DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 218

[Docket No. 200625–0169]

RIN 0648–BJ06

Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to the U.S. Navy Training and Testing Activities in the Hawaii-Southern California Training and Testing 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 Hawaii-Southern California Training and Testing (HSTT) Study Area over the course of seven years, effectively extending the time period from December 20, 2023, to December 20, 2025. In August 2018, the MMPA was amended by the John S. McCain National Defense Authorization Act (NDAA) for Fiscal Year 2019 to allow for seven-year authorizations for military readiness activities, as compared to the previously allowed five years. The Navy's activities qualify as military readiness activities pursuant to the MMPA as amended by the NDAA for Fiscal Year 2004. These regulations, which allow for the issuance of Letters of Authorization (LOAs) 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 or stocks and their habitat, and establish requirements pertaining to the monitoring and reporting of such taking.

DATES: Effective from July 10, 2020, to December 20, 2025.

ADDRESSES: Copies of the Navy's applications, NMFS' proposed rule for these regulations, NMFS' proposed and final rules and subsequent LOAs for the associated five-year HSTT Study Area regulations, other supporting documents cited herein, and a list of the references cited in this document 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: Wendy Piniak, 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.*), extend 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, air guns, impact pile driving/vibratory extraction, and the movement of vessels throughout the HSTT Study Area. The HSTT Study Area is comprised of established operating and warning areas across the north-central Pacific Ocean, from the mean high tide line in Southern California west to Hawaii and the International Date Line. The Study Area includes the at-sea areas of three existing range complexes (the Hawaii Range Complex, the Southern California (SOCAL) Range Complex, and the Silver Strand Training Complex), and overlaps a portion of the Point Mugu Sea Range (PMSR). Also included in the Study Area are Navy pierside locations in Hawaii and Southern California, Pearl Harbor, San Diego Bay, and the transit corridor [1] on the high seas where sonar training and testing may occur.

NMFS received an application from the Navy requesting to extend NMFS' existing MMPA regulations (50 CFR part 218, subpart H; hereafter ''2018 HSTT regulations'') that authorize the take of marine mammals incidental to Navy training and testing activities conducted in the HSTT Study Area to cover seven years of the Navy's activities, instead of five. 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.

[1] Vessel transit corridors are the routes typically used by Navy assets to traverse from one area to another. The route depicted in Figure 2–1 of the Navy's March 2019 rulemaking/LOA application is the shortest route between Hawaii and Southern California, making it the quickest and most fuel efficient. The depicted vessel transit corridor is notional and may not represent the actual routes used by ships and submarines transiting from Southern California to Hawaii and back. Actual routes navigated are based on a number of factors including, but not limited to, weather, training, and operational requirements.

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

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 or eliminate the likelihood of ship strikes;
- Activity limitations in certain areas and times that are biologically important (*i.e.,* for foraging, migration, reproduction) for marine mammals;
- Implementation of a Notification and Reporting Plan (for dead, live stranded, or marine mammals struck by a vessel); 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 a 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 such 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 least practicable adverse impact 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 of Request

On December 27, 2018, NMFS published a five-year final rule governing the taking of marine mammals incidental to Navy training and testing activities conducted in the HSTT Study Area (83 FR 66846; hereafter ''2018 HSTT final rule''). Previously, on August 13, 2018, and towards the end of the time period in which NMFS was processing the Navy's request for the 2018 regulations, the 2019 NDAA amended the MMPA for military readiness activities to allow incidental take regulations to be issued for up to seven years instead of the previous five years. The Navy's training and testing activities conducted in the HSTT Study Area qualify as military readiness activities pursuant to the MMPA, as amended by the 2004 NDAA. On March 11, 2019 the Navy submitted an application requesting that NMFS extend the 2018 HSTT regulations and associated LOAs such that they would cover take incidental to seven years of training and testing activities instead of five, extending the expiration date from December 20, 2023 to December 20, 2025.

In its 2019 application, the Navy proposed no changes to the nature of the specified activities covered by the 2018 HSTT final rule, the level of activity within and between years will be consistent with that previously analyzed in the 2018 HSTT final rule, and all activities will be conducted within the same boundaries of the HSTT Study Area identified in the 2018 HSTT final rule. Therefore, the training and testing activities (*e.g.,* equipment and sources used, exercises conducted) and the mitigation, monitoring, and nearly all reporting measures are identical to those described and analyzed in the 2018 HSTT final rule. The only changes included in the Navy's request were to conduct those same activities in the same region for an additional two years. In its request, the Navy included all information necessary to identify the type and amount of incidental take that may occur in the two additional years so NMFS could determine whether the analyses and conclusions regarding the impacts of the proposed activities on marine mammal species and stocks previously reached for five years of activities remain applicable for seven years of identical activity.

The purpose of the Navy's training and testing activities is to ensure that the Navy meets its mission mandated by federal law (10 U.S.C. 8062), which is to maintain, train, and equip combat-ready naval forces capable of winning wars, deterring aggression, and maintaining freedom of the seas. The Navy executes this responsibility by establishing and executing training programs, including at-sea training and exercises, and ensuring naval forces have access to the ranges, operating areas (OPAREAs), and airspace needed to develop and maintain skills for conducting naval activities. The Navy's mission is achieved in part by conducting training and testing within the HSTT Study Area.

The Navy's March 11, 2019, rulemaking and LOA extension application (hereafter ''2019 Navy application'') reflects the same compilation of training and testing activities presented in the Navy's October 13, 2017, initial rulemaking and LOA application (hereafter ''2017 Navy application'') and the 2018 HSTT regulations that were subsequently promulgated, which can be found at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities.* These activities are deemed by the Navy necessary to accomplish military readiness requirements and are anticipated to continue into the reasonably foreseeable future. The 2019 Navy application and this rule cover training and testing activities that will occur over seven years, including the five years already authorized under the 2018 HSTT regulations, with the regulations valid from the publication date of this final rule through December 20, 2025.

Summary of the Regulations

NMFS is extending the incidental take regulations and associated LOAs through December 20, 2025, to cover the same Navy activities covered by the 2018 HSTT regulations. The 2018 HSTT final rule was recently published and its analysis remains current and valid. In its 2019 application, the Navy proposed no changes to the nature (*e.g.,* equipment and sources used, exercises conducted) or level of the specified activities within or between years or to the boundaries of the HSTT Study Area. The mitigation, monitoring, and nearly all reporting measures (described below) will be identical to those described and analyzed in the 2018 HSTT final rule. The regulatory language included at the end of this final rule, which will be published at 50 CFR part 218, subpart H, also is the same as the HSTT 2018 regulations, except for a small number of technical changes. No new information has been received from the

Navy, or otherwise become available to NMFS, since publication of the 2018 HSTT final rule that significantly changes the analyses supporting the 2018 findings. Where there is any new information pertinent to the descriptions, analyses, or findings required to authorize incidental take for military readiness activities under MMPA section 101(a)(5)(A), that information is provided in the appropriate sections below.

Because the activities included in the 2019 Navy application have not changed and the analyses and findings included in the documents provided and produced in support of the recently published 2018 HSTT final rule remain current and applicable, this final rule relies heavily on and references to the applicable information and analyses in those documents. Below is a list of the primary documents referenced in this final rule. The list indicates the short name by which the document is referenced in this final rule, as well as the full titles of the cited documents. All of the documents can be found at: *www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities* and *http://www.hstteis.com/.*

- NMFS June 26, 2018, Hawaii-Southern California Training and Testing (HSTT) proposed rule (83 FR 29872; hereafter ''2018 HSTT proposed rule'');
- NMFS December 27, 2018, Hawaii-Southern California Training and Testing (HSTT) final rule (83 FR 66846; hereafter ''2018 HSTT final rule'');
- NMFS September 13, 2019, Hawaii-Southern California Training and Testing (HSTT) proposed rule (84 FR 48388; hereafter ''2019 HSTT proposed rule'');
- Navy October 13, 2017, MMPA rulemaking and LOA application (hereafter ''2017 Navy application'');
- Navy March 11, 2019, MMPA rulemaking and LOA extension application (hereafter ''2019 Navy application''); and
- October 26, 2018, Hawaii-Southern California Training and Testing (HSTT) Final Environmental Impact Statement/Overseas Environmental Impact Statement (FEIS/OEIS) (hereafter ''2018 HSTT FEIS/OEIS'').

Description of the Specified Activity

The Navy requested authorization to take marine mammals incidental to conducting training and testing activities. The Navy has determined that acoustic and explosives stressors are most likely to result in impacts on marine mammals that could rise to the level of harassment. A small number of serious injuries or mortalities are also possible from vessel strikes or exposure to explosive detonations. Detailed descriptions of these activities are provided in Chapter 2 of the 2018 HSTT FEIS/OEIS and in the 2017 and 2019 Navy applications.

Overview of Training and Testing Activities

The Navy routinely trains and tests in the HSTT Study Area in preparation for national defense missions. Training and testing activities and components covered in the 2019 Navy application are described in detail in the *Overview of Training and Testing Activities* sections of the 2018 HSTT proposed rule, the 2018 HSTT final rule, and Chapter 2 (*Description of Proposed Action and Alternatives*) of the 2018 HSTT FEIS/OEIS. Each military training and testing activity described meets mandated Fleet requirements to deploy combat-ready forces. The Navy proposed no changes to the specified activities described and analyzed in the 2018 HSTT final rule. The boundaries of the HSTT Study Area (see Figure 2–1 of the 2019 Navy application); the training and testing activities (*e.g.,* equipment and sources used, exercises conducted); manner of or amount of vessel movement; and standard operating procedures presented in this final rule are identical to those described and analyzed in the 2018 HSTT final rule.

Dates and Duration

The specified activities will occur at any time during the seven-year period of validity of the regulations. The number of training and testing activities are described in the *Detailed Description of the Specified Activities* section (Tables 1 through 5).

Geographical Region

The geographic extent of the HSTT Study Area is identical to that described in the 2018 HSTT final rule. The HSTT Study Area (see Figure 2–1 of the 2019 Navy application) is comprised of established operating and warning areas across the north-central Pacific Ocean, from the mean high tide line in Southern California west to Hawaii and the International Date Line. The Study Area includes the at-sea areas of three existing range complexes (the Hawaii Range Complex, the Southern California (SOCAL) Range Complex, and the Silver Strand Training Complex), and overlaps a portion of the Point Mugu Sea Range (PMSR). Also included in the Study Area are Navy pierside locations in Hawaii and Southern California, Pearl Harbor, San Diego Bay, and the transit corridor [2] on the high seas where sonar training and testing may occur.

A Navy range complex consists of geographic areas that encompass a water component (above and below the surface) and airspace, and may encompass a land component where training and testing of military platforms, tactics, munitions, explosives, and electronic warfare systems occur. Range complexes include established OPAREAs, which may be further divided to provide better control of the area for safety reasons. Additional detail on range complexes and testing ranges was provided in the *Duration and Location* section of the 2018 HSTT proposed rule; please see the 2018 HSTT proposed rule or the 2017 Navy application for more information and maps.

Description of Acoustic and Explosive 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 statutory mission. Training and testing with these systems may introduce acoustic (sound) energy or shock waves from explosives into the environment. The specific components that could act as stressors by having direct or indirect impacts on the environment are described in detail in the *Description of Acoustic and Explosive Stressors* section of the 2018 HSTT final rule and Chapter 2 (*Description of Proposed Action and Alternatives*) of the 2018 HSTT FEIS/OEIS. The Navy proposes no changes to the nature of the specified activities and, therefore, the acoustic and explosive stressors are identical to those described and analyzed in the 2018 HSTT final rule.

Other Stressor—Vessel Strike

Vessel strikes are not specific to any particular training or testing activity, but rather a limited, sporadic, and incidental result of Navy vessel movement within the HSTT Study Area. Navy vessels transit at speeds that are optimal for fuel conservation or to meet training and testing requirements. The average speed of large Navy ships ranges between 10 and 15 knots and

[2] Vessel transit corridors are the routes typically used by Navy assets to traverse from one area to another. The route depicted in Figure 2–1 of the 2019 Navy application is the shortest route between Hawaii and Southern California, making it the quickest and most fuel efficient. The depicted vessel transit corridor is notional and may not represent the actual routes used by ships and submarines transiting from Southern California to Hawaii and back. Actual routes navigated are based on a number of factors including, but not limited to, weather, training, and operational requirements.

submarines generally operate at speeds in the range of 8 to 13 knots, while a few specialized vessels can travel at faster speeds. By comparison, this is slower than most commercial vessels where full speed for a container ship is typically 24 knots (Bonney and Leach, 2010), with average vessel speeds along the California coast recently reported to be between 14 and 18 knots (Moore *et al.,* 2018).

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 ship strike would result in serious injury or mortality. The Navy proposed no changes to the nature of the specified activities, the training and testing activities, the manner of or amount of vessel movement, or standard operating procedures described in the 2018 HSTT final rule. Therefore, the description of vessel strikes as a stressor is the same as that presented in the *Other Stressor—Vessel Strike* sections of the 2018 HSTT proposed rule and 2018 HSTT final rule.

Detailed Description of the Specified Activities

The Navy's specified activities are presented and analyzed as a representative year of training to account for the natural fluctuation of training cycles and deployment schedules in any seven-year period. In the 2018 HSTT final rule, NMFS analyzed the potential impacts of these activities (*i.e.,* incidental take of marine mammals) based on the Navy conducting three years of a representative level of activity and two years of a maximum level of activity. For the purposes of this rulemaking, the Navy presented and NMFS analyzed activities based on the additional two years of training and testing consisting of an additional one year of a maximum level of activity and one year of a representative level of activity consistent with the pattern set forth in the 2018 HSTT final rule, the 2018 HSTT FEIS/OEIS, and the 2017 Navy application.

Training Activities

The number of planned training activities that could occur annually and the duration of those activities remains identical to those presented in Table 4 of the 2018 HSTT final rule, and are not repeated here. The number of planned training activities that could occur over the seven-year period are presented in Table 1. The table is organized according to primary mission areas and includes the activity name, associated stressors applicable to these regulations, sound source bin, number of proposed activities, and locations of those activities in the HSTT Study Area. For further information regarding the primary platform used (*e.g.,* ship or aircraft type) see Appendix A (*Navy Activity Descriptions*) of the 2018 HSTT FEIS/OEIS.

TABLE 1—TRAINING ACTIVITIES ANALYZED FOR SEVEN-YEAR PERIOD IN THE HSTT STUDY AREA

Stressor category	Activity name	Description	Source bin	Location	7-year number of events
Major Training Events—Large Integrated Anti-Submarine Warfare					
Acoustic	Composite Training Unit Exercise [1].	Aircraft carrier and carrier air wing integrates with surface and submarine units in a challenging multi-threat operational environment that certifies them ready to deploy.	ASW1, ASW2, ASW3, ASW4, ASW5, HF1, LF6, MF1, MF3, MF4, MF5, MF11, MF12.	SOCAL	18
Acoustic	Rim of the Pacific Exercise [1].	A biennial multinational training exercise in which navies from Pacific Rim nations and the United Kingdom assemble in Pearl Harbor, Hawaii, to conduct training throughout the Hawaiian Islands in a number of warfare areas. Marine mammal systems may be used during a Rim of the Pacific exercise. Components of a Rim of the Pacific exercise, such as certain mine warfare and amphibious training, may be conducted in the Southern California Range Complex.	ASW2, ASW3, ASW4, HF1, HF3, HF4, M3, MF1, MF3, MF4, MF5, MF11.	HRC SOCAL	4 4
Major Training Events—Medium Integrated Anti-Submarine Warfare					
Acoustic	Fleet Exercise/ Sustainment Exercise [1].	Aircraft carrier and carrier air wing integrates with surface and submarine units in a challenging multi-threat operational environment to maintain ability to deploy.	ASW1, ASW2, ASW3, ASW4, HF1, LF6, MF1, MF3, MF4, MF5, MF11, MF12.	HRC SOCAL	7 35
Acoustic	Undersea Warfare Exercise.	Elements of the anti-submarine warfare tracking exercise combine in this exercise of multiple air, surface, and subsurface units, over a period of several days. Sonobuoys are released from aircraft. Active and passive sonar used.	ASW3, ASW4, HF1, LF6, MF1, MF3, MF4, MF5, MF11, MF12.	HRC	17
Integrated/Coordinated Training—Small Integrated Anti-Submarine Warfare Training					
Acoustic	Navy Undersea Warfare Training and Assessment Course Surface Warfare Advanced Tactical Training.	Multiple ships, aircraft, and submarines integrate the use of their sensors to search for, detect, classify, localize, and track a threat submarine in order to launch an exercise torpedo.	ASW3, ASW4, HF1, MF1, MF3, MF4, MF5.	HRC SOCAL	7 18
Integrated/Coordinated Training—Medium Coordinated Anti-Submarine Warfare Training					
Acoustic	Submarine Commanders Course.	Train prospective submarine Commanding Officers to operate against surface, air, and subsurface threats.	ASW3, ASW4, HF1, MF1, MF3, MF4, MF5, TORP1, TORP2.	HRC SOCAL	12 12

TABLE 1—TRAINING ACTIVITIES ANALYZED FOR SEVEN-YEAR PERIOD IN THE HSTT STUDY AREA—Continued

Stressor category	Activity name	Description	Source bin	Location	7-year number of events
Integrated/Coordinated Training—Small Coordinated Anti-Submarine Warfare Training					
Acoustic	Amphibious Ready Group/ Marine Expeditionary Unit Exercise Group Sail Independent Deployer Certification Exercise/ Tailored Anti-Submarine Warfare Training.	Small-scale, short duration, coordinated anti-submarine warfare exercises.	ASW2, ASW3, ASW4, HF1, MF1, MF3, MF4, MF5, MF11.	HRC SOCAL	14 86
Amphibious Warfare					
Explosive	Naval Surface Fire Support Exercise—at Sea.	Surface ship uses large-caliber gun to support forces ashore; however, land target simulated at sea. Rounds impact water and are scored by passive acoustic hydrophones located at or near target area.	Large-caliber HE rounds (E5).	HRC (W188)	105
Acoustic	Amphibious Marine Expeditionary Unit Exercise.	Navy and Marine Corps forces conduct advanced integration training in preparation for deployment certification.	ASW2, ASW3, ASW4, HF1, MF1, MF3, MF4, MF5, MF11.	SOCAL	18
Acoustic	Amphibious Marine Expeditionary Unit Integration Exercise.	Navy and Marine Corps forces conduct integration training at sea in preparation for deployment certification.	ASW2, ASW3, ASW4, HF1, MF1, MF3, MF4, MF5, MF11.	SOCAL	18
Acoustic	Marine Expeditionary Unit Composite Training Unit Exercise.	Amphibious Ready Group exercises are conducted to validate the Marine Expeditionary Unit's readiness for deployment and includes small boat raids; visit, board, search, and seizure training; helicopter and mechanized amphibious raids; and a non-combatant evacuation operation.	ASW2, ASW3, ASW4, HF1, MF1, MF3, MF4, MF5, MF11.	SOCAL	18
Anti-Submarine Warfare					
Acoustic	Anti-Submarine Warfare Torpedo Exercise—Helicopter.	Helicopter crews search for, track, and detect submarines. Recoverable air launched torpedoes are employed against submarine targets.	MF4, MF5, TORP1	HRC SOCAL	42 728
Acoustic	Anti-Submarine Warfare Torpedo Exercise—Maritime Patrol Aircraft.	Maritime patrol aircraft crews search for, track, and detect submarines. Recoverable air launched torpedoes are employed against submarine targets.	MF5, TORP1	HRC SOCAL	70 175
Acoustic	Anti-Submarine Warfare Torpedo Exercise—Ship.	Surface ship crews search for, track, and detect submarines. Exercise torpedoes are used during this event.	ASW3, MF1, TORP1	HRC SOCAL	350 819
Acoustic	Anti-Submarine Warfare Torpedo Exercise—Submarine.	Submarine crews search for, track, and detect submarines. Exercise torpedoes are used during this event.	ASW4, HF1, MF3, TORP2	HRC SOCAL	336 91
Acoustic	Anti-Submarine Warfare Tracking Exercise—Helicopter.	Helicopter crews search for, track, and detect submarines.	MF4, MF5	HRC SOCAL, PMSR HSTT Transit Corridor.	1,113 3,668 42
Acoustic	Anti-Submarine Warfare Tracking Exercise—Maritime Patrol Aircraft.	Maritime patrol aircraft aircrews search for, track, and detect submarines. Recoverable air launched torpedoes are employed against submarine targets.	MF5	HRC SOCAL, PMSR	182 350
Acoustic	Anti-Submarine Warfare Tracking Exercise—Ship.	Surface ship crews search for, track, and detect submarines.	ASW3, MF1, MF11, MF12	HRC SOCAL, PMSR	1,568 2,961
Acoustic	Anti-Submarine Warfare Tracking Exercise—Submarine.	Submarine crews search for, track, and detect submarines.	ASW4, HF1, HF3, MF3	HRC SOCAL, PMSR HSTT Transit Corridor.	1,400 350 49
Explosive, Acoustic.	Service Weapons Test	Air, surface, or submarine crews employ explosive torpedoes against virtual targets.	HF1, MF3, MF6, TORP2, Explosive torpedoes (E11).	HRC SOCAL	14 7
Mine Warfare					
Acoustic	Airborne Mine Countermeasure–Mine Detection.	Helicopter aircrews detect mines using towed or laser mine detection systems.	HF4	SOCAL	70
Explosive, Acoustic.	Civilian Port Defense—Homeland Security Anti-Terrorism/Force Protection Exercises.	Maritime security personnel train to protect civilian ports against enemy efforts to interfere with access to those ports.	HF4, SAS2 E2, E4	Pearl Harbor, HI San Diego, CA	7 21
Explosive	Marine Mammal Systems	The Navy deploys trained bottlenose dolphins (*Tursiops truncatus*) and California sea lions (*Zalophus californianus*) as part of the marine mammal mine-hunting and object-recovery system.	E7	HRC SOCAL	70 1,225
Acoustic	Mine Countermeasure Exercise—Ship Sonar.	Ship crews detect and avoid mines while navigating restricted areas or channels using active sonar.	HF4, HF8, MF1K	HRC SOCAL	210 664
Acoustic	Mine Countermeasure Exercise—Surface.	Mine countermeasure ship crews detect, locate, identify, and avoid mines while navigating restricted areas or channels, such as while entering or leaving port.	HF4	SOCAL	1,862

TABLE 1—TRAINING ACTIVITIES ANALYZED FOR SEVEN-YEAR PERIOD IN THE HSTT STUDY AREA—Continued

Stressor category	Activity name	Description	Source bin	Location	7-year number of events
Explosive, Acoustic.	Mine Countermeasures Mine Neutralization Remotely Operated Vehicle.	Ship, small boat, and helicopter crews locate and disable mines using remotely operated underwater vehicles.	HF4, E4	HRC SOCAL	42 2,604
Explosive	Mine Neutralization Explosive Ordnance Disposal.	Personnel disable threat mines using explosive charges.	E4, E5, E6, E7	HRC (Puuloa) SOCAL (IB, TAR 2, TAR 3, TAR 21, SWAT 3, SOAR).	140 1,358
Acoustic	Submarine Mine Exercise	Submarine crews practice detecting mines in a designated area.	HF1	HRC SOCAL	280 84
Acoustic	Surface Ship Object Detection.	Ship crews detect and avoid mines while navigating restricted areas or channels using active sonar.	MF1K, HF8	HRC SOCAL	287 1,134
Explosive	Underwater Demolitions Multiple Charge—Mat Weave and Obstacle Loading.	Military personnel use explosive charges to destroy barriers or obstacles to amphibious vehicle access to beach areas.	E10, E13	SOCAL (TAR 2, TAR 3).	126
Explosive	Underwater Demolition Qualification and Certification.	Navy divers conduct various levels of training and certification in placing underwater demolition charges.	E6, E7	HRC (Puuloa) SOCAL (TAR 2)	203 700
Surface Warfare					
Explosive	Bombing Exercise Air-to-Surface.	Fixed-wing aircrews deliver bombs against surface targets.	E12[2]	HRC SOCAL HSTT Transit Corridor.	1,309 4,480 35
Explosive	Gunnery Exercise Surface-to-Surface Boat Medium-Caliber.	Small boat crews fire medium-caliber guns at surface targets.	E1, E2	HRC SOCAL	70 98
Explosive	Gunnery Exercise Surface-to-Surface Ship Large-caliber.	Surface ship crews fire large-caliber guns at surface targets.	E5	HRC SOCAL HSTT Transit Corridor.	210 1,302 91
Explosive	Gunnery Exercise Surface-to-Surface Ship Medium-Caliber.	Surface ship crews fire medium-caliber guns at surface targets.	E1, E2	HRC SOCAL HSTT Transit Corridor.	350 1,260 280
Explosive, Acoustic.	Independent Deployer Certification Exercise/ Tailored Surface Warfare Training.	Multiple ships, aircraft and submarines conduct integrated multi-warfare training with a surface warfare emphasis. Serves as a ready-to-deploy certification for individual surface ships tasked with surface warfare missions.	E1, E3, E6, E10	SOCAL	7
Explosive	Integrated Live Fire Exercise.	Naval Forces defend against a swarm of surface threats (ships or small boats) with bombs, missiles, rockets, and small-, medium- and large-caliber guns.	E1, E3, E6, E10	HRC (W188A) SOCAL (SOAR)	7 7
Explosive	Missile Exercise Air-to-Surface.	Fixed-wing and helicopter aircrews fire air-to-surface missiles at surface targets.	E6, E8, E10	HRC SOCAL	70 1,498
Explosive	Missile Exercise Air-to-Surface Rocket.	Helicopter aircrews fire both precision-guided and unguided rockets at surface targets.	E3	HRC SOCAL	1,598 1,722
Explosive	Missile Exercise Surface-to-Surface.	Surface ship crews defend against surface threats (ships or small boats) and engage them with missiles.	E6, E10	HRC (W188) SOCAL (W291)	140 70
Explosive, Acoustic.	Sinking Exercise	Aircraft, ship, and submarine crews deliberately sink a seaborne target, usually a decommissioned ship made environmentally safe for sinking according to U.S. Environmental Protection Agency standards, with a variety of munitions.	TORP2, E5, E10, E12	HRC SOCAL	21 4
Pile driving	Elevated Causeway System.	A pier is constructed off of the beach. Piles are driven into the bottom with an impact hammer. Piles are removed from seabed via vibratory extractor. Only in-water impacts are analyzed.	Impact hammer or vibratory extractor.	SOCAL	14
Other Training Exercises					
Acoustic	Kilo Dip	Functional check of the dipping sonar prior to conducting a full test or training event on the dipping sonar.	MF4	HRC SOCAL	420 16,800
Acoustic	Submarine Navigation Exercise.	Submarine crews operate sonar for navigation and object detection while transiting into and out of port during reduced visibility.	HF1, MF3	Pearl Harbor, HI San Diego Bay, CA.	1,540 560
Acoustic	Submarine Sonar Maintenance and Systems Checks.	Maintenance of submarine sonar systems is conducted pierside or at sea.	MF3	HRC Pearl Harbor, HI SOCAL San Diego Bay, CA. HSTT Transit Corridor.	1,820 1,820 651 644 70

TABLE 1—TRAINING ACTIVITIES ANALYZED FOR SEVEN-YEAR PERIOD IN THE HSTT STUDY AREA—Continued

Stressor category	Activity name	Description	Source bin	Location	7-year number of events
Acoustic	Submarine Under-Ice Certification.	Submarine crews train to operate under ice. Ice conditions are simulated during training and certification events.	HF1	HRC SOCAL	84 42
Acoustic	Surface Ship Sonar Maintenance and Systems Checks.	Maintenance of surface ship sonar systems is conducted pierside or at sea.	HF8, MF1	HRC Pearl Harbor, HI SOCAL San Diego, CA HSTT Transit Corridor.	525 560 1,750 1,750 56
Acoustic	Unmanned Underwater Vehicle Training—Certification and Development.	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.	FLS2, M3, SAS2	HRC SOCAL	175 70

Notes: HRC = Hawaii Range Complex, SOCAL = Southern California Range Complex, HSTT = Hawaii-Southern California Training and Testing, PMSR = Point Mugu Sea Range Overlap, TAR = Training Area and Range, SOAR = Southern California Anti-Submarine Warfare Range, IB = Imperial Beach Minefield.
1. Any non-antisubmarine warfare activity that could occur is captured in the individual activities.
2. For the Bombing Exercise Air-to-Surface, all activities were analyzed using E12 explosive bin, but smaller explosives are frequently used.

Testing Activities

The number of planned testing activities that could occur annually and the duration of those activities are identical to those presented in Tables 5 through 8 of the 2018 HSTT final rule, and are not repeated here. Similar to the 2017 Navy application, the Navy's planned testing activities here are based on the level of testing activities anticipated to be conducted into the reasonably foreseeable future, with adjustments that account for changes in the types and tempo (increases or decreases) of testing activities to meet current and future military readiness requirements. The number of planned testing activities that could occur for the seven-year period are presented in Tables 2 through 5.

Naval Air Systems Command

The Naval Air Systems Command testing activities that could occur over the seven-year period within the HSTT Study Area are presented in Table 2.

TABLE 2—NAVAL AIR SYSTEMS COMMAND TESTING ACTIVITIES ANALYZED FOR SEVEN-YEAR PERIOD IN THE HSTT STUDY AREA

Stressor category	Activity name	Description	Source bin	Location	7-year number of events
Anti-Submarine Warfare					
Acoustic	Anti-Submarine Warfare Torpedo Test.	This event is similar to the training event torpedo exercise. Test evaluates anti-submarine warfare systems onboard rotary-wing and fixed-wing aircraft and the ability to search for, detect, classify, localize, track, and attack a submarine or similar target.	MF5, TORP1	HRC SOCAL	134 353
Explosive, Acoustic.	Anti-Submarine Warfare Tracking Test–Helicopter.	This event is similar to the training event anti-submarine tracking exercise–helicopter. The test evaluates the sensors and systems used to detect and track submarines and to ensure that helicopter systems used to deploy the tracking systems perform to specifications.	MF4, MF5, E3	SOCAL	414
Explosive, Acoustic.	Anti-Submarine Warfare 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.	ASW2, ASW5, MF5, MF6, E1, E3.	HRC SOCAL	399 436
Explosive, Acoustic.	Sonobuoy Lot Acceptance Test.	Sonobuoys are deployed from surface vessels and aircraft to verify the integrity and performance of a lot or group of sonobuoys in advance of delivery to the fleet for operational use.	ASW2, ASW5, HF5, HF6, LF4, MF5, MF6, E1, E3, E4.	SOCAL	1,120
Mine Warfare					
Acoustic	Airborne Dipping Sonar Minehunting Test.	A mine-hunting dipping sonar system that is deployed from a helicopter and uses high-frequency sonar for the detection and classification of bottom and moored mines.	HF4	SOCAL	24
Explosive	Airborne Mine Neutralization System Test.	A test of the airborne mine neutralization system that evaluates the system's ability to detect and destroy mines from an airborne mine countermeasures capable helicopter (*e.g.,* MH–60). The airborne mine neutralization system uses up to four unmanned underwater vehicles equipped with high-frequency sonar, video cameras, and explosive and non-explosive neutralizers.	E4	SOCAL	117

TABLE 2—NAVAL AIR SYSTEMS COMMAND TESTING ACTIVITIES ANALYZED FOR SEVEN-YEAR PERIOD IN THE HSTT STUDY AREA—Continued

Stressor category	Activity name	Description	Source bin	Location	7-year number of events
Acoustic	Airborne Sonobuoy Minehunting Test.	A mine-hunting system made up of sonobuoys deployed from a helicopter. A field of sonobuoys, using high-frequency sonar, is used for detection and classification of bottom and moored mines.	HF6	SOCAL	33
Surface Warfare					
Explosive	Air-to-Surface Bombing Test	This event is similar to the training event bombing exercise air-to-surface. Fixed-wing aircraft test the delivery of bombs against surface maritime targets with the goal of evaluating the bomb, the bomb carry and delivery system, and any associated systems that may have been newly developed or enhanced.	E9	HRC SOCAL	56 98
Explosive	Air-to-Surface Gunnery Test	This event is similar to the training event gunnery exercise air-to-surface. Fixed-wing and rotary-wing aircrews evaluate new or enhanced aircraft guns against surface maritime targets to test that the gun, gun ammunition, or associated systems meet required specifications or to train aircrew in the operation of a new or enhanced weapons system.	E1	HRC SOCAL	35 330
Explosive	Air-to-Surface Missile Test	This event is similar to the training event missile exercise air-to-surface. Test may involve both fixed-wing and rotary-wing aircraft launching missiles at surface maritime targets to evaluate the weapons system or as part of another systems integration test.	E6, E9, E10	HRC SOCAL	126 384
Explosive	Rocket Test	Rocket tests are conducted to evaluate the integration, accuracy, performance, and safe separation of guided and unguided 2.75-inch rockets fired from a hovering or forward flying helicopter or tilt rotor aircraft.	E3	HRC SOCAL	14 142
Other Testing Activities					
Acoustic	Kilo Dip	Functional check of a helicopter deployed dipping sonar system (*e.g.,* AN/AQS–22) prior to conducting a testing or training event using the dipping sonar system.	MF4	SOCAL	12
Acoustic	Undersea Range System Test.	Post installation node survey and test and periodic testing of range node transmit functionality.	MF9	HRC	129

Notes: HRC = Hawaii Range Complex, SOCAL = Southern California Range Complex.

Naval Sea Systems Command

The Naval Sea Systems Command testing activities that could occur over the seven-year period within the HSTT Study Area are presented in Table 3.

TABLE 3—NAVAL SEA SYSTEMS COMMAND TESTING ACTIVITIES ANALYZED FOR SEVEN-YEAR PERIOD IN THE HSTT STUDY AREA

Stressor category	Activity name	Description	Source bin	Location	7-year number of events
Anti-Submarine Warfare					
Acoustic	Anti-Submarine Warfare Mission Package Testing.	Ships and their supporting platforms (*e.g.,* rotary-wing aircraft and unmanned aerial systems) detect, localize, and prosecute submarines.	ASW1, ASW2, ASW3, ASW5, MF1, MF4, MF5, MF12, TORP1.	HRC SOCAL	154 161
Acoustic	At-Sea Sonar Testing	At-sea testing to ensure systems are fully functional in an open ocean environment.	ASW3, ASW4, HF1, LF4, LF5, M3, MF1, MF1K, MF2, MF3, MF5, MF9, MF10, MF11.	HRC HRC—SOCAL SOCAL	109 7 138
Acoustic	Countermeasure Testing	Countermeasure testing involves the testing of systems that will detect, localize, and track incoming weapons, including marine vessel targets. Testing includes surface ship torpedo defense systems and marine vessel stopping payloads.	ASW3, ASW4, HF5, TORP1, TORP2.	HRC HRC—SOCAL SOCAL HSTT Transit Corridor.	56 28 77 14
Acoustic	Pierside Sonar Testing	Pierside testing to ensure systems are fully functional in a controlled pierside environment prior to at-sea test activities.	HF1, HF3, HF8, M3, MF1, MF3, MF9.	Pearl Harbor, HI San Diego, CA	49 49
Acoustic	Submarine Sonar Testing/ Maintenance.	Pierside and at-sea testing of submarine systems occurs periodically following major maintenance periods and for routine maintenance.	HF1, HF3, M3, MF3	HRC Pearl Harbor, HI San Diego, CA	28 119 168
Acoustic	Surface Ship Sonar Testing/Maintenance.	Pierside and at-sea testing of ship systems occurs periodically following major maintenance periods and for routine maintenance.	ASW3, MF1, MF1K, MF9, MF10.	HRC Pearl Harbor, HI San Diego, CA SOCAL	21 21 21 21

TABLE 3—NAVAL SEA SYSTEMS COMMAND TESTING ACTIVITIES ANALYZED FOR SEVEN-YEAR PERIOD IN THE HSTT STUDY AREA—Continued

Stressor category	Activity name	Description	Source bin	Location	7-year number of events
Explosive, Acoustic.	Torpedo (Explosive) Testing.	Air, surface, or submarine crews employ explosive and non-explosive torpedoes against artificial targets.	ASW3, HF1, HF5, HF6, MF1, MF3, MF4, MF5, MF6, TORP1, TORP2, E8, E11.	HRC (W188) HRC (W188) SOCAL. SOCAL	56 21 56
Acoustic	Torpedo (Non-Explosive) Testing.	Air, surface, or submarine crews employ non-explosive torpedoes against submarines or surface vessels.	ASW3, ASW4, HF1, HF6, M3, MF1, MF3, MF4, MF5, MF6, TORP1, TORP2, TORP3.	HRC HRC SOCAL SOCAL	56 63 56
Mine Warfare					
Explosive, Acoustic.	Mine Countermeasure and Neutralization Testing.	Air, surface, and subsurface vessels neutralize threat mines and mine-like objects.	HF4, E4	SOCAL	70
Explosive, Acoustic.	Mine Countermeasure Mission Package Testing.	Vessels and associated aircraft conduct mine countermeasure operations.	HF4, SAS2, E4	HRC SOCAL	118 406
Acoustic	Mine Detection and Classification Testing.	Air, surface, and subsurface vessels detect and classify mines and mine-like objects. Vessels also assess their potential susceptibility to mines and mine-like objects.	HF1, HF8, MF1, MF5	HRC HRC SOCAL SOCAL	14 10 77
Surface Warfare					
Explosive	Gun Testing—Large-Caliber.	Surface crews defend against surface targets with large-caliber guns.	E3	HRC HRC—SOCAL SOCAL	49 504 49
Explosive	Gun Testing—Medium-Caliber.	Surface crews defend against surface targets with medium-caliber guns.	E1	HRC HRC—SOCAL SOCAL	28 336 28
Explosive	Missile and Rocket Testing.	Missile and rocket testing includes various missiles or rockets fired from submarines and surface combatants. Testing of the launching system and ship defense is performed.	E6	HRC HRC—SOCAL SOCAL	91 168 140
Unmanned Systems					
Acoustic	Unmanned Surface Vehicle System Testing.	Testing involves the production or upgrade of unmanned surface vehicles. This may include tests of mine detection capabilities, evaluations of the basic functions of individual platforms, or complex events with multiple vehicles.	HF4, SAS2	HRC SOCAL	21 28
Acoustic	Unmanned Underwater Vehicle Testing.	Testing involves the production or upgrade of unmanned underwater vehicles. This may include tests of mine detection capabilities, evaluations of the basic functions of individual platforms, or complex events with multiple vehicles.	HF4, MF9	HRC SOCAL	21 2,037
Vessel Evaluation					
Acoustic	Submarine Sea Trials—Weapons System Testing.	Submarine weapons and sonar systems are tested at-sea to meet the integrated combat system certification requirements.	HF1, M3, MF3, MF9, MF10, TORP2.	HRC SOCAL	7 7
Explosive	Surface Warfare Testing	Tests the capabilities of shipboard sensors to detect, track, and engage surface targets. Testing may include ships defending against surface targets using explosive and non-explosive rounds, gun system structural test firing, and demonstration of the response to Call for Fire against land-based targets (simulated by sea-based locations).	E1, E5, E8	HRC HRC—SOCAL SOCAL	63 441 102
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.	ASW4, HF4, HF8, MF1, MF4, MF5, MF6, TORP1, TORP2.	HRC HRC SOCAL\ SOCAL	49 60 69
Acoustic	Vessel Signature Evaluation.	Surface ship, submarine and auxiliary system signature assessments. This may include electronic, radar, acoustic, infrared and magnetic signatures.	ASW3	HRC HRC SOCAL SOCAL	28 252 168
Other Testing Activities					
Acoustic	Insertion/Extraction	Testing of submersibles capable of inserting and extracting personnel and payloads into denied areas from strategic distances.	M3, MF9	HRC SOCAL	7 7
Acoustic	Signature Analysis Operations.	Surface ship and submarine testing of electromagnetic, acoustic, optical, and radar signature measurements.	HF1, M3, MF9	HRC SOCAL	14 7

Notes: HRC = Hawaii Range Complex, SOCAL = Southern California Range Complex, HSTT = Hawaii-Southern California Training and Testing, CA = California, HI = Hawaii.

Office of Naval Research

The Office of Naval Research testing activities that could occur over the seven-year period within the HSTT Study Area are presented in Table 4.

TABLE 4—OFFICE OF NAVAL RESEARCH TESTING ACTIVITIES ANALYZED FOR SEVEN-YEAR PERIOD IN THE HSTT STUDY AREA

Stressor category	Activity name	Description	Source bin	Location	7-year number of events
Acoustic and Oceanographic Science and Technology					
Explosive, Acoustic.	Acoustic and Oceanographic Research.	Research using active transmissions from sources deployed from ships and unmanned underwater vehicles. Research sources can be used as proxies for current and future Navy systems.	AG, ASW2, BB4, BB9, LF3, LF4, LF5, MF8, MF9, MF9, MF9, E3.	HRC SOCAL	14 28
Acoustic	Long Range Acoustic Communications.	Bottom mounted acoustic source off of the Hawaiian Island of Kauai will transmit a variety of acoustic communications sequences.	LF4	HRC	21

Notes: HRC = Hawaii Range Complex, SOCAL = Southern California Range Complex.

Naval Information Warfare Systems Command

The Naval Information Warfare Systems Command testing activities that could occur over the seven-year period within the HSTT Study Area are presented in Table 5.

TABLE 5—NAVAL INFORMATION WARFARE SYSTEMS COMMAND TESTING ACTIVITIES ANALYZED FOR SEVEN-YEAR PERIOD IN THE HSTT STUDY AREA

Stressor category	Activity name	Description	Source bin	Location	7-year number of events
Acoustic	Anti-Terrorism/Force Protection.	Testing sensor systems that can detect threats to naval piers, ships, and shore infrastructure.	SD1	San Diego, CA SOCAL	98 112
Acoustic	Communications	Testing of underwater communications and networks to extend the principles of FORCEnet below the ocean surface.	ASW2, ASW5, HF6, LF4	HRC SOCAL	5 70
Acoustic	Energy and Intelligence, Surveillance, and Reconnaissance Sensor Systems.	Develop, integrate, and demonstrate Intelligence, Surveillance, and Reconnaissance systems and in-situ energy systems to support deployed systems.	AG, HF2, HF7, LF4, LF5, LF6, MF10.	HRC SOCAL HSTT Transit Corridor.	87 357 56
Acoustic	Vehicle Testing	Testing of surface and subsurface vehicles and sensor systems that may involve Unmanned Underwater Vehicles, gliders, and Unmanned Surface Vehicles.	BB4, FLS2, FLS3, HF6, LF3, M3, MF9, MF13, SAS1, SAS2, SAS3.	HRC SOCAL HSTT Transit Corridor.	8 1,141 14

Notes: HRC = Hawaii Range Complex, SOCAL = Southern California Range Complex, HSTT = Hawaii-Southern California Training and Testing, CA = California.

Summary of Acoustic and Explosive Sources Analyzed for Training and Testing

Tables 6 through 9 show the acoustic and explosive source classes, bins, and numbers used, airgun sources and numbers used, and numbers of pile driving and removal activities associated with the Navy's planned training and testing activities over a seven-year period in the HSTT Study Area that were analyzed in the 2019 Navy application and for this final rule. The annual numbers for acoustic source classes, explosive source bins, and airgun sources, as well as the annual pile driving and removal activities associated with Navy training and testing activities in the HSTT Study Area are identical to those presented in Tables 9 through 12 of the 2018 HSTT final rule, and are not repeated here. Consistent with the periodicity in the 2018 HSTT final rule, the Navy included the addition of two pile driving/extraction activities for each of the two additional years.

Table 6 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 and testing activities. Acoustic source bin use in the planned activities would vary annually. The seven-year totals for the planned training and testing activities take into account that annual variability.

TABLE 6—ACOUSTIC SOURCE CLASSES ANALYZED AND NUMBER USED FOR SEVEN-YEAR PERIOD FOR TRAINING AND TESTING ACTIVITIES IN THE HSTT STUDY AREA

Source class category	Bin	Description	Unit [1]	Training	Testing
				7-year total	7-year total
Low-Frequency (LF): Sources that produce signals less than 1 kHz.	LF3	LF sources greater than 200 dB	H	0	1,365

TABLE 6—ACOUSTIC SOURCE CLASSES ANALYZED AND NUMBER USED FOR SEVEN-YEAR PERIOD FOR TRAINING AND TESTING ACTIVITIES IN THE HSTT STUDY AREA—Continued

Source class category	Bin	Description	Unit [1]	Training	Testing
				7-year total	7-year total
	LF4	LF sources equal to 180 dB and up to 200 dB.	H	0	4,496
			C	0	140
	LF5	LF sources less than 180 dB	H	65	14,458
	LF6	LF sources greater than 200 dB with long pulse lengths.	H	956	360
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	38,489	8,692
	MF1K	Kingfisher mode associated with MF1 sonars.	H	700	98
	MF2 [2]	Hull-mounted surface ship sonars (*e.g.,* AN/SQS–56).	H	0	378
	MF3	Hull-mounted submarine sonars (*e.g.,* AN/BQQ–10).	H	14,700	9,177
	MF4	Helicopter-deployed dipping sonars (*e.g.,* AN/AQS–22 and AN/AQS–13).	H	2,719	2,502
	MF5	Active acoustic sonobuoys (*e.g.,* DICASS)	C	40,128	38,233
	MF6	Active underwater sound signal devices (*e.g.,* MK 84).	C	63	8,202
	MF8	Active sources (greater than 200 dB) not otherwise binned.	H	0	490
	MF9	Active sources (equal to 180 dB and up to 200 dB) not otherwise binned.	H	0	36,056
	MF10	Active sources (greater than 160 dB, but less than 180 dB) not otherwise binned.	H	0	13,104
	MF11	Hull-mounted surface ship sonars with an active duty cycle greater than 80%.	H	5,205	392
	MF12	Towed array surface ship sonars with an active duty cycle greater than 80%.	H	1,260	4,620
	MF13	MF sonar source	H	0	2,100
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	12,550	5,403
	HF2	HF Marine Mammal Monitoring System	H	0	840
	HF3	Other hull-mounted submarine sonars (classified).	H	1,919	769
	HF4	Mine detection, classification, and neutralization sonar (*e.g.,* AN/SQS–20).	H	15,012	114,069
	HF5	Active sources (greater than 200 dB) not otherwise binned.	H	0	6,720
			C	0	280
	HF6	Active sources (equal to 180 dB and up to 200 dB) not otherwise binned.	H	0	7,015
	HF7	Active sources (greater than 160 dB, but less than 180 dB) not otherwise binned.	H	0	9,660
	HF8	Hull-mounted surface ship sonars (*e.g.,* AN/SQS–61).	H	711	5,136
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	1,503	3,290
	ASW2	MF Multistatic Active Coherent sonobuoy (*e.g.,* AN/SSQ–125).	C	4,824	32,900
	ASW3	MF towed active acoustic countermeasure systems (*e.g.,* AN/SLQ–25).	H	37,385	19,187
	ASW4	MF expendable active acoustic device countermeasures (*e.g.,* MK 3).	C	9,023	15,398
	ASW5 [3]	MF sonobuoys with high duty cycles	H	1,780	3,854
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	1,605	6,454
	TORP2	Heavyweight torpedo (*e.g.,* MK 48)	C	3,515	2,756
	TORP3		C	0	315
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	196	3,424
	FLS3	VHF sources with short pulse lengths, narrow beam widths, and focused beam patterns.	H	0	18,480

TABLE 6—ACOUSTIC SOURCE CLASSES ANALYZED AND NUMBER USED FOR SEVEN-YEAR PERIOD FOR TRAINING AND TESTING ACTIVITIES IN THE HSTT STUDY AREA—Continued

Source class category	Bin	Description	Unit [1]	Training	Testing
				7-year total	7-year total
Acoustic Modems (M): Systems used to transmit data through the water.	M3	MF acoustic modems (greater than 190 dB)	H	274	3,623
Swimmer Detection Sonars (SD): Systems used to detect divers and submerged swimmers.	SD1–SD2	HF and VHF sources with short pulse lengths, used for the detection of swimmers and other objects for the purpose of port security.	H	0	70
Synthetic Aperture Sonars (SAS): Sonars in which active acoustic signals are post-processed to form high-resolution images of the seafloor.	SAS1	MF SAS systems	H	0	13,720
	SAS2	HF SAS systems	H	6,297	60,088
	SAS3	VHF SAS systems	H	0	32,200
	SAS4	MF to HF broadband mine countermeasure sonar.	H	294	0
Broadband Sound Sources (BB): Sonar systems with large frequency spectra, used for various purposes.	BB4	LF to MF oceanographic source	H	0	6,414
	BB7	LF oceanographic source	C	0	196
	BB9	MF optoacoustic source	H	0	3,360

[1] H = hours; C = count (*e.g.,* number of individual pings or individual sonobuoys).
[2] MF2/MF2K are sources on frigate class ships, which were decommissioned during Phase II.
[3] Formerly ASW2 (H) in Phase II.
Notes: dB = decibel(s), kHz = kilohertz, VHF = very high frequency.

Table 7 describes the number of air gun shots that could occur over seven years under the planned training and testing activities.

TABLE 7—TRAINING AND TESTING AIR GUN SOURCES QUANTITATIVELY ANALYZED IN THE HSTT STUDY AREA

Source class category	Bin	Unit [1]	Training	Testing
			7-year total	7-year total
Air Guns (AG): Small underwater air guns	AG	C	0	5,908

[1] C = count. One count (C) of AG is equivalent to 100 air gun firings.

Table 8 summarizes the impact pile driving and vibratory pile removal activities that could occur during a 24-hour period. Annually, for impact pile driving, the Navy will drive 119 piles, two times a year for a total of 238 piles. Over the seven-year period of the rule, the Navy will drive a total of 1,666 piles by impact pile driving. Annually, for vibratory pile extraction, the Navy will extract 119 piles, two times a year for a total of 238 piles. Over the seven-year period of the rule, the Navy will extract a total of 1,666 piles by vibratory pile extraction.

TABLE 8—SUMMARY OF PILE DRIVING AND REMOVAL ACTIVITIES PER 24-HOUR PERIOD IN THE HSTT STUDY AREA

Method	Piles per 24-hour period	Time per pile (minutes)	Total estimated time of noise per 24-hour period (minutes)
Pile Driving (Impact)	6	15	90
Pile Removal (Vibratory)	12	6	72

Table 9 describes the number of in-water explosives that could be used in any year under the proposed training and testing activities. Under the proposed activities bin use would vary annually, and the seven-year totals for the planned training and testing activities take into account that annual variability.

TABLE 9—EXPLOSIVE SOURCE BINS ANALYZED AND NUMBER USED FOR SEVEN-YEAR PERIOD FOR TRAINING AND TESTING ACTIVITIES WITHIN THE HSTT STUDY AREA

Bin	Net explosive weight (lb.) [1]	Example explosive source	Modeled underwater detonation depths (ft.)	Training	Testing
				7-year total	7-year total
E1	0.1–0.25	Medium-caliber projectiles	0.3, 60	20,580	87,012
E2	>0.25–0.5	Medium-caliber projectiles	0.3, 50	12,222	0
E3	>0.5–2.5	Large-caliber projectiles	0.3, 60	19,579	20,848
E4	>2.5–5	Mine neutralization charge	10, 16, 33, 50, 61, 65, 650	266	4,372
E5	>5–10	5 in projectiles	0.3, 10, 50	33,310	9,800
E6	>10–20	Hellfire missile	0.3, 10, 50, 60	4,056	230
E7	>20–60	Demo block/ shaped charge	10, 50, 60	91	0
E8	>60–100	Lightweight torpedo	0.3, 150	241	399
E9	>100–250	500 lb bomb	0.3	2,950	28
E10	>250–500	Harpoon missile	0.3	1,543	210
E11	>500–650	650 lb mine	61, 150	69	84
E12	>650–1,000	2,000 lb bomb	0.3	114	0
E13	>1,000–1,740	Multiple Mat Weave charges	NA [2]	63	0

[1] Net Explosive Weight refers to the amount of explosives; the actual weight of a munition may be larger due to other components.
[2] Not modeled because charge is detonated in surf zone; not a single E13 charge, but multiple smaller charges detonated in quick succession.
Notes: in. = inch(es), lb. = pound(s), ft. = feet.

Vessel Movement

Vessels used as part of the planned activities include ships, submarines, unmanned vessels, and boats ranging in size from small, 22 ft (7 m) rigid hull inflatable boats to aircraft carriers with lengths up to 1,092 ft (333 m). The average speed of large Navy ships ranges between 10 and 15 knots and submarines generally operate at speeds in the range of 8–13 knots (kn), while a few specialized vessels can travel at faster speeds. Small craft (for purposes of this analysis, less than 18 m in length) have much more variable speeds (0–50+ kn, dependent on the activity), but generally range from 10 to 14 kn. From unpublished Navy data, average median speed for large Navy ships in the HSTT Study Area from 2011–2015 varied from 5–10 kn with variations by ship class and location (*i.e.,* slower speeds close to the coast). While these speeds for large and small craft are representative of most events, some vessels need to temporarily operate outside of these parameters. A full description of Navy vessels that are used during training and testing activities can be found in the 2017 Navy application and Chapter 2 (*Description of Proposed Action and Alternatives*) of the 2018 HSTT FEIS/OEIS.

The number of Navy vessels used in the HSTT Study Area varies based on military training and testing requirements, deployment schedules, annual budgets, and other dynamic factors. Most training and testing activities involve the use of vessels. These activities could be widely dispersed throughout the HSTT Study Area, but would typically be conducted near naval ports, piers, and range areas. Navy vessel traffic will be especially concentrated near San Diego, California and Pearl Harbor, Hawaii. There is no seasonal differentiation in Navy vessel use because of continual operational requirements from Combatant Commanders. The majority of large vessel traffic occurs between the installations and the OPAREAs. Support craft will be more concentrated in the coastal waters in the areas of naval installations, ports, and ranges. Activities involving vessel movements occur intermittently and are variable in duration, ranging from a few hours up to weeks.

The manner in which Navy vessels will be used during training and testing activities, the speeds at which they operate, the number of vessels that will be used during various activities, and the locations in which Navy vessel movement will be concentrated within the HSTT Study Area have not changed from those analyzed in the 2018 HSTT final rule. The only change related to the Navy's request regarding Navy vessel movement is the vessel use associated with the additional two years of Navy activities.

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 a real-world situation 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 additional 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 activities and included them in the environmental analysis. Details on standard operating procedures were provided in the 2018 HSTT proposed rule; please see the 2018 HSTT proposed rule, the 2017 Navy application, and Chapter 2 (*Description of Proposed Action and Alternatives*) of the 2018 HSTT FEIS/OEIS for more information. The Standard Operating Procedures for the seven-year period will be identical to those in place under the 2018 HSTT final rule.

Comments and Responses

On May 8, 2019, we published a notice of receipt (NOR) in the **Federal Register** (84 FR 20105) for the Navy's application to effectively extend the five-year 2018 HSTT regulations to seven years, and requested comments and information related to the Navy's request. The review and comment period for the NOR ended on June 7, 2019. We reviewed and considered all comments and information received on the NOR in development of the proposed rule. We published the proposed seven-year rule for the Navy's HSTT activities in the **Federal Register** on September 13, 2019 (83 FR 48388),

with a 30-day comment period. In that proposed rule, we requested public input on the request for authorization described therein, our analyses, and the proposed authorizations and requested that interested persons submit relevant information, suggestions, and comments. During the 30-day comment period, we received 30 comment letters. Of this total, one submission was from the Marine Mammal Commission (hereafter ''Commission''), two letters were from organizations or individuals acting in an official capacity (*e.g.,* non-governmental organizations (NGOs)) and 27 submissions were from private citizens. Both the Commission and NGOs included their comments submitted on the 2018 HSTT proposed five-year rule, which the seven-year rule here is nearly identical to. The Commission did not reiterate their 2018 HSTT proposed rule recommendations in their comment letter but maintained that the recommendations that NMFS did not incorporate into the 2018 HSTT final rule are still relevant and pertain to the extension of the five-year rule and asked that they be reviewed again in the course of considering the new seven-year rule. One letter from NGOs attached their 2018 HSTT proposed rule comment letter. They stated that ''most of the issues raised [in their 2018 HSTT proposed rule comment letter] were not adequately addressed in the 2018–2023 Final Rule'' and asked that NMFS renew consideration of their prior comments. To the extent they raised concerns with how ''most'' issues were addressed previously, they did not identify which issues those were. The second letter from NGOs also attached their comments on the 2018 HSTT proposed rule and the Notice of Receipt of the 2017 Navy application.

NMFS has reviewed and considered all public comments received on the 2019 HSTT proposed rule and issuance of the LOAs. In considering the comments received we realized that our responses to some of the comments on the 2018 HSTT proposed rule could benefit from additional detail and/or clarification. Accordingly, we are republishing the responses to comments received on the 2018 HSTT proposed rule, some of which have been updated, along with providing our responses to new comments on the 2019 proposed rule. Therefore, all relevant comments received on both the 2018 and 2019 HSTT proposed rules and our responses are presented below. We provide no response to specific comments that addressed species or statutes not relevant to our proposed authorization under section 101(a)(5)(A) of the MMPA (*e.g.,* comments related to sea turtles) or species or stocks that do not occur in the HSTT Study Area (*e.g.,* Southern Resident Killer whales).

General Comments

The majority of the 18 comment letters received on the 2018 HSTT proposed rule and 27 comment letters received on the 2019 HSTT proposed rule from private citizens expressed general opposition toward the Navy's proposed training and testing activities and requested that NMFS not issue the LOAs while one comment on the 2019 HSTT proposed rule expressed general support, with none of these general commenters providing information relevant to NMFS' decisions. Therefore, these comments were not considered further. The remaining comments are addressed below.

Comment 1: Some commenters expressed concern with issuing LOAs for seven years.

Response: Under section 101(a)(5)(A) of the MMPA, applicants may apply for the incidental take coverage that they need for their activities and NMFS ''shall issue'' the requested authorizations provided certain findings (see the *Background* section) can be made. In August 2018, Congress amended the MMPA through the NDAA for Fiscal Year 2019 to allow for seven-year authorizations for military readiness activities, as compared to the previously allowed five years. Following the statutory amendment, the Navy applied for longer term coverage for its testing and training activities in the HSTT Study Area, and with NMFS making the required findings through this rulemaking, issuance of regulations and LOAs for the longer period is appropriate.

Comment 2: Several Commenters expressed concern and the need for increased reporting and assessment of impacts due to impacts of climate change on marine mammal populations.

Response: We note that the Navy is required to provide annual reports to NMFS and the Adaptive Management process allows for timely modification of mitigation or monitoring measures based on new information, when appropriate (see the *Mitigation Measures* and *Monitoring* sections for additional detail). The reporting requirements included in this final rule are consistent with NMFS' regulations and the goals of the monitoring and reporting program, as discussed in the 2018 HSTT final rule.

Impact Analysis

General

Comment 3: In a comment on the 2018 HSTT proposed rule, a Commenter recommended that the Navy provide NMFS with an acoustics analysis that addresses noise impacts on land, from the air, and underwater. Full environmental analysis of the noise would examine a suite of metrics appropriate to the array of resources impacted. The impacts should discuss potential effects on wildlife, visitors, and other noise-sensitive receivers.

The commenter also recommended that the Navy consider the following as it plans to conduct activities in the HSTT Study Area:

- Use appropriate metrics to assess potential environmental impacts on land and water.
- Determine natural ambient acoustic conditions as a baseline for analysis.
- Assess effects from cumulative noise output, incorporating noise generated from other anthropogenic sources.
- Determine distance at which noise will attenuate to natural levels.
- Assess effects that these noise levels would have on terrestrial wildlife, marine wildlife, and visitors.
- Appropriate and effective mitigation measures should be developed and used to reduce vessel strike (*e.g.,* timing activities to avoid migration, and searching for marine mammals before and during activities and taking avoidance measures).

Response: The analysis conducted by the Navy and provided to NMFS was based on the best available science and provided NMFS with all information needed to conduct a complete and thorough analysis of the effects of Navy activities on affected marine mammals and their habitat. In addition, NMFS refers the Commenter to the 2018 HSTT FEIS/OEIS which conducted an assessment of all of the activities which comprised the proposed action and their impacts (including cumulative impacts) along with alternatives to the proposed action and their impacts to relevant resources. In the context of this MMPA rule, the Navy was not required to do ambient noise monitoring or assess impacts to wildlife other than marine mammals or to visitors/tourists. The mitigation measures in this rule include procedural measures to use trained Lookouts to observe for marine mammals within a mitigation zone before, during, and after applicable activities to avoid or reduce potential impacts wherever and whenever training and testing activities occur. Additionally, the Navy will implement

measures within mitigation areas to avoid potential impacts in key areas of importance for marine mammal foraging, reproduction, and migration. The mitigation measures in this rule also include procedural measures to minimize vessel strike (avoiding whales by 500 yds, *etc.*), mitigation areas to minimize strike in biologically important areas, and Awareness Notification Message areas wherein all vessels are alerted to stay vigilant to the presence of large whales.

Density Estimates

Comment 4: In a comment on the 2018 HSTT proposed rule, a Commenter stated that 30 iterations or Monte Carlo simulations is low for general bootstrapping methods used in those models but understands that increasing the number of iterations in turn increases the computational time needed to run the models. Accordingly, the Commenter suggested that the Navy consider increasing the iterations from 30 to at least 200 for activities that have yet to be modeled for upcoming MMPA rulemakings for Navy testing and training activities.

Response: In areas where there are four seasons, 30 iterations are used in NAEMO which results in a total of 120 iterations per year for each event. However, in areas where there are only two seasons, warm and cold, the number of iterations per season is increased to 60 so that 120 iterations per year are maintained. The Navy reached this number of iterations by running two iterations of a scenario and calculating the mean of exposures, then running a third iteration and calculating the running mean of exposures, then a fourth iteration and so on. This is done until the running mean becomes stable. Through this approach, it was determined 120 iterations was sufficient to converge to a statistically valid answer and provides a reasonable uniformity of exposure predictions for most species and areas. There are a few exceptions for species with sparsely populated distributions or highly variable distributions. In these cases, the running mean may not flatten out (or become stable); however, there were so few exposures in these cases that while the mean may fluctuate, the overall number of exposures did not result in significant differences in the totals. In total, the number of simulations conducted for HSTT Phase III exceeded six million simulations and produced hundreds of terabytes of data. Increasing the number of iterations, based on the discussion above, would not result in a significant change in the results, but would incur a significant increase in resources (*e.g.,* computational and storage requirements). This would divert these resources from conducting other more consequential analysis without providing for meaningfully improved data. The Navy has communicated that it is continually looking at ways to improve NAEMO and reduce data and computational requirements. As technologies and computational efficiencies improve, the Navy will evaluate these advances and incorporate them where appropriate. NMFS has reviewed the Navy's approach and concurs that it is technically sound and reflects the best available science.

Comment 5: In a comment on the 2018 HSTT proposed rule, a Commenter had concerns regarding the Navy's pinniped density estimates. Given that a single density was provided for the respective areas and pinnipeds were assumed to occur at sea as individual animals, uncertainty does not appear to have been incorporated in the Navy's animat modeling for pinnipeds. The Navy primarily used sightings or abundance data, assuming certain correction factors, divided by an area to estimate pinniped densities. Many, if not all, of the abundance estimates had associated measures of uncertainty (*i.e.,* coefficients of variation (CV), standard deviation (SD), or standard error (SE)). Therefore, the Commenter recommended that NMFS require the Navy to specify whether and how it incorporated uncertainty in the pinniped density estimates into its animat modeling and if it did not, require the Navy to use measures of uncertainty inherent in the abundance data (*i.e.,* CV, SD, SE) similar to the methods used for cetaceans.

Response: As noted in the cited 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), the Navy did not apply statistical uncertainty outside the survey boundaries into non-surveyed areas, since it deemed application of statistical uncertainty would not be meaningful or appropriate. We note that there are no measures of uncertainty (*i.e.,* no CV, SD, or SE) provided in NMFS Pacific Stock Assessment Report (SAR) Appendix 3 (Carretta *et al.,* 2019) associated with the abundance data for any of the pinniped species present in Southern California. Although some measures of uncertainty are presented in some citations within the SAR and in other relevant publications for some survey findings, it is not appropriate for the Navy to attempt to derive summations of total uncertainty for an abundance when the authors of the cited studies and the SAR have not. For additional information regarding use of pinniped density data, see the cited ''U.S. Navy Marine Species Density Database Phase III for the Hawaii-Southern California Training and Testing Study Area'' Section 11 (U.S. Department of the Navy, 2017b). As a result of the lack of published applicable measures of uncertainty for pinnipeds during this analysis, the Navy did not incorporate measures of uncertainty into the pinniped density estimates. NMFS independently reviewed the methods and densities used by the Navy and concur that they are appropriate and reflect the best available science.

Comment 6: In a comment on the 2018 HSTT proposed rule, a Commenter had concerns regarding the various areas, abundance estimates, and correction factors that the Navy used for pinnipeds. The Commenter referenced a lot of information in the context of both what the Navy used and what the Commenter argued they could have used instead and summarized the discussion with several recommendations.

For harbor seals, the area was based on the NMFS SOCAL stratum (extending to the extent of the U.S. exclusive economic zone (EEZ), 370 km from the coast) for its vessel-based surveys (*i.e.,* Barlow 2010) and the Navy applied the density estimates from the coast to 80 km offshore. The Commenter believes that this approach is inappropriate and that the Navy should use the area of occurrence to estimate the densities for harbor seals. For harbor seals, the Navy assumed that 22 percent of the stock occurred in SOCAL, citing Department of the Navy (2015). The Commenter had two concerns with this approach. First, one has to go to Department of the Navy (2015) to determine the original source of the information (Lowry *et al.,* 2008; see the commenter's February 20, 2014, letter on this matter). Second, Lowry *et al.* (2008) indicated that 23.3 percent of the harbor seal population occurred in SOCAL, not 22 percent as used by the Navy. Therefore, the Commenter recommended that, at the very least, NMFS require the Navy to revise the pinniped density estimates using the extent of the coastal range (*e.g.,* from shore to 80 km offshore) of harbor seals as the applicable area, 23.3 percent of the California abundance estimate based on Lowry *et al.* (2008), and an at-sea correction factor of 65 percent based on Harvey and Goley (2011) for both seasons.

For monk seals the area was based on the areas within the 200-m isobaths in both the Main and Northwest Hawaiian Islands (MHI and NWHI, respectively) and areas beyond the 200-m isobaths in the U.S. EEZ. The Commenter asserted that some of the abundances used were not based on best available science. The Navy noted that its monk seal abundance was less than that reported by Baker *et al.* (2016), but that those more recent data were not available when the Navy's modeling process began. The Baker *et al.* (2016) data have been available for almost two years and should have been incorporated accordingly, particularly since the data would yield greater densities and the species is endangered. For monk seals, the Commenter recommended using the 2015 monk seal abundance estimate from Baker *et al.* (2016) and an at-sea correction factor of 63 percent for the MHI based on Baker *et al.* (2016) and 69 percent for the NWHI based on Harting *et al.* (2017).

For the northern fur seals, the area was based on the NMFS SOCAL stratum (extending to the extent of the U.S. EEZ, 370 km from the coast) for its vessel-based surveys (*i.e.,* Barlow, 2010). For elephant seals, California sea lions, and Guadalupe fur seals, the area was based on the Navy SOCAL modeling area. The Commenter had concerns that these areas are not based on the biology or ecology of these species. The Commenter recommended using the same representative area for elephant seals, northern fur seals, Guadalupe fur seals, and California sea lions.

The Commenter recommended using an increasing trend of 3.8 percent annually for the last 15 years for elephant seals as part of the California population and at least 31,000 as representative of the Mexico population based on Lowry *et al.* (2014). Additionally, the commenter recommended using an at-sea correction factor of 44 percent for the cold season and 48 percent for the warm season for California sea lions based on Lowry and Forney (2005).

Finally, the Commenter recommended that NMFS require the Navy to (1) specify the assumptions made and the underlying data that were used for the at-sea correction factors for Guadalupe and northern fur seals and (2) consult with experts in academia and at the NMFS Science Centers to develop more refined pinniped density estimates that account for pinniped movements, distribution, at-sea correction factors, and density gradients associated with proximity to haul-out sites or rookeries.

Response: The Navy provided additional clarification regarding the referenced concerns about areas, abundance estimates, and correction factors that were used for pinnipeds. We 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. Different methods may be supportable in different situations, and, further, there may be more than one acceptable method to estimate take in a particular situation. Accordingly, while NMFS always ensures that the 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. We note the following in further support of the analysis: 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 and, further, would not change NMFS' determinations for pinnipeds. In addition, we note that (1) many of the specific recommendations that the Commenter makes are largely minor in nature: ''44 not 47 percent,'' ''63 not 61 percent,'' ''23.3 not 22 percent'' or ''area being approximately 13 percent larger;'' and (2) even where the recommendation is somewhat larger in scale, given the ranges 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 recruitment or survival of any of these stocks, or the negligible impact determination. 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.

For harbor seals—Based on the results from satellite tracking of harbor seals at Monterey, California and the documented dive depths (Eguchi and Harvey, 2005), the extent of the range for harbor seals in the HSTT Study Area used by the Navy (a 50 Nmi buffer around all known haul-out sites; approximately 93 km) is more appropriate than the suggested 80 km offshore suggested by Commenter.

The comment is incorrect in its claim that the NMFS and Navy did not use the best available science. Regarding the appropriate percentage of the California Current Ecosystem abundance to assign to the HSTT Study Area, the 22 percent that the Navy used is based on the most recent of the two years provided in Lowry *et al.* (2008) rather than the mean of two years, which is one valid approach. Additionally, since approximately 74 percent of the harbor seal population in the Channel Islands (Lowry *et al.,* 2017) is present outside and to the north of the HSTT Study Area, it is a reasonable assumption that the 22 percent used already provides a conservative overestimate and that it would not be appropriate to apply a higher percentage of the overall population for distribution into the Navy's modeling areas.

Again, the comment is incorrect in its claim that the correction factors applied to population estimates were either unsubstantiated or incorrect. Regarding the Commenter's recommended use of an at-sea correction factor of 65 percent for both seasons based on Harvey and Goley (2011), that correction factor was specifically meant to apply to the single molting season when harbor seals are traditionally surveyed (see discussion in Lowry *et al.,* 2017). Additionally, the authors of that study provided a correction factor (CF = 2.86; 35 percent) for Southern California but left open the appropriateness of that factor given the limited data available at the time. For these reasons, having separate correction factors for each of the seasons is more appropriate as detailed in Section 11.1.5 (*Phoca vitulina,* Pacific harbor seal) of the ''U.S. Navy Marine Species Density Database Phase III for the Hawaii-Southern California Training and Testing Study Area'' (U.S. Department of the Navy, 2017b).

For monk seals, as detailed in Section 11.1.4 (*Neomonachus schauinslandi,* Hawaiian monk seal) of the ''U.S. Navy Marine Species Density Database Phase III for the Hawaii-Southern California Training and Testing Study Area'' (U.S. Department of the Navy, 2017b), the Navy consulted with the researchers and subject matter experts at the Pacific Science Center and the Monk Seal Recovery Team regarding the abundance estimates, at sea correction factors, and distribution for monk seals in the Hawaiian Islands during development

of the 2018 HSTT FEIS/OEIS throughout 2015 and the Summer of 2016, and as used subsequently in its MMPA application. The Navy incorporated the results of those consultations, including unpublished data, into the analysis of monk seals. Additional details in this regard to monk seal distributions and population trends as reflected by the abundance in the Hawaiian Islands are presented in the 2018 HSTT FEIS/OEIS in Section 3.7.2.2.9.2 (Habitat and Geographic Range) and Section 3.7.2.2.9.3 (Population Trends). The Navy has indicated that it has continued ongoing communications with researchers at the Pacific Islands Science Center and elsewhere, has accounted for the findings in the citations noted by the Commenter (Baker *et al.,* 2016; Harting *et al.,* 2017) as well as information in forthcoming publications provided ahead of publication via those researchers (cited as in preparation), and specifically asked for and received concurrence from subject matter experts regarding specific findings presented in the 2018 HSTT FEIS/OEIS regarding monk seals. The Navy also considered (subsequent to publication of the 2018 HSTT FEIS/OEIS) the new Main Hawaiian Islands haul-out correction factor presented in the publication by Wilson *et al.* (2017, which would be inconsistent with the use of the Baker *et al.* (2016) correction factors suggested by the Commenter), and the Harting *et al.* (2017) correction factor, and considered the new abundance numbers presented in the 2016 Stock Assessment Report, which first became available in January 2018. It is the Navy's assessment that a revision of the monk seal at-sea density would only result in small changes to the predicted effects and certainly would not change the conclusions presented in the 2018 HSTT FEIS/OEIS regarding impact on the population or the impact on the species. NMFS concurs with this conclusion. The Navy has communicated that it assumes that as part of the ongoing regulatory discussions with NMFS, changes to estimates of effects can be best dealt with in the next rulemaking given Wilson *et al.* (2017) has now also provided a totally new haulout correction factor for the Main Hawaiian Islands that was not considered in Baker *et al.* (2016), Harting *et al.* (2017), or the 2016 SAR. NMFS agrees.

For northern fur seals, elephant seals, California sea lions, and Guadalupe fur seals, the Navy consulted with various subject matter experts regarding the abundances and distributions used in the 2018 HSTT FEIS/OEIS analyses for these species and based on those consultations and the literature available, the Navy and NMFS believe that the findings presented in the 2018 HSTT FEIS/OEIS and supporting technical reports provide the most accurate assessments available for these species. Given the demonstrated differences in the at-sea distributions of elephant seals, northern fur seals, Guadalupe fur seals, and California sea lions (Gearin *et al.,* 2017; Lowry *et al.,* 2014; Lowry, *et al.,* 2017; Norris, 2017; Norris, *et al.,* 2015; Robinson *et al.,* 2012; University of California Santa Cruz and National Marine Fisheries Service, 2016), it would not be appropriate to use the same representative area for distributions of these species' population abundances. For example, California sea lions forage predominantly within 20 nmi from shore (Lowry and Forney, 2005), while tag data shows that many elephant seals (Robinson *et al.,* 2012) and Guadalupe fur seals (Norris, 2017) seasonally forage in deep waters of the Pacific well outside the boundaries of the HSTT Study Area.

For northern elephant seals (*Mirounga angustirostris,* Northern elephant seal), as detailed in Section 11.1.3 of the technical report titled *U.S. Navy Marine Species Density Database Phase III for the Hawaii-Southern California Training and Testing Study Area* (U.S. Department of the Navy, 2017b), the Navy considered a number of factors in the development of the data for this species, including the fact that not all of the elephant seal population is likely to occur exclusively within the Southern California portion of the HSTT Study Area. Given that the three main rookeries considered in this analysis are located at the northern boundary of the HSTT Study Area and that elephant seals migrate northward after the breeding season, the Navy, in consultation with subject matter experts, believes the current abundance used in the analysis is based on the best available science and represents a conservative overestimate of the number of elephant seals likely to be affected by Navy activities in the HSTT Study Area. NMFS agrees with this assessment, and it was used in the MMPA analysis.

For California sea lions, the citation (Lowry and Forney, 2005) used as the basis for this recommendation specifically addressed the use of the Central and Northern California at-sea correction factor elsewhere, with the authors stating; ''In particular, [use of the Central and Northern California at-sea correction factor] would not be appropriate for regions where sea lions reproduce, such as in the Southern California Bight (SCB) and in Mexico, . . .'' Given the waters of the Southern California Bight and off Mexico overlap the HSTT Study Area and since the authors of the cited study specifically recommended not using the correction factor in the manner the Commenter suggested, the Navy does not believe use of that correction factor for the HSTT Study Area would be appropriate. NMFS concurs with this approach.

For Guadalupe fur seal—Additional detail regarding the data used for the analysis of Guadalupe fur seals was added to the 2018 HSTT FEIS/OEIS Section 3.7.2.2.8 (*Arctocephalus townsendi,* Guadalupe Fur Seal). The Navy had integrated the latest (September 2017) unpublished data for Guadalupe fur seals from researchers in the United States and Mexico into the at-sea correction factor and density distribution of the species used in the modeling, but consultations with experts in academia and at the NMFS Science Centers and their recommendations had not been finalized before release of the Draft EIS/OEIS. Subsequently, this revision of the text was not considered critical for the final NEPA document since the new data did not provide any significant change to the conclusions reached regarding the Guadalupe fur seal population. In fact, the data indicates an increase in the population and expansion of their range concurrent with decades of ongoing Navy training and testing in the SOCAL range complex. The Navy recently supported new census and at-sea satellite tagging of Guadalupe fur seals in 2018 and 2019. These data were not available during the development of the 2018 HSTT FEIS/OEIS, but the results do not change the overall conclusions. For instance, Guadalupe fur seals tagged to date are truly pelagic and mainly transit the offshore (<2000 m) waters of the HSTT SOCAL area (Norris *et al.,* 2019a, 2019b; Norris *et al.,* 2020). Therefore, modeled takes are likely an over-prediction of exposure. NMFS agrees with this assessment, and it was used in the MMPA analysis.

For Northern Fur Seal—As presented in Section 11.1.2 (*Callorhinus ursinus,* Northern fur seal) of the Navy's Density Technical Report (U.S. Department of the Navy, 2017b), the correction factor percentages for northern fur seals potentially at sea were derived from the published literature as cited (Antonelis *et al.,* 1990; Ream, *et al.,* 2005; Roppel, 1984).

For future EISs, the Navy explained that it did and will continue to consult with authors of the papers relevant to the analyses as well as other experts in

academia and at the NMFS Science Centers during the development of the Navy's analyses. During the development of the 2018 HSTT EIS/OEIS and as late as September 2017, the Navy had ongoing communications with various subject matter experts and specifically discussed pinniped movements, the distribution of populations within the study area to support the analyses, the pinniped haulout or at-sea correction factors, and the appropriateness of density gradients associated with proximity to haul-out sites or rookeries. As shown in the references cited, the personal communications with researchers have been made part of the public record, although many other informal discussions with colleagues have also assisted in the Navy's approach to the analyses presented.

The Navy acknowledges that there have been previous comments provided by this Commenter on other Navy range complex documents regarding the use of satellite tag movement and location data to derive at-sea pinniped density data, and the Navy asserts that previous responses to those comments remain valid. Additionally, the Commenter has noted that the ''. . . Commenter continues to believe that data regarding movements and dispersion of tagged pinnipeds could yield better approximations of densities than the methods the Navy currently uses.'' The Navy acknowledges that in comments to previous HSTT EIS/OEIS analyses, the Commenter has recommended this untried approach; responses to those previous comments have been provided. The Navy also notes that there have been papers suggesting the future application of Bayesian or Markov chain techniques for use in habitat modeling (*e.g.,* Redfern *et al.,* 2006) and overcoming the bias introduced by interpretation of population habitat use based on non-randomized tagging locations (*e.g.,* Whitehead and Jonsen, 2013). However, the use of satellite tag location data in a Bayesian approach to derive cetacean or pinniped densities at sea has yet to be accepted, implemented, or even introduced in the scientific literature.

This issue was in fact recently discussed as part of the Density Modeling Workshop associated with the October 2017 Society for Marine Mammalogy conference. The consensus of the marine mammal scientists present was that while pinniped tag data could provide a good test case, it realistically was unlikely to be a focus of the near-term research. The working group determined that a focused technical group should be established to specifically discuss pinnipeds and data available for density surface modelling in the future. It was also discussed at the Density Modeling Workshop in October 2018. The Navy has convened a pinniped working group and NMFS Alaska Fisheries Science Center is sponsoring a demonstration project to use haul-out and telemetry data from seals in Alaska to determine the viability of such an approach.

Therefore, consistent with previous assessments and based on recent discussions with subject matter experts in academia, the NMFS Science Centers, and the National Marine Mammal Laboratory, and given there is no currently established methodology for implementing the approach suggested by the Commenter, the Navy believes that attempting to create and apply a new density derivation method at this point would introduce additional levels of uncertainty into density estimations.

For these reasons, the Navy and NMFS did not use density estimates based on pinniped tracking data. Publications reporting on satellite tag location data have been and will continue to be used to aid in the understanding of pinniped distributions and density calculations as referenced in the 2018 HSTT FEIS/OEIS and the Navy's ''U.S. Navy Marine Species Density Database Phase III for the Hawaii-Southern California Training and Testing Study Area'' report (U.S. Department of the Navy, 2017b). The Navy has communicated that it will continue, as it has in the past, to refine pinniped density and distributions using telemetry data and evolving new techniques (such as passive acoustic survey data) in development of the Navy's analyses. As noted above, NMFS has reviewed the Navy's methods and concurs that they are appropriate and reflect the best available science.

Comment 7: Commenters noted that in the 2018 HSTT final rule, NMFS stated that it would incorporate the best and most recently available abundance and haul out data for monk seals into its next rulemaking, but failed to do so in the 2019 HSTT proposed rule. They argued that in light of the critical status of the monk seals, which number approximately 1,415 individuals, there is no justification for NMFS' failure to comply with the MMPA's command to incorporate the best available science into the proposed extension rule.

Response: As described in the response to Comment 6, in developing the Marine Species Density Database Phase III for the Hawaii-Southern California Training and Testing Study Area, as part of the 2018 HSTT FEIS/OEIS, the Navy consulted with researchers and subject matter experts at NMFS' Pacific Islands Fisheries Science Center and the Monk Seal Recovery Team regarding the abundance estimates, at sea correction factors, and distribution for monk seals in the Hawaiian Islands. The Navy incorporated the results of those consultations, including unpublished data from Wilson *et al.,* then in review, into the analysis of monk seals for the 2018 HSTT FEIS/OEIS and the 2017 and 2019 Navy Applications. When developing the analysis for monk seals, the Navy, in consultation with researchers at the NMFS Pacific Islands Fisheries Science Center, incorporated an estimated increased monk seal abundance. The published SAR for Hawaiian monk seals at the time (2015) reported a population size of 1,112, however in consultation with NMFS the Navy used a population size of 1,300. This estimate was also in agreement with the population size estimates reported by Baker *et al.* (2016) (2013 = 1,291, 2014 = 1,309, 2015 = 1,324). The most recent draft 2019 SARs report a population size of 1,351 and the abundance estimate used in the Navy's analyses is within the 95 percent confidence interval (1,294–1,442; CV = 0.03). It is the Navy's assessment that a revision of the monk seal at-sea density (given the most recent abundance estimate of 1,351) would result in only very small changes to the predicted effects (particularly given the distribution of monk seals in the HSTT Study Area) and would not change the conclusions presented in the 2018 HSTT FEIS/OEIS and 2017 and 2019 Navy applications regarding impact on the population or the impact on the species. NMFS concurs with this conclusion. NMFS and the Navy will continue to consider the most recent and best available data in future EIS and MMPA rule analyses.

Comment 8: In a comment on the 2018 HSTT proposed rule, a Commenter recommended that NMFS require the Navy to (1) specify what modeling method and underlying assumptions, including any relevant source spectra and assumed animal swim speeds and turnover rates, were used to estimate the ranges to PTS and TTS for impact and vibratory pile-driving activities, (2) accumulate the energy for the entire day of proposed activities to determine the ranges to PTS and TTS for impact and vibratory pile-driving activities, and (3) clarify why the PTS and TTS ranges were estimated to be the same for LF and HF cetaceans during impact pile driving.

Response: As explained in Section 3.7.3.1.4.1 of the 2018 HSTT FEIS/OEIS,

the Navy measured values for source levels and transmission loss from pile driving of the Elevated Causeway System, the only pile driving activity included in the Specified Activity. The Navy reviewed the source levels and how the spectrum was used to calculate the range to effects; NMFS supports the use of these measured values for the MMPA analysis. These recorded source waveforms were weighted using the auditory weighting functions. Low-frequency and high-frequency cetaceans have similar ranges for impact pile driving since low-frequency cetaceans would be relatively more sensitive to the low-frequency sound which is below high-frequency cetaceans' best range of hearing. Neither the NMFS user spreadsheet nor NAEMO were required for calculations. An area density model was developed in MS Excel which calculated zones of influence (ZOI) to thresholds of interest (*e.g.,* behavioral response) based on durations of pile driving and the aforementioned measured and weighted source level values. The resulting area was then multiplied by density of each marine mammal species that could occur within the vicinity. This produced an estimated number of animals that could be impacted per pile, per day, and overall during the entire activity for both the impact pile driving and vibratory removal phases. NMFS reviewed the manner in which the Navy applied the frequency weighting and calculated all values and concurred with the approach.

Regarding the appropriateness of accumulating energy for the entire day, based on the best available science regarding animal reaction to sound, selecting a reasonable SEL calculation period is necessary to more accurately reflect the time period an animal would likely be exposed to the sound. The Navy factored both mitigation effectiveness and animal avoidance of higher sound levels into the impact pile driving analysis. For impact pile driving, the mitigation zone extends beyond the average ranges to PTS for all hearing groups; therefore, mitigation will help prevent or reduce the potential for exposure to PTS. The impact pile driving mitigation zone also extends beyond or into a portion of the average ranges to TTS; therefore, mitigation will help prevent or reduce the potential for exposure to all TTS or some higher levels of TTS, depending on the hearing group. Mitigation effectiveness and animal avoidance of higher sound levels were both factored into the impact pile driving analysis as most marine mammals should be able to easily move away from the expanding ensonified zone of TTS/PTS within 60 seconds, especially considering the soft start procedure, or avoid the zone altogether if they are outside of the immediate area upon startup. Marine mammals are likely to leave the immediate area of pile driving and extraction activities and be less likely to return as activities persist. However, some ''naive'' animals may enter the area during the short period of time when pile driving and extraction equipment is being re-positioned between piles. Therefore, an animal ''refresh rate'' of 10 percent was selected. This means that 10 percent of the single pile ZOI was added for each consecutive pile within a given 24-hour period to generate the daily ZOI per effect category. These daily ZOIs were then multiplied by the number of days of pile driving and pile extraction and then summed to generate a total ZOI per effect category (*i.e.,* behavioral response, TTS, PTS). The small size of the mitigation zone and its close proximity to the observation platform will result in a high likelihood that Lookouts would be able to detect marine mammals throughout the mitigation zone. NMFS concurs with the Navy's approach, and it was used in the MMPA analysis.

PTS/TTS Thresholds

Comment 9: In a comment on the 2018 HSTT proposed rule, a Commenter supported the weighting functions and associated thresholds as stipulated in Finneran (2016), which are the same as those used for Navy Phase III activities, but points to additional recent studies that provide additional behavioral audiograms (*e.g.,* Branstetter *et al.,* 2017; Kastelein *et al.,* 2017b) and information on TTS (*e.g.,* Kastelein *et al.,* 2017a, 2017c). However, they commented that the Navy should provide a discussion of whether those new data corroborate the current weighting functions and associated thresholds.

Response: The NMFS Revised Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (NMFS 2018) (Acoustic Technical Guidance), which was used in the assessment of effects for this rulemaking, compiled, interpreted, and synthesized the best available scientific information for noise-induced hearing effects for marine mammals to derive updated thresholds for assessing the impacts of noise on marine mammal hearing, including the articles that the Commenter referenced that were published subsequent to the publication of the first version of 2016 Acoustic Technical Guidance. 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).

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. Thus far, no new information has been published or otherwise conveyed that would fundamentally change the assessment of impacts or conclusions of this rule. Furthermore, the recent peer-reviewed updated marine mammal noise exposure criteria by Southall *et al.* (2019a) provide identical PTS and TTS thresholds to those provided in NMFS' Acoustic Technical Guidance.

Comment 10: In a comment on the 2018 HSTT proposed rule, Commenters stated that the criteria that NMFS has produced to estimate temporary threshold shift (TTS) and permanent threshold shift (PTS) in marine mammals are erroneous and non-conservative. Commenters cited multiple purported issues with NMFS' Acoustic Technical Guidance, such as pseudoreplication and inconsistent treatment of data, broad extrapolation from a small number of individuals, and disregarding ''non-linear accumulation of uncertainty.'' Commenters suggested that NMFS not rely exclusively on its auditory guidance for determining Level A harassment take, but should at a minimum retain the historical 180-dB rms Level A harassment threshold as a ''conservative upper bound'' or conduct a ''sensitivity analysis'' to ''understand the potential magnitude'' of the supposed errors.

Response: NMFS disagrees with this characterization of the Acoustic Technical Guidance and the associated recommendation. The Acoustic Technical Guidance is a compilation, interpretation, and synthesis of the scientific literature that provides the best scientific information regarding the effects of anthropogenic sound on marine mammals' hearing. The technical guidance was classified as a Highly Influential Scientific Assessment and, as such, underwent three independent peer reviews, at three different stages in its development, including a follow-up to one of the peer reviews, prior to its dissemination by NMFS. In addition, there were three separate public comment periods, during which time we received and responded to similar comments on the guidance (81 FR 51694), which we cross-reference here, and more recent public and interagency review under Executive Order 13795. This review process was scientifically rigorous and

ensured that the Guidance represents the best scientific data available. Furthermore, the recent peer-reviewed updated marine mammal noise exposure criteria by Southall *et al.* (2019a) provide identical PTS and TTS thresholds to those provided in NMFS' Acoustic Technical Guidance.

The Acoustic Technical Guidance updates the historical 180 dB rms injury threshold, which was based on professional judgement (*i.e.,* no data were available on the effects of noise on marine mammal hearing at the time this original threshold was derived). NMFS disagrees with any suggestion that the use of the Acoustic Technical Guidance provides erroneous results. The 180-dB rms threshold is plainly outdated, as the best available science indicates that rms SPL is not even an appropriate metric by which to gauge potential auditory injury.

Multiple studies from humans, terrestrial mammals, and marine mammals have demonstrated less 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 behavioral temporary threshold shift studies, behaviorally derived data are only available for two mid-frequency cetacean species (bottlenose dolphin, beluga) and two phocids (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. 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 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.

Behavioral Harassment Thresholds

Comment 11: In a comment on the 2018 HSTT proposed rule, Commenters commented on what they assert is NMFS' failure to set proper thresholds for behavioral impacts. Referencing the biphasic function that assumes an unmediated dose response relationship at higher received levels and a context-influenced response at lower received levels that NMFS uses to quantify behavioral harassment from sonar, Commenters commented that resulting functions depend on some inappropriate assumptions that tend to significantly underestimate effects. Commenters expressed concern that every data point that informs the agency's pinniped function, and nearly two-thirds of the data points informing the odontocete function (30/49), are derived from a captive animal study. Additionally, Commenters asserted that the risk functions do not incorporate (nor does NMFS apparently consider) a number of relevant studies on wild marine mammals. The Commenters stated that it is not clear from the proposed rule, or from the Navy's recent technical report on acoustic ''criteria and thresholds,'' on which NMFS' approach in the rule is based, exactly how each of the studies that NMFS employed was applied in the analysis, or how the functions were fitted to the data, but the available evidence on behavioral response raises concerns that the functions are not conservative for some species. Commenters recommended NMFS make additional technical information available, including from any expert elicitation and peer review, so that the public can fully comment.

Response: 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, 2017a) details how the Navy's proposed method, which was determined appropriate and adopted by NMFS, accounted for the differences in captive and wild animals in the development of the behavioral response functions. The Navy used the best available science, which has been reviewed by external scientists and approved by NMFS, in the analysis. The Navy and NMFS have utilized all available data that relate known or estimable received levels to observations of individual or group behavior as a result of sonar exposure (which is needed to inform the behavioral response function) for the development of updated thresholds. Limiting the data to the small number of field studies that include these necessary data would not provide enough data with which to develop the new risk functions. In addition, NMFS agrees with the assumptions made by the Navy, including the fact that captive animals may be less sensitive, in that 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 agency 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. As new science is published, NMFS and the Navy continue to evaluate the information. The

thresholds have been rigorously vetted among scientists and within the Navy community and then reviewed by the public before being applied—all applicable technical information considered has been shared with the public. It is not possible to revise and update the criteria and risk functions every time a new paper is published. These new papers provide additional information, and the Navy has considered them for updates to the thresholds 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 HSTT FEIS/OEIS or this rule. To be included in the behavioral response function, data sets need 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.

As noted, the derivation of the behavioral response functions is provided in the 2017 technical report titled ''Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)''. The appendices to this report detail the specific data points used to generate the behavioral response functions. Data points come from published data that is readily available and cited within the technical report.

Comment 12: In a comment on the 2018 HSTT proposed rule, Commenters stated concerns with the use of distance ''cut-offs'' in the behavioral harassment thresholds, and one commenter 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.

Response: The consideration of proximity (cut-off distances) was part of the criteria developed in consultation between the Navy and NMFS, is appropriate based on the best available science which shows that marine mammal responses to sound vary based on both sound level and distance, and was applied within the Navy's acoustic effects model. The derivation of the behavioral response functions 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 is not available for a given species group) were reviewed to find the farthest distance to which significant behavioral reactions were observed. 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 under military readiness for the actions analyzed within the 2018 HSTT FEIS/OEIS and included in these regulations. NMFS has independently assessed the Navy's behavioral harassment thresholds and believes that they appropriately apply the best available science and it is not necessary to recalculate take estimates.

The Commenter 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 Commenter finds this inherently inappropriate, as this is what the data show. As noted previously, there are multiple studies illustrating that in situations where one would expect a behavioral harassment 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 13: In a comment on the 2018 HSTT proposed rule regarding cut-off distances, Commenters noted that dipping sonar appears to be a significant predictor of deep-dive rates in beaked whales on Southern California Anti-submarine Warfare Range (SOAR), 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. Importantly, these effects were observed at substantially greater distances (*e.g.,* 30 or more km) from dipping sonar than would otherwise be expected given the systems' source levels and the beaked whale response thresholds developed from research on hull-mounted sonar. Commenters suggested that the analysis, and associated cut-off distances, do not properly consider the impacts of dipping sonar.

Response: The Navy relied upon the best science that was available to develop the behavioral response functions in consultation with NMFS. The Navy's 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.

The referenced article (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 2018 HSTT proposed rule was published would change the assessment of impacts or conclusions in the 2018 HSTT FEIS/OEIS or in this rulemaking. Nonetheless, the new information and data presented in the new article were thoroughly reviewed by the Navy and will be quantitatively incorporated into future behavioral response functions, as appropriate, when and if other new data that would meaningfully change the functions would necessitate their revision.

Furthermore, ongoing Navy funded 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 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 whale documented high site fidelity to this area (Schorr *et al.,* 2018, updated in 2020).

Comment 14: In a comment on the 2018 HSTT proposed rule regarding the behavioral thresholds for explosives, Commenters recommended that NMFS

estimate and ultimately authorize behavioral takes of marine mammals during all explosive activities, including those that involve single detonations.

Response: 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),'' and NMFS has applied the general rule a commenter referenced to single explosives for years, *i.e.,* that marine mammals are unlikely to respond to a single instantaneous detonation *at received levels below the TTS threshold* in a manner that would rise to the level of a take. Neither NMFS nor the Navy are aware of evidence to support the assertion that animals will have significant behavioral reactions (*i.e.,* those that would rise to the level of a take) to temporally and spatially isolated explosions below the TTS threshold.

Marine mammals may be exposed to isolated impulses in their natural environment (*e.g.,* lightning). There is no evidence to support that animals have significant behavioral responses to temporally and spatially isolated impulses (such as military explosions) that may rise to the level of ''harassment'' under the MMPA for military readiness activities. Still, the analysis conservatively assumes that any modeled instance of temporally or spatially separated detonations occurring in a single 24-hour period would result in harassment under the MMPA for military readiness activities. The Navy has been monitoring detonations since the 1990s and has not observed these types of reactions. To be clear, this monitoring has occurred under the monitoring plans developed specifically for shock trials, the detonations with the largest net explosive weight conducted by the Navy, and no shock trials are proposed in this Study Area.

Further, to clarify, the current take estimate framework does not preclude the consideration of animals being behaviorally disturbed 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 behaviorally harassed and those potential impacts are considered in the negligible impact determination.

All of the Navy's monitoring projects, reports, and publications are available on the marine species monitoring web page (*https://www.navymarinespeciesmonitoring.us/*). NMFS will continue to review applicable monitoring and science data and consider modifying these criteria when and if new information suggests it is appropriate.

Mortality and injury thresholds for explosions

Comment 15: In a comment on the 2018 HSTT proposed rule, a Commenter recommended that NMFS require the Navy to (1) explain why the constants and exponents for onset mortality and onset slight lung injury thresholds for Phase III have been amended, (2) ensure that the modified equations are correct, and (3) specify any additional assumptions that were made.

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)''. It is our understanding that the constants and exponents for onset mortality and onset slight lung injury were amended by the Navy since Phase II to better account for the best available science. Specifically, the equations were modified in 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.

Comment 16: In a comment on the 2018 HSTT proposed rule, a Commenter stated that the Navy only used the onset mortality and onset slight lung injury criteria to determine the range to effects, while it used the 50 percent mortality and 50 percent slight lung injury criteria to estimate the numbers of marine mammal takes. The Commenter believes that this approach is inconsistent with the manner in which the Navy estimated the numbers of takes for PTS, TTS, and behavioral disruption for explosive activities. All of those takes have been and continue to be based on onset, not 50-percent values. The Commenter commented on circumstances of the deaths of multiple common dolphins during one of the Navy's underwater detonation events in March 2011 (Danil and St. Leger, 2011) and indicated that the Navy's mitigation measures are not fully effective, especially for explosive activities. The Commenter believes it would be more prudent for the Navy to estimate injuries and mortalities based on onset rather than a 50-percent incidence of occurrence. The Navy did indicate that it is reasonable to assume for its impact analysis—thus its take estimation process—that extensive lung hemorrhage is a level of injury that would result in mortality for a wild animal (Department of the Navy 2017a). Thus, the Commenter asserted that it is unclear why the Navy did not follow through with that premise. The Commenter recommended that NMFS use onset mortality, onset slight lung injury, and onset GI tract injury thresholds to estimate both the numbers of marine mammal takes and the respective ranges to effect.

Response: Based on an extensive review of the incident referred to by the Commenter, in coordination with NMFS the Navy revised and updated the mitigation for these types of events. There have been no further incidents since these mitigation changes were instituted in 2011. The Navy used the range to one percent risk of mortality and injury (referred to as ''onset'' in the Draft EIS/OEIS) to inform the development of mitigation zones for explosives. In all cases, the mitigation zones for explosives extend beyond the range to one percent risk of non-auditory injury, even for a small animal (representative mass = 5 kg). The 2018 HSTT FEIS/OEIS clarified that the ''onset'' non-auditory injury and mortality criteria are actually one percent risk criteria.

Over-predicting impacts, which would occur with the use of one percent non-auditory injury risk criteria in the quantitative analysis, would not afford extra protection to any animal. The Navy, in coordination with NMFS, has determined that the 50 percent incidence of occurrence is a reasonable representation of a potential effect and appropriate for take estimation. Although the commenter implies that the Navy did not use extensive lung hemorrhage as indicative of mortality, that statement is incorrect. Extensive lung hemorrhage is assumed to result in mortality, and the explosive mortality criteria are based on extensive lung injury data. See the 2017 technical report titled ''Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III).''

Range to Effects

Comment 17: In a comment on the 2018 HSTT proposed rule, a Commenter noted that regarding TTS, the ranges to effect provided in Table 25 of the **Federal Register** notice of the 2018 HSTT proposed rule and Table 6–4 of the 2017 Navy application appear to be incorrect. The ranges for LF cetaceans should increase with increasing sonar emission time. Therefore, the Commenter recommended that NMFS determine what the appropriate ranges to TTS for bin LF5 should be and amend

the ranges for the various functional hearing groups in the tables accordingly.

Response: The table regarding the *Range to Temporary Threshold Shift for sonar bin LF5 over a representative range of environments within the HSTT Study Area* (Table 25 in the Proposed and Final Rules) is correct. The reason the values in the tables in the rules and the 2018 HSTT FEIS/OEIS do not change over the indicated interval (1 sec, 30 sec, 60 sec, 120 sec) is that the LF5 pulse interval is longer than these values, hence the same range to TTS in the table. The values are consistent across the board because the max source level of LF5 (<180 dB SPL) is so close to the LF cetacean TTS threshold 179 dB SEL. At such small range to effects, the resolution of NAEMO comes into play, and such small changes in range to effects cannot be discerned between the example durations.

Mitigation and Avoidance Calculations

Comment 18: In a comment on the 2018 HSTT proposed rule, Commenters cited concerns that there was not enough information by which to evaluate the Navy's post-modeling calculations to account for mitigation and avoidance and imply that Level A takes and mortality takes may be underestimated. One Commenter recommended that NMFS (1) authorize 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 and (2) use those numbers, in addition to the revised Level B harassment takes, to inform its negligible impact determination analyses.

Response: The consideration of marine mammal avoidance and mitigation effectiveness is integral to 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''; additional information on the mitigation analysis also was included in the 2018 HSTT final rule.

Sound levels diminish quickly below levels that could cause PTS. Studies have shown that all animals observed avoid areas well beyond these zones; therefore, the vast majority of animals are likely to avoid sound levels that could cause injury to their ear. As discussed 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,'' animats in the Navy's acoustic effects model do not move horizontally or ''react'' to sound in any way. However, the current best available science based on a growing body of behavioral response research shows that 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 (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, 2017a)) and Southall *et al.* (2019a). Avoidance to this distance greatly reduces the likelihood of impacts to hearing such as TTS and PTS. Accordingly, NMFS and the Navy's analysis appropriately applies a quantitative adjustment to the exposure results calculated by the model (which does not consider avoidance or mitigation).

Specifically, behavioral response literature, including the recent 3S and SOCAL BRS studies, indicate that the 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. 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. For blue whales and other LF cetaceans, the range to PTS is 65 m for MF1 30 sec duration exposure, which is well within the mitigation zones for hull-mounted MFAS.

As discussed 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'' and the 2018 HSTT final rule, 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 Level A take 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. Lastly, 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'' very clearly explains in detail how species sightability, the Lookout's ability to observe the range to PTS (for sonar and other transducers) and mortality (for explosives), 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 the ability for sound sources to be positively controlled (powered down) are considered in the post-modeling calculation to account for mitigation and avoidance. It is not necessary to view the many tables of numbers generated in the assessment to evaluate the method.

Comment 19: In a comment on the 2019 HSTT proposed rule, Commenters noted that the Navy and NMFS failed to consider the maximum amount of take that is likely to occur because the Navy's computer modeled take is reduced based on unsubstantiated assumptions concerning the effectiveness of the Navy's procedural mitigation measures (primarily Lookouts with some passive acoustic monitoring) and the rates at which mammals avoid permanent threshold shift (PTS) exposure levels. Therefore, they assert that the PTS and injury (Level A) take estimates are low, and the negligible impact analysis is invalid because the numbers considered by NMFS are arbitrary. They provide the following example to illustrate their point: 2013 model-estimated PTS for blue whales was 116 individual instances of take (see Navy Marine Mammal Program, Space and Naval Warfare Systems Center Pacific, Post-Model Quantitative Analysis of Animal Avoidance Behavior and Mitigation Effectiveness for Hawaii-Southern California Training and Testing, 39

(Table 5–1) (August 27, 2013)). After implementation of mitigation, the estimated instances of PTS were reduced to 9 instances, and after assumed rates of animal avoidance were added, the estimated instances of take were reduced to 0. The Commenters asserted that in other words, the Navy assumed that it would be able to reduce 92 percent of modeled PTS for blue whales based on the effectiveness of its Lookouts and that PTS take estimates for other cetaceans are reduced at similar rates. The Commenters noted that there is no apparent rational basis for the extremely high rates of effectiveness (over 90 percent) the Navy claims for its procedural mitigation. They asserted that it is difficult to assess these claims, as neither the Navy nor NMFS has disclosed the actual numbers used to assess mitigation effectiveness for cetaceans along the four factors (species sightability, observation area, visibility, positive control). The Commenters requested that NMFS disclose those numbers and justify its reliance on them. The Commenters also incorporated the critiques raised by the Marine Mammal Commission in its 2017 comment letter concerning: (i) The comparative ineffectiveness of marine observers compared to line-transect observers; and (ii) the assumed 95 percent animal avoidance rate for PTS. In particular, they assert that references cited by NMFS and the Navy do not support the conclusion that cetaceans (other than beaked whales) regularly avoid sonar sources so as to mitigate PTS.

Response: As noted in response to a similar comment on the 2018 HSTT proposed rule (see Comment 18 above), the consideration of marine mammal avoidance and mitigation effectiveness is integral to 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. The example presented by the Commenters is based on the analysis conducted during the 2013–2018 rulemaking (Phase II), rather than the current Phase III analysis used for this rule, so it is not applicable to this final rule. See the response to Comment 20 below for more information on how avoidance and mitigation effectiveness are evaluated.

Comment 20: In a comment on the 2018 HSTT proposed rule, a Commenter stated in regard to the method in which the Navy's post-model calculation considers avoidance specifically (*i.e.,* assuming animals present beyond the range of PTS for the first few pings will be able to avoid it and incur only TTS, which results in a 95 percent reduction in the number of estimated PTS takes predicted by the model), given that sound sources are moving, it may not be until later in an exercise that the animal is close enough to experience PTS, and it is those few close pings that contribute to the potential to experience PTS. An animal being beyond the PTS zone initially has no bearing on whether it will come within close range later during an exercise since both sources and animals are moving. In addition, Navy vessels may move faster than the ability of the animals to evacuate the area. The Navy should have been able to query the dosimeters of the animats to verify whether its 5-percent assumption was valid. The Commenter expressed concerned that this method underestimates the number of PTS takes.

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.'' 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.'' In regard to the comment about vessels moving faster than animals' ability to get out of the way, as discussed in the Navy's 2018 technical report titled ''Quantitative Analysis for Estimating Acoustic and Explosive Impacts to Marine Mammals and Sea Turtles,'' 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 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. Querying the dosimeters of the animats would not produce useful information since, as discussed previously, the animats do not move in the horizontal and are not programmed to ''react'' to sound or any other stimulus. The Commenter referenced comments that they have previously submitted on the Navy's Gulf of Alaska incidental take regulations and we refer the Commenter to NMFS' responses, which were included in the **Federal Register** document announcing the issuance of the final regulations (82 FR 19572, April 27, 2017).

Underestimated Beaked Whale Injury and Mortality

Comment 21: In a comment on the 2018 HSTT proposed rule, a Commenter stated that the Navy and NMFS both underestimate take for Cuvier's beaked whales because they are extremely sensitive to sonar. A new study of Cuvier's beaked whales in Southern California exposed to mid and high-power sonar confirmed that they modify their diving behavior up to 100-km away (Falcone *et al.,* 2017). The Commenter asserted that this science disproves NMFS' assumption that beaked whales will find suitable habitat nearby within their small range. This modified diving behavior, which was particularly strong when exposed to mid-power sonar, indicates disruption of feeding. Accordingly, impacts on Cuvier's beaked whales could include interference with essential behaviors that will have more than a negligible impact on this species. In addition, Lookouts and shutdowns do not protect Cuvier's beaked whales from Navy sonar because this is a deep-diving species that is difficult to see from ships.

Response: Takes of Cuvier's beaked whales are not underestimated. The behavioral harassment threshold for beaked whales has two components, both of which consider the sensitivity of beaked whales. First, the biphasic behavioral harassment function for beaked whales, which is based on data on beaked whale responses, has a significantly lower mid-point than other groups and also reflects a significantly higher probability of ''take'' at lower levels (*e.g.,* close to 15 percent at 120 dB). Additionally, the distance cut-off used for beaked whales is farther than for any other group (50 km, for both the MF1 and MF4 bins, acknowledging the fact that the unpredictability of dipping sonar likely results in takes at greater

distances than other more predictable sources of similar levels). Regarding the referenced article, the Commenter has cited only part of it. The study, which compiles information from multiple studies, found that *shallow* dives were predicted to increase in duration as the distance to both high-and mid-power MFAS sources decreased, beginning at approximately 100 km away and, specifically, the differences only varied from approximately 20 minutes without MFAS to about 24 minutes with MFAS at the closest distance (*i.e.,* the dive time varied from 20 to 24 minutes over the distance of 100 km away to the closest distance measured). Further, the same article predicted that deep dive duration (which is more directly associated with feeding and linked to potential energetic effects) was predicted to increase with proximity to mid-power MFAS from approximately 60 minutes to approximately 90 minutes beginning at around 40 km (10 dives). There were four deep dives exposed to high-power MFAS within 20 km, the distance at which deep dive durations increased with the lower power source types. Other responses to MFAS included deep dives that were shorter than typical and shallower, and instances where there were no observed responses at closer distances. The threshold for Level B harassment is higher than just ''any measurable response'' and NMFS and the Navy worked closely together to identify behavioral response functions and distance cut-offs that reflect the best available science to identify when marine mammal behavioral patterns will be disrupted to a point where they are abandoned or significantly altered. Further, the take estimate is in no way based on an assumption that beaked whales will always be sighted by Lookouts—and adjustment to account for Lookout effectiveness considers the variable detectability of different species. In this rule, both the take estimate and the negligible impact analysis appropriately consider the sensitivity of, and scale of impacts to (we address impacts to feeding and energetics), Cuvier's (and all) beaked whales. Finally, new passive acoustic monitoring in the HSTT Study Area documents more extensive beaked whale distribution across the entire Study Area, wherever sensors are deployed (Griffiths and Barlow 2016, Rice *et al.* 2020).

Comment 22: In a comment on the 2018 HSTT proposed rule, a Commenter stated that NMFS underestimated serious injury and mortality for beaked whales. They noted the statement in the proposed rule that because a causal relationship between Navy MFAS use and beaked whale strandings has not been established in all instances, and that, in some cases, sonar was considered to be only one of several factors that, in aggregate, may have contributed to the stranding event, NMFS does ''not expect strandings, serious injury, or mortality of beaked whales to occur as a result of training activities.'' (83 FR 30007). The Commenter asserted that this opinion is inconsistent with best available science and does not take into account the fact that the leading explanation for the mechanism of sonar-related injuries—that whales suffer from bubble growth in organs that is similar to decompression sickness, or ''the bends'' in human divers—has now been supported by numerous papers. At the same time, the Commenter argued that NMFS fails to seriously acknowledge that sonar can seriously injure or kill marine mammals at distances well beyond those established for permanent hearing loss (83 FR 29916) and dismisses the risk of stranding and other mortality events (83 FR 30007) based on the argument that such effects can transpire only under the same set of circumstances that occurred during known sonar-related events—an assumption that is arbitrary and capricious. In conclusion, the Commenter argued that none of NMFS' assumptions regarding the expected lack of serious injury and mortality for beaked whales are supported by the record, and all lead to an underestimation of impacts.

Response: The Commenter's characterization of NMFS' analysis is incorrect. NMFS does not disregard the fact 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. 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 strandings in the proposed rule. As noted, 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 HSTT Study Area and during the specified activities (and which the Navy takes care across the world not to operate under without additional monitoring). There have been no documented beaked whale mortalities from Navy activities within the HSTT Study Area. Further, none of the beaked whale strandings causally associated with Navy sonar stranding are in the Pacific. For these reasons, NMFS does not anticipate that the Navy's HSTT training or testing activities will result in beaked whale marine mammal strandings, and none are authorized. Furthermore, ongoing Navy funded beaked whale monitoring at a heavily used training and testing area in SOCAL has not documented mortality or habitat abandonment by beaked whales. Passive acoustic detections of beaked whales have not significantly changed over ten years of monitoring (DiMarzio *et al.,* 2018, 2019, 2020). From visual surveys in the 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 whale documented high site fidelity to this area even though the study area is located in one of the most used Navy areas in the Pacific (Schorr *et al.,* 2018, 2020).

Comment 23: In a comment on the 2019 HSTT proposed rule, Commenters noted that NMFS did not propose to authorize beaked whale mortalities subsequent to MFA sonar use for any of the Navy's Phase III activities and states that that approach is inconsistent with the tack taken for both TAP I and Phase II activities. The Commenters noted that for the 2013–2018 final rule for HSTT, NMFS authorized up to 10 beaked whale mortality takes during the five-year period of the final rule (78 FR 78153; December 24, 2013). They noted that NMFS justified authorizing those mortalities by stating that, although NMFS does not expect injury or mortality of any beaked whales to occur as a result of active sonar training exercises, there remains the potential for the operation of mid-frequency active sonar to contribute to the mortality of beaked whales (78 FR 78149; December 24, 2013). The Commenters stated that this justification is still applicable. The Commenters state that previously unrecognized sensitivities have been elucidated since the previous final rule was authorized (December 24, 2013), noting that Falcone *et al.,* (2017) indicated that responses of Cuvier's beaked whales to mid-frequency active sonar within and near the Navy's Southern California Anti-submarine

Warfare Range (SOAR) were more pronounced during mid-power (*i.e.,* helicopter-dipping sonar, MF4) than high-power (*i.e.,* hull-mounted sonar, MF1) sonar use. The Commenters state that this indicates lower received levels from a less predictable source caused more marked responses than higher received levels from a predictable source traveling along a seemingly consistent course. The Commenters noted that since multiple species of beaked whales are regularly observed on the Navy's ranges in both Hawaii and Southern California, including its instrumented ranges, those species have been a priority for the Navy's monitoring program and that this indicates that research involving beaked whales continues to be a priority for the Navy and some of the whales' sensitivities to anthropogenic sound are just being discovered. The Commenters assert that until such time that NMFS can better substantiate its conclusion that the Navy's activities do not have the potential to kill beaked whales, taking by mortality should be included in all related rulemakings.

The Commenters asserted that NMFS indicated that steep bathymetry, multiple hull-mounted platforms using sonar simultaneously, constricted channels, and strong surface ducts are not all present together in the HSTT Study Area during the specified activities (83 FR 66882; December 27, 2018), and that NMFS specified that it did not authorize beaked whale mortalities in the 2018 HSTT final rule based on the lack of those factors and the lack of any strandings associated with Navy sonar use in the HSTT Study Area (83 FR 66882; December 27, 2018). The Commenters stated that this does not comport with NMFS' acknowledgement in the 2018 HSTT proposed rule that all five of those factors are not necessary for a stranding to occur (83 FR 29930; June 26, 2018). They go on to state that ''NMFS cannot ignore that there remains the potential for the operation of MFA sonar to contribute to the mortality of beaked whales.'' Given that the potential for beaked whale mortalities cannot be obviated, the Commenters recommend that NMFS authorize at least 10 mortality takes of beaked whales subsequent to MFA sonar use, consistent with the HSTT Phase II final rule.

Response: NMFS does not disregard the fact 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. However, the Commenters are incorrect that NMFS must either obviate the potential for mortality or authorize it. If the best available science indicates that a take is reasonably likely to occur, then NMFS should analyze it, and will authorize it if the necessary findings can be made. Sometimes, especially where there is greater uncertainty, NMFS will analyze and authorize (where appropriate) impacts with a smaller likelihood of occurring to be precautionary and/or where an applicant specifically requests the legal coverage. However, the MMPA does not require NMFS to authorize impacts that are unlikely to occur. For example, any marine vessel has the potential of striking and killing a marine mammal—however, the probability is so low for any particular vessel that authorization for ship strike is neither requested nor authorized by NMFS except in cases where the aggregated impacts of large fleets of vessels are under consideration and the probability of a strike is high enough to meaningfully consider and to expect it could occur within the period of the authorization. In this case, the likelihood of a stranding resulting from the Navy's activity is so low as to be discountable. In an excess of caution, NMFS included authorization for beaked whale mortality by stranding in the 2013–2018 HSTT rule. However, there is no evidence that any such strandings subsequently actually occurred as a result of the Navy's activities. Each rulemaking involves review of the best available science independent of take that was authorized during previous periods based on the science available at that time. Upon consideration in this rulemaking of the statutory standards and the best available science, including full consideration of Falcone *et al.,* (2017), we have determined that mortality of beaked whales is unlikely to occur and it is therefore not appropriate to authorize beaked whale mortality.

As described in Comment 22, NMFS included a full discussion in the 2018 HSTT proposed rule of these potential causes of mortality and specifically discussed the few cases where active naval sonar (in the U.S. or, largely, elsewhere) has either potentially contributed to or (as with the Bahamas example) been more definitively causally linked with marine mammal strandings. As noted, 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, and strong surface ducts). The Commenters are incorrect, however, in implying that NMFS found that all these features must be present together—rather, we have suggested that all else being equal, the fewer of these factors that are present, the less likely they are, in combination, to lead to a stranding. Further, in addition to the mitigation and monitoring measures in place (visual monitoring, passive acoustic monitoring when practicable, mitigation areas including the Hawaii Island Mitigation Area, *etc.;* see the 2018 HSTT final rule *Mitigation Measures* and *Monitoring* sections for a full description of these measures) the Navy minimizes active sonar military readiness activities when these features are present to the maximum extent practicable to meet specific training or testing requirements. Additionally, as noted above, there have never been any strandings associated with Navy sonar use in the HSTT Study Area, including in the six years of Navy activities since the 2013 authorizations referenced by the Commenters were issued.

The Navy acknowledges that it has funded research on the impacts of their activities on beaked whales in the HSTT Study Area since 2008 and plans to continue to do so during the seven years covered by this rule (DiMarzio *et al.,* 2019, 2020; Falcone *et al.,* 2012, 2017; Rice *et al.,* 2019, 2020; Schorr *et al.,* 2014, 2019, 2020). NMFS also acknowledges the Commenters' statements that beaked whales have been documented through Navy-funded studies responding to active sonar sources. However, these are behavioral responses with animals eventually returning after the sources have departed (DiMarzio *et al.* 2019, 2020; Schorr *et al.* 2019, 2020). Further, controlled exposure experiments have not documented any beaked whale mortalities (Falcone *et al.,* 2017). Additionally, while beaked whales have shown avoidance responses to active sonar sources, to date, no population impacts have been detected on two of the most heavily used anti-submarine warfare training areas in the HSTT Study Area. This includes no significant change in beaked whale foraging echolocation levels on a monthly or annual basis as determined from over ten years of passive acoustic monitoring (DiMarzio *et al.,* 2019, 2020). Furthermore, visual, photo-identification, and satellite tagging studies at a Navy range in Southern California have documented repeated sightings of the same beaked whale individuals, sightings of new beaked

whale individuals, sightings of beaked whale mother-calf pairs, and most importantly, repeated sighting of beaked whale mothers with their second calf (Falcone *et al.,* 2012; Schorr *et al.,* 2014, 2019, 2020). New passive acoustic monitoring in the HSTT Study Area documents more extensive beaked whale distribution across the entire Study Area, wherever sensors are deployed (Griffiths and Barlow 2016, Rice *et al.,* 2019, 2020).

For these reasons as well as the other reasons discussed more fully in the 2018 HSTT final rule (*e.g.,* mitigation measures, monitoring, *etc.*), NMFS does not anticipate that the Navy's HSTT training and testing activities will result in beaked whale strandings and mortality, and therefore, no takes are authorized.

Ship Strike

Comment 24: In a comment on the 2018 HSTT proposed rule, a Commenter stated that the Navy's current approach to determine the risk of a direct vessel collision with marine mammals is flawed and fails to account for the likelihood that ship strikes since 2009 were unintentionally underreported. The Commenter noted that vessel collisions are generally underreported in part because they can be difficult to detect, especially for large vessels and that the distribution, being based on reported strikes, does not account for this problem. Additionally, the Commenter asserted that the Navy's analysis does not address the potential for increased strike risk of non-Navy vessels as a consequence of acoustic disturbance. For example, some types of anthropogenic noise have been shown to induce near-surfacing behavior in right whales, increasing the risk of ship-strike—by not only the source vessel but potentially by third-party vessels in the area—at relatively moderate levels of exposure (Nowacek *et al.,* 2004). An analysis based on reported strikes by Navy vessels per se does not account for this additional risk. In assessing ship-strike risk, the Navy should include offsets to account for potentially undetected and unreported collisions.

Response: While NMFS agrees that broadly speaking the number of total ship strikes may be underestimated due to incomplete information from other sectors (shipping, *etc.*), NMFS is confident that whales struck by Navy vessels are detected and reported, and Navy strikes are the numbers used in NMFS' analysis to support the authorized number of strikes. Navy ships have multiple Lookouts, including on the forward part of the ship that can visually detect a hit whale (which has occasionally occurred), in the unlikely event ship personnel do not feel the strike. The 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. Accordingly, NMFS is confident that the information used to support the analysis is accurate and complete.

There is no evidence that Navy training and testing activities (or other acoustic activities) increase the risk of nearby non-Navy vessels (or other nearby Navy vessels not involved in the referenced training or testing) striking marine mammals. More whales are struck by non-Navy vessels off California in areas outside of the HSTT Study Area such as approaches to Los Angeles and San Francisco.

Comment 25: Commenters noted that between publication of the 2018 HSTT proposed rule and the 2018 HSTT final rule, NMFS removed seven whale stocks from the list of whales the Navy determined were likely to be struck and killed by a vessel in the initial five-year period, including sei whales from the Hawaii and Eastern North Pacific stocks, and sperm whales from the California/Oregon/Washington (CA/OR/WA) stock. The Commenters asserted that NMFS has not sufficiently justified its decision to remove the Eastern North Pacific stock of sei whales and the CA/OR/WA stock of sperm whales from the list of whale stocks the Navy initially determined had the potential to be struck and killed by a vessel. They noted that while NMFS cited purportedly new considerations in its decision (relative likelihood of hitting one stock versus another and whether the Navy has ever definitively struck an individual from a particular stock), the underlying data doesn't support its conclusions as the strike probability for both stocks is the same as for the Eastern North Pacific Blue whale which remains on the list of whales that the Commenters characterize as those likely to die from a vessel strike. The Commenters further noted that unlike the other five stocks that NMFS removed from the list, individuals from both the Eastern North Pacific stock of sei whales and CA/OR/WA stock of sperm whales have been hit by a vessel in the past, and that the CA/OR/WA stock of sperm whales is as relatively abundant as other stocks included in the final strike list. The Commenters asserted that the fact that the Navy itself has not previously hit whales from either stock does not alone justify removal, especially when the Navy admits that it was unable to identify the species of over one-third (36 percent) of the whales it struck during the relevant time period. The Commenters stated that given the historic strike data and calculated percent likelihood of being struck as indicated in Table 43 of the 2018 HSTT final rule, NMFS had no valid basis to conclude that Navy vessels are not likely to strike sei whales from the Eastern North Pacific stock or sperm whales from the CA/OR/WA stock.

Response: The Commenters are correct that the probabilities calculated for vessel strike for each stock were considered in combination with the information indicating the species that the Navy has definitively hit in the HSTT Study Area since 1991 (since they started tracking vessel strikes consistently), as well as the information on relative abundance, total recorded strikes (by any vessel), and the overlay of all of this information with the Navy's area of testing and training activities. In Navy strikes over the last 11 years in the HSTT Study Area (2009–2019), the species struck has been identified. The Eastern North Pacific stock of sei whales have never been struck by the Navy, have rarely been struck by other vessels (only one other vessel strike is known), have a low percent likelihood of being struck based on the SAR calculations (2.3 percent), and a very low relative abundance (0.007). The CA/OR/WA stock of sperm whales have also never been struck by the Navy, have rarely been struck by other vessels (only one other vessel strike is known, even given their higher relative abundance, as noted by the Commenter), and have a low percent likelihood of being struck based on the SAR calculations (2.3 percent). Because of these reasons, these stocks are unlikely to be struck by the Navy during the seven years covered by this rule.

Comment 26: In a comment on the 2019 HSTT proposed rule, Commenters stated that the Navy arbitrarily failed to increase its vessel strike estimate upwards to account for the greater number of at-sea days. They stated that applying the historic strike rate of 0.00006 whales per day by the increased number of at-sea days over seven years (assumed by the Commenters to be 31,728) the new base strike estimate should be 1.9 whales rather than 1.34 whales. They further state that applying the Poisson distribution to this new base strike estimate indicates that there is an 8 percent chance that 4 large whales

will be hit during the extended seven-year time period. They asserted that NMFS neither considers nor explains why the chance of striking 4 whales is not considered likely during the extended seven-year period of authorization, and how this may impact overall strike probability assessments for individual whale stocks and that NMFS' reliance on a total vessel strike number derived for only five years of HSTT activities to authorize those activities to continue for seven years is arbitrary and capricious.

Response: Based on the revised seven-year ship strike analysis that was used in the 2019 HSTT proposed rule (which incorporates all ship strike data in the HSTT Study Area from 2009 through 2018, rather than 2016 as previously analyzed for the 2017 Navy application), the strike rate is 0.000047 whales strikes per day at sea. Over a seven year period the number of at-sea days is 31,729, leading to an estimate of 1.5 whales over seven years. When applying the Poisson distribution to this strike estimate, as reported in the *Vessel Strike* section, the probability analysis concluded that there was a 22 percent chance that zero whales would be struck by Navy vessels over the seven-year period, and a 33.5, 25.1, 12.5, and 4.7 percent chance that one, two, three, or four whales, respectively, would be struck over the seven-year period. The probability of the Navy striking up to three large whales over the seven-year period (which is a 12.5 percent chance) as analyzed for this final rule using updated Navy vessel strike data and at-sea days is very close to the probability of the Navy striking up to three large whales over five years (which was a 10 percent chance). As the probability of striking three large whales does not differ significantly from the 2018 HSTT final rule, and the probability of striking four large whales over seven years remains very low to the point of being unlikely (less than 5 percent), the Navy has requested, and we are authorizing, no change in the number of takes by serious injury or mortality due to vessel strikes over the seven-year period of this rule. Furthermore, these are statistical calculations of probabilities of strike that do not factor in Navy operating procedures and mitigations to avoid large whales. There has not been an actual Navy ship strike to a large whale in the HSTT Study Area since 2010. This lack of vessel strikes is factored into the revised seven-year statistical calculation and is reflected in the probabilities shown above.

Comment 27: In a comment on the 2019 HSTT proposed rule, Commenters asserted that it was arbitrary and capricious for NMFS to assume that the annualized strike rate for each of the six large whales species that NMFS determined have the potential to be struck would decrease over the seven-year extension period as compared to the initial five-year period. They asserted that given that the same level of training and testing activities will continue under the proposed extension rule for a longer amount of time, at minimum, the annual strike rate should remain constant at the levels authorized in the 2018 HSTT final rule. They asserted that NMFS' arbitrary reduction of the annual strike rate precludes reasoned analysis of whether vessel strikes will inflict non-negligible impacts on whale stocks. The Commenters noted of particular concern were the CA/OR/WA stock of humpback whales and the Eastern North Pacific stock of blue whales, both of which suffer annual human-caused mortality at levels much higher than the established PBR (Potential Biological Removal; as represented by the negative residual PBR numbers). They asserted that by definition, any mortality above PBR will decrease a marine mammal stock below its optimum sustainable population, thereby inducing population level, non-negligible impacts. The Commenters asserted that NMFS' analysis does not sufficiently consider the effects of further increasing mortality above established PBR levels, especially in light of the fact that annual take estimates have been arbitrarily reduced. They noted that an additional 0.2 mortalities per year is a potentially significant stressor for the populations of both the CA/OR/WA stock of humpback whales and the Eastern North Pacific stock of blue whales, and that NMFS failed to adequately consider this potential through population viability analyses or other accepted method for determining long-term population level effects. They further asserted that NMFS does not separately address the possibility of striking and killing a reproductive female. They stated that NMFS's failure to adequately consider the effects of these additional mortalities, including the potential death of a reproductive female, is arbitrary and capricious.

Response: In the 2018 HSTT final rule, potential mortalities of three whales due to ship strike were spread over five years and therefore, the annual average of 0.4 gray whales (Eastern North Pacific stock), fin whales (CA/OR/WA stock), and humpback whales (Central North Pacific stock) and an annual average of 0.2 blue whales (Eastern North Pacific stock), humpback whales (CA/OR/WA stock, Mexico DPS), and sperm whales (Hawaii stock) (*i.e.,* one, or two, take(s) over five years divided by five to get the annual number) were expected to potentially occur and were authorized. NMFS did not arbitrarily reduce the annualized strike rate in the seven-year analysis. Following these same methods, as the three total potential mortalities are now spread over seven years rather than five, an annual average of 0.29 gray whales (Eastern North Pacific stock), fin whales (CA/OR/WA stock), and humpback whales (Central North Pacific stock) and an annual average of 0.14 blue whales (Eastern North Pacific stock), humpback whales (CA/OR/WA stock, Mexico DPS), and sperm whales (Hawaii stock) as described in Table 16 (*i.e.,* one, or two, take(s) over seven years divided by seven to get the annual number) are expected to potentially occur and are authorized.

As explained in the *Serious Injury or Mortality* subsection of the *Negligible Impact Analysis and Determination* section of the 2018 HSTT final rule and this rule, in the commercial fisheries setting for ESA-listed marine mammals (which is similar to 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 in consideration). When those considerations are applied in the section 101(a)(5)(A) context here, the authorized lethal take (0.14 annually) of humpback whales from the CA/OR/WA stock, and blue whales from the Eastern North Pacific stock are less than 10 percent of PBR (33.4 for humpback whales from the CA/OR/WA stock and 2.1 for blue whales from the Eastern North Pacific stock) and there are management measures in place to address the mortality and serious injury from the activities other than those the Navy is conducting. For the complete discussion of how NMFS carefully considered potential mortalities from the Navy's activities in light of PBR levels, including an explanation for why mortality above PBR will not necessarily induce population-level non-negligible

impacts, see the discussion in this rule and the 2018 HSTT final rule.

NMFS acknowledges that the removal of a reproductive female (or any female) could be more impactful to the status of a population than the removal of a male. However, the PBR framework that supports the negligible impact finding inherently considers the likelihood that the human-caused mortalities being considered may consist of a random distribution of individuals of different sex in different life stages. Also, beyond the low likelihood of striking a whale at all, the likelihood of hitting a reproductive female is even lower.

Mitigation and Monitoring

Least Practicable Adverse Impact Determination

Comment 28: In a comment on the 2018 HSTT proposed rule, a Commenter stated that deaths of, or serious injuries to marine mammals that occur pursuant to activities conducted under an incidental take authorization, while perhaps negligible to the overall health and productivity of the species or stock and of little consequence at that level, nevertheless are clearly adverse to the individuals involved and results in some quantifiable (though negligible) adverse impact on the population; it reduces the population to some degree. Under the least practicable adverse impact requirement, and more generally under the purposes and policies of the MMPA, the Commenter asserted that Congress embraced a policy to minimize, whenever practicable, the risk of killing or seriously injuring a marine mammal incidental to an activity subject to section 101(a)(5)(A), including providing measures in an authorization to eliminate or reduce the likelihood of lethal taking. The Commenter recommended that NMFS address this point explicitly in its analysis and clarify whether it agrees that the incidental serious injury or death of a marine mammal always should be considered an adverse impact for purposes of applying the least practicable adverse impact standard.

Response: NMFS disagrees that it is necessary or helpful to explicitly address the point the Commenter raises in the discussion on the least practicable adverse impact standard. It is always NMFS' practice to mitigate mortality to the greatest degree possible, as death is the impact that is most easily linked to reducing the probability of adverse impacts to populations. However, we cannot agree that one mortality will always decrease any population in a quantifiable or meaningful way. For example, for very large populations, one mortality may fall well within typical known annual variation and not have any effect on population rates. Further, we do not understand the problem that the Commenter's recommendation is attempting to fix. Applicants generally do not express reluctance to mitigate mortality, and we believe that modifications of this nature would confuse the issue.

Comment 29: In a comment on the 2018 HSTT proposed rule, a Commenter recommended that NMFS address the habitat component of the least practicable adverse impact provision in greater detail. It asserted that NMFS' discussion of critical habitat, marine sanctuaries, and BIAs in the proposed rule is not integrated with the discussion of the least practicable adverse impact standard. It would seem that, under the least practicable adverse impact provision, adverse impacts on important habitat should be avoided whenever practicable. Therefore, to the extent that activities would be allowed to proceed in these areas, NMFS should explain why it is not practicable to constrain them further.

Response: 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.,* calving areas in Hawaii, feeding areas in SOCAL). In addition to being delineated based on physical features that drive habitat function (*e.g.,* bathymetric features among others for some BIAs), the high densities and concentration of certain important behaviors (*e.g.,* feeding) 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.

Comment 30: In a comment on the 2018 HSTT proposed rule, 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. In this regard, the Commenter asserted that it seems as though the proposed ''effectiveness'' criterion more appropriately fits as an element of practicability and should be addressed under that prong of the analysis. In other words, a measure not expected to be effective should not be considered a practicable means of reducing impacts.

Response: In the *Mitigation Measures* section, NMFS has explained in detail our interpretation of the least practicable adverse impact standard, the rationale for our interpretation, and our approach for implementing our interpretation. The ability of a measure to reduce effects on marine mammals is entirely related to its ''effectiveness'' as a measure, whereas the effectiveness of a measure is not connected to its practicability. The Commenter provides no support for its argument, and NMFS has not implemented the suggestion.

Comment 31: In a comment on the 2018 HSTT proposed rule, a Commenter recommended that NMFS recast its conclusions to provide sufficient detail as to why additional measures either are not needed (*i.e.,* there are no remaining adverse impacts) or would not be practicable to implement. The Commenter stated that the most concerning element of NMFS' implementation of the least practicable adverse impact standard is its suggestion that the mitigation measures proposed by the Navy will ''sufficiently reduce impacts on the affected mammal species and stocks and their habitats'' (83 FR 11045). That phrase suggests that NMFS is applying a ''good-enough'' standard to the Navy's activities. Under the statutory criteria, however, those proposed measures are ''sufficient'' only if they have either (1) eliminated all adverse impacts on marine mammal species and stocks and their habitat or (2) if adverse impacts remain, it is not practicable to reduce them further.

Response: The statement that the Commenter references does not indicate that NMFS applies a ''good-enough'' standard to determining least practicable adverse impact. Rather, it indicates that the mitigation measures are sufficient to meet the statutory legal standard. In addition, as NMFS has explained in our description of the least practicable adverse impact standard, NMFS does not view the necessary analysis through the yes/no lens that the Commenter seeks to prescribe. Rather, NMFS' least practicable adverse impact analysis considers both the reduction of adverse effects and their practicability.

Further, since the 2018 HSTT proposed rule was published, the Navy and NMFS evaluated additional measures in the context of both their practicability and their ability to further reduce impacts to marine mammals and have determined that the addition of several measures (see *Mitigation Measures* section) is appropriate. Regardless, beyond these new additional measures, where the Navy's HSTT activities are concerned, the Navy has indicated that further procedural or area mitigation of any kind (beyond that prescribed in this final rule) would be impracticable. NMFS has reviewed documentation and analysis provided by the Navy explaining how and why specific procedural and geographic based mitigation measures impact practicability, and NMFS concurs with these assessments and has determined that the mitigation measures outlined in the final rule satisfy the statutory standard and that any adverse impacts that remain cannot practicably be further mitigated.

Comment 32: In a comment on the 2018 HSTT proposed rule, a Commenter recommended that any ''formal interpretation'' of the least practicable adverse impact standard by NMFS be issued in a stand-alone, generally applicable rulemaking (*e.g.,* in amendments to 50 CFR 216.103 or 216.105) or in a separate policy directive, rather than in the preambles to individual proposed rules.

Response: We appreciate the Commenter's recommendation and may consider the recommended approach in the future. We note, however, that providing relevant explanations in a proposed incidental take rule is an effective and efficient way to provide information to the reader and solicit focused input from the public, and ultimately affords the same opportunities for public comment as a stand-alone rulemaking would. NMFS has provided similar explanations of the least practicable adverse impact standard in other recent section 101(a)(5)(A) rules, including: U.S. Navy Operations of Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar; Geophysical Surveys Related to Oil and Gas Activities in the Gulf of Mexico; and the final rule for U.S. Navy Training and Testing Activities in the Atlantic Fleet Study Area.

Comment 33: In a comment on the 2018 HSTT proposed rule, 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: It ''cannot just parrot what the Navy says.''

Response: NMFS disagrees with much of what the Commenter asserts. 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. Regarding the comment about mitigation of habitat impacts, it has been addressed above in the response to Comment 29.

When a suggested or recommended mitigation measure 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 2018 HSTT final rule. First, the type of mitigation required varies 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. Examples of NMFS' analysis on this issue appear throughout the rule. For instance, while it was not practicable for the Navy to include a mitigation area for the Tanner-Cortes blue whale BIA, the Navy did agree to expand mitigation protection to all of the other blue whale BIAs in the SOCAL region. Additionally, while the Navy cannot alleviate all training in the mitigation areas that protect small resident odontocete populations in Hawaii, it has further expanded the protections in those areas such that it does not use explosives or MFAS in the areas (MF1 bin in both areas, MF4 bin in the Hawaii Island area).

Nonetheless, NMFS agrees 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, and concur with those aspects of the Navy's analysis with which NMFS agrees. The Commenter seems 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 HSTT Study Area. Discussion regarding specific recommendations for mitigation measures provided by the Commenter on the proposed rule are discussed separately.

Procedural Mitigation Effectiveness and Recommendations

Comment 34: In a comment on the 2018 HSTT proposed rule, a Commenter stated that the Navy's proposed mitigation zones are similar to the zones previously used during Phase II activities and are intended, based on the Phase III HSTT DEIS/OEIS, to avoid the potential for marine mammals to be exposed to levels of sound that could result in injury (*i.e.,* PTS). However, the Commenter believed that Phase III proposed mitigation zones would not protect various functional hearing groups from PTS. For example, the mitigation zone for an explosive sonobuoy is 549 m but the mean PTS zones range from 2,113–3,682 m for HF. Similarly, the mitigation zone for an explosive torpedo is 1,920 m but the mean PTS zones range from 7,635–10,062 m for HF, 1,969–4,315 m for LF, and 3,053–3,311 for PW. The appropriateness of such zones is further complicated by platforms firing munitions (*e.g.,* for missiles and rockets) at targets that are 28 to 139 km away from the firing platform. An aircraft would clear the target area well before it positions itself at the launch location and launches the missile or rocket.

Ships, on the other hand, do not clear the target area before launching the missile or rocket. In either case, marine mammals could be present in the target area unbeknownst to the Navy at the time of the launch.

Response: NMFS is aware that some mitigation zones do not fully cover the area in which an animal from a certain hearing group may incur PTS. For this small subset of circumstances, NMFS discussed potential enlargement of the mitigation zones with the Navy, but concurred with the Navy's assessment that further enlargement would be impracticable. Specifically, the Navy explained that, as discussed in Chapter 5 (Mitigation) of the 2018 HSTT FEIS/OEIS, for explosive mitigation zones any additional increases in mitigation zone size (beyond what is depicted for each explosive activity), or additional observation requirements, would be impracticable to implement due to implications for safety, sustainability, the Navy's ability to meet Title 10 requirements to successfully accomplish military readiness objectives, and the Navy's ability to conduct testing associated with required acquisition milestones or as required to meet operational requirements. Additionally, Navy Senior Leadership has approved and determined that the mitigation detailed in Chapter 5 (Mitigation) of the 2018 HSTT FEIS/OEIS provides the greatest extent of protection that is practicable to implement. NMFS has analyzed the fact that despite these mitigation measures, some Level A harassment may occur in some circumstances; the Navy is authorized for these takes by Level A harassment.

Comment 35: In a comment on the 2018 HSTT proposed rule, a Commenter made several comments regarding visual and acoustic detection as related to mitigating impacts that can cause injury. The Commenter noted that the Navy indicated in the 2018 HSTT DEIS/OEIS that Lookouts would not be 100 percent effective at detecting all species of marine mammals for every activity because of 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). The Navy has been collaborating with researchers at the University of St. Andrews to study Navy Lookout effectiveness and the Commenter anticipates that the Lookout effectiveness study will be very informative once completed, but notes that in the interim, the preliminary data *do* provide an adequate basis for taking a precautionary approach. The Commenter believed that rather than simply reducing the size of the mitigation zones it plans to monitor, the Navy should supplement its visual monitoring efforts with other monitoring measures including passive acoustic monitoring.

The Commenter suggested that sonobuoys could be deployed with the target in the various target areas prior to the activity. This approach would allow the Navy to better determine whether the target area is clear and remains clear until the munition is launched.

Although the Navy indicated that it was continuing to improve its capabilities for using range instrumentation to aid in the passive acoustic detection of marine mammals, it also stated that it didn't have the capability or resources to monitor instrumented ranges in real time for the purpose of mitigation. That capability clearly exists. While available resources could be a limiting factor, the Commenter notes that personnel who monitor the hydrophones on the operational side do have the ability to monitor for marine mammals as well. The Commenter has supported the use of the instrumented ranges to fulfill mitigation implementation for quite some time and contends that localizing certain species (or genera) provides more effective mitigation than localizing none at all.

The Commenter recommended that NMFS require the Navy to use passive and active acoustic monitoring, whenever practicable, to supplement visual monitoring during the implementation of its mitigation measures for all activities that have the potential to cause injury or mortality beyond those explosive activities for which passive acoustic monitoring already was proposed, including those activities that would occur on the Southern California Offshore Range (SCORE) and Pacific Missing Range Facility (PMRF) ranges.

Response: For explosive mitigation zones, any additional increases in mitigation zone size (beyond what is depicted for each explosive activity) or observation requirements would be impracticable to implement due to implications for safety, sustainability, and the Navy's ability to meet Title 10 requirements to successfully accomplish military readiness objectives. We do note, however, that since the 2018 HSTT proposed rule, the Navy has committed to implementing pre-event observations for all in-water explosives events (including some that were not previously monitored) and to using additional platforms if available in the vicinity of the detonation area to help with this monitoring.

As discussed in the comment (referencing the use of sonobuoys or hydrophones), 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). For other explosive events, there are no platforms participating that 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 2018 HSTT FEIS/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. Additionally, diverting platforms that have passive acoustic monitoring platforms 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. However, the Navy's instrumented ranges were not developed for the purpose of mitigation. As discussed above, 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. A more detailed discussion of the limitations for on-range passive acoustic detection as real-time mitigation is provided in Comment 42 and is not practicable for the Navy. For example, beaked whales produce highly directed echolocation clicks that are difficult to simultaneously detect on multiple hydrophones within the instrumented range at PMRF; therefore, there is a high probability that a vocalizing animal would be assigned a false location on the range (*i.e.,* the Navy would not be able to verify its presence in a mitigation zone). 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 would not be 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 2018 HSTT FEIS/OEIS.

Comment 36: In a comment on the 2018 HSTT proposed rule, a Commenter recommended that NMFS require the Navy to conduct additional pre-activity overflights before conducting any activities involving detonations barring any safety issues (*e.g.,* low fuel), as well as post-activity monitoring for activities involving medium- and large caliber projectiles, missiles, rockets, and bombs.

Response: The Navy has agreed to implement pre-event observation mitigation, as well as post-event observation, for all in-water explosive event mitigation measures. 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.

Comment 37: In a comment on the 2018 HSTT proposed rule, a Commenter recommended that the Navy implement larger shutdown zones.

Response: The Navy mitigation zones represent the maximum surface area the Navy can effectively observe based on the platform involved, number of personnel that will be involved, and the number and type of assets and resources available. As mitigation zone sizes increase, the potential for observing marine mammals and thus reducing impacts decreases, because the number of observers cannot increase although the area to observe increases. For instance, if a mitigation zone increases from 1,000 to 2,000 yd, the area that must be observed increases four-fold. NMFS has analyzed the Navy's required mitigation and found that it will effect the least practicable adverse impact. The Navy's mitigation measures consider both the need to reduce potential impacts and the ability to provide effective observations throughout a given mitigation zone. To implement these mitigation zones, Navy Lookouts are trained to use a combination of unaided eye and optics as they search the surface around a vessel, detonation location, or applicable sound source. In addition, there are other Navy personnel on a given bridge watch (in addition to designated Lookouts), who are also constantly watching the water for safety of navigation and marine mammals. Takes that cannot be mitigated are analyzed and authorized provided the necessary findings can be made.

Comment 38: In a comment on the 2018 HSTT proposed rule, Commenters stated that NMFS should cap the maximum level of activities each year.

Response: The Commenters offer no rationale for why a cap is needed and nor do they suggest what an appropriate cap might be. The Navy is responsible under Title 10 for conducting the needed amount of testing and training to maintain military readiness, which is what they have proposed and NMFS has analyzed. Further, the MMPA states that NMFS shall issue MMPA authorizations if the necessary findings can be made, as they have been here. Importantly, as described in the *Mitigation Areas* section, the Navy will limit activities (active sonar, explosive use, *etc.*) to varying degrees in multiple areas that are important to sensitive species or for critical behaviors in order to minimize impacts that are more likely to lead to adverse effects on rates of recruitment or survival.

Comment 39: In a comment on the 2018 HSTT proposed rule, a Commenter suggested the Navy could improve observer effectiveness through the use of NMFS-certified marine mammal observers.

Response: The Navy currently requires at least one qualified Lookout on watch at all times a vessel is underway. In addition, on surface ships with hull-mounted sonars during sonar events, the number increases with two additional Lookouts on the forward portion of the vessel (*i.e.,* total of three Lookouts). Furthermore, unlike civilian commercial ships, there are additional bridge watch standers on Navy ships viewing the water during all activities. The Navy's Marine Species Awareness training that all bridge watchstanders including Lookouts take has been reviewed and approved by NMFS. This training is conducted annually and prior to MTEs. In addition, unit-based passive acoustic detection is used when available and appropriate.

As we understand from the Navy, mandating NMFS-certified marine mammal observers on all platforms would require setting up and administering a certification program, providing security clearance for certified people, ensuring that all platforms are furnished with these individuals, and housing these people on ships for extended times from weeks to months. This would be an extreme logistical burden on realistic training. The requirement for additional non-Navy observers would provide little additional benefit, especially at the near ship mitigation ranges for mid-frequency active sonars on surface ships (<1,000 yds), and would not be significantly better than the current system developed by the Navy in consultation with NMFS.

The purpose of Navy Lookouts is to provide sighting information for marine mammals and other protected species, as well as other boats and vessels in the area, in-water debris, and other safety of navigation functions. During active sonar use, additional personnel are assigned for the duration of the sonar event. In addition, the other Navy personnel on a given bridge watch along with designated Lookouts are also constantly watching the water for safety of navigation and marine mammals.

Navy training and testing activities often occur simultaneously and in various regions throughout the HSTT Study Area, with underway time that could last for days or multiple weeks at a time. The pool of certified marine mammal observers across the U.S. West Coast is rather limited, with many already engaged in regional NMFS survey efforts. Relative to the number of dedicated MMOs that would be required to implement this condition, as of July 2018, there are approximately 22 sonar-equipped Navy ships (*i.e.,* surface ships with hull-mounted active sonars) stationed in San Diego. Six additional vessels from the Pacific Northwest also transit to Southern California for training (28 ships times 2 observers per watch times 2 watches per day = minimum of 112 observers). There are currently not enough certified marine mammal observers to cover these Navy activities, even if it were practicable for the other reasons explained above.

Senior Navy commands in the Pacific continuously reemphasize the importance of Lookout responsibilities to all ships. Further, the Navy has an ongoing study in which certified Navy civilian scientist observers embark periodically on Navy ships in support of a comparative Lookout effectiveness study. Results from this study will be used to make recommendations for further improvements to Lookout training.

Additionally, we note that the necessity to include trained NMFS-approved PSOs on Navy vessels, while adding little or no additional protective or data-gathering value, would be very expensive and those costs would need to be offset—most likely through reductions in the budget for Navy monitoring, through which invaluable data is gathered.

Comment 40: In a comment on the 2018 HSTT proposed rule, Commenters stated that NMFS should consider

increasing the exclusion zone to the 120 dB isopleth because some animals are sensitive to sonar at low levels of exposure.

Response: First, it is important to note that the Commenters are suggesting that NMFS require mitigation that would eliminate all take, which is not what the applicable standard requires. Rather, NMFS is required to put in place measures that effect the ''least practicable adverse impact.'' Separately, NMFS acknowledges that some marine mammals may respond to sound at 120 dB in some circumstances; however, based on the best available data, only a subset of those exposed at that low level respond in a manner that would be considered harassment under the MMPA. NMFS and the Navy have quantified those individuals of certain stocks where appropriate, analyzed the impacts, and authorized take where needed. Further, NMFS and the Navy have identified exclusion zone sizes that are best suited to minimize impacts to marine mammal species and stocks and their habitat while also being practicable (see *Mitigation Measures* section).

Comment 41: In a comment on the 2018 HSTT proposed rule, a Commenter stated that NMFS should impose a 10-kn ship speed limit in biologically important areas and critical habitat for marine mammals to reduce vessel strikes. The Commenter also specifically referenced this measure in regard to humpback whales and blue whales.

Response: This issue also is addressed elsewhere in the *Comments and Responses* section for specific mitigation areas. However, 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 reduce the already low probability of ship strike little, if any. The Navy is unable to impose a 10-kn ship speed limit because it would not be practical to implement and would impact the effectiveness of 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 Navy's analysis of these additional restrictions and the impacts they would have on military readiness and concurs with the Navy's assessment that they are impracticable.

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 Southern California and Hawaii, with no whales struck by the Navy from 2010–2019. There have been no whales struck in Hawaii since 2008 (4 whales were struck between 2000 and 2008). Current Navy Standard Operating Procedures and mitigations require a minimum of at least one Lookout on duty while underway (in addition to bridge watch personnel) and, so long as safety of navigation is maintained, to keep 500 yards away from large whales and 200 yards away from other marine mammals (except for bow-riding dolphins and pinnipeds hauled out on shore or man-made navigational structures, port structures, and vessels). Furthermore, there is no Navy ship strike of a marine mammal on record in SOCAL that has occurred in the coastal area (~40 nmi from shore), which is where speed restrictions are most requested. Finally, the most recent model estimate of the potential for civilian ship strike risk to blue, humpback, and fin whales off the coast of California found the highest risk near San Francisco and Long Beach associated with commercial ship routes to and from those ports (Rockwood *et al.,* 2017). There was no indication of a similar high risk to these species off San Diego, where the HSTT Study Area occurs.

Previously, the Navy commissioned a vessel density and speed report based on an analysis of Navy ship traffic in the HSTT Study Area between 2011 and 2015. Median speed of all Navy vessels within the HSTT Study Area is typically already low, with median speeds between 5 and 12 knots. Further, the presence and transits of commercial and recreational vessels, annually numbering in the thousands, poses a more significant risk to large whales than the presence of Navy vessels. The *Vessel Strike* subsection of the *Estimated Take of Marine Mammals* section of this rule and the 2018 HSTT FEIS/OEIS Chapter 3 (Affected Environment and Environmental Consequences) Section 3.7.3.4.1 (Impacts from Vessels and In-Water Devices) and Appendix K, Section K.4.1.6.2 (San Diego (Arc) Blue Whale Feeding Area Mitigation Considerations), explain the important differences between most Navy vessels and their operation and commercial ships that make Navy vessels much less likely to strike a whale.

When developing Phase III mitigation measures, the Navy analyzed the potential for implementing additional types of mitigation, such as vessel speed restrictions within the HSTT Study Area. The Navy determined that based on how the training and testing activities will be conducted within the HSTT 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 2018 HSTT FEIS/OEIS. NMFS fully reviewed this analysis and concurs with the Navy's conclusions.

Comment 42: In a comment on the 2018 HSTT proposed rule, Commenters stated that NMFS should improve detection of marine mammals with restrictions on low-visibility activities and alternative detection such as thermal or acoustic methods.

Response: The Navy has compiled information related to the effectiveness of certain equipment to detect marine mammals in the context of their activities, as well as the practicality and effect on mission effectiveness of using various equipment. NMFS has reviewed this evaluation and concurs with the characterizations and the conclusions below.

Low visibility—Anti-submarine warfare training involving the use of mid-frequency active sonar typically involves the periodic use of active sonar to develop the ''tactical picture,'' or an understanding of the battle space (*e.g.,* area searched or unsearched, presence of false contacts, and an understanding of the water conditions). Developing the tactical picture can take several hours or days, and typically occurs over vast waters with varying environmental and oceanographic conditions. Training during both high visibility (*e.g.,* daylight, favorable weather conditions) and low visibility (*e.g.,* nighttime, inclement weather conditions) is vital because sonar operators must be able to understand the environmental differences between day and night and varying weather conditions and how they affect sound propagation and the detection capabilities of sonar. Temperature layers move up and down in the water column and ambient noise levels can vary significantly between night and day, affecting sound propagation and how sonar systems are operated. Reducing or securing power in low-visibility conditions as a mitigation would affect a commander's ability to develop the tactical picture and would

prevent sonar operators from training in realistic conditions. Further, during integrated training multiple vessels and aircraft may participate in an exercise using different dimensions of warfare simultaneously (*e.g.,* submarine warfare, surface warfare, air warfare, *etc.*). If one of these training elements were adversely impacted (*e.g.,* if sonar training reflecting military operations were not possible), the training value of other integrated elements would also be degraded. Additionally, failure to test such systems in realistic military operational scenarios increases the likelihood these systems could fail during military operations, thus unacceptably placing Sailors' lives and the Nation's security at risk. Some systems have a nighttime testing requirement; therefore, these tests cannot occur only in daylight hours. Reducing or securing power in low visibility conditions would decrease the Navy's ability to determine whether systems are operationally effective, suitable, survivable, and safe for their intended use by the fleet even in reduced visibility or difficult weather conditions.

Thermal detection—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. 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. 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 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. 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). Although thermal detection may be reliable in some applications and environments, the current technologies are limited by their: (1) Low sensor resolution and a narrow fields of view, (2) reduced performance in certain environmental conditions, (3) inability to detect certain animal characteristics and behaviors, and (4) high cost and uncertain long term reliability.

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 such as 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. One example of trying to use existing DoD thermal system is being proposed by the U.S. Air Force. The Air Force agreed to attempt to use specialized U.S. Air Force aircraft with military thermal detection systems for marine mammal detection and mitigation during a limited at-sea testing event. It should be noted, however, these systems are specifically designed for and integrated into a small number of U.S. Air Force aircraft and cannot be added or effectively transferred universally to Navy aircraft. The effectiveness remains unknown in using a standard DoD thermal system 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 positive, *etc.*)

Finally, 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 marine mammal detection have not been sufficiently studied both in terms of their effectiveness within the environmental conditions found in the HSTT Study Area and their compatibility with Navy training and testing (*i.e.,* polar waters vs. temperate waters). 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 Study Area. Furthermore, thermal detection systems are designed to detect marine mammals and do not have the capability to detect other resources for which the Navy is required to implement mitigation, including sea turtles. Focusing on thermal detection systems could also provide a distraction from and compromise to the Navy's ability to implement its established observation and mitigation requirements. The mitigation measures discussed in Chapter 5 (Mitigation), Section 5.3 (Procedural Mitigation to be Implemented) of the 2018 HSTT FEIS/OEIS 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.

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 development stage).

The Office of Naval Research Marine Mammals and Biology program also funded a project (2013–2019) 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.

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.

Passive Acoustic Monitoring—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). For other explosive events, there are no platforms participating that have passive acoustic monitoring capabilities. Adding a passive acoustic monitoring capability (either by adding a passive acoustic monitoring device 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 Chapter 5 (Mitigation), Section 5.5.3 (Active and Passive Acoustic Monitoring Devices) of the 2018 HSTT FEIS/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. Additionally, diverting platforms that have passive acoustic monitoring platforms would impact their ability to meet their Title 10 requirements and reduce the service life of those systems.

The use of real-time passive acoustic monitoring (PAM) for mitigation at the Southern California Anti-submarine Warfare Range (SOAR) exceeds the capability of current technology. The Navy has a significant research investment in the Marine Mammal Monitoring on Navy Ranges (M3R) system at three ocean locations including SOAR. However, this system was designed and intended to support marine mammal research for select species, and not as a mitigation tool. Marine mammal PAM using instrumented hydrophones is still under development and while it has produced meaningful results for marine species monitoring, abundance estimation, and research, it was not developed for nor is it appropriate for real-time mitigation. The ability to detect, classify, and develop an estimated position (and the associated area of uncertainty) differs across species, behavioral context, animal location vs. receiver geometry, source level, *etc.* Based on current capabilities, and given adequate time, vocalizing animals within an indeterminate radius around a particular hydrophone are detected, but obtaining an estimated position for all individual animals passing through a predetermined area is not assured. Detecting vocalizations on a hydrophone does not determine whether vocalizing individuals would be within the established mitigation zone in the timeframes required for mitigation. Since detection ranges are generally larger than current mitigation zones for many activities, this would unnecessarily delay events due to uncertainty in the animal's location and put at risk event realism.

Furthermore, PAM at SOAR does not account for animals not vocalizing. For instance, there have been many documented occurrences during PAM verification testing at SOAR of small boats on the water coming across marine mammals such as baleen whales that were not vocalizing and therefore not detected by the range hydrophones. Animals must vocalize to be detected by PAM; the lack of detections on a hydrophone may give the false impression that the area is clear of marine mammals. The lack of vocalization detections is not a direct measure of the absence of marine mammals. If an event were to be moved based upon low-confidence localizations, it may inadvertently be moved to an area where non-vocalizing animals of undetermined species are present.

To develop an estimated position for an individual, it must be vocalizing and its vocalizations must be detected on at least three hydrophones. The hydrophones must have the required bandwidth, and dynamic range to capture the signal. In addition, calls must be sufficiently loud so as to provide the required signal to noise ratio on the surrounding hydrophones. Typically, small odontocetes echolocate with a directed beam that makes detection of the call on multiple hydrophones difficult. Developing an estimated position of selected species requires the presence of whistles which may or may not be produced depending on the behavioral state. Beaked whales at SOAR vocalize only during deep foraging dives which occur at a rate of approximately 10 per day. They produce highly directed echolocation clicks that are difficult to simultaneously detect on multiple hydrophones. Current real-time systems cannot follow individuals and at best produce sparse positions with multiple false locations. The position estimation process must occur in an area with hydrophones spaced to allow the detection of the same echolocation click on at least three hydrophones. Typically, a spacing of less than 4 km in water depths of approximately 2 km is preferred. In the absence of detection,

the analyst can only determine with confidence if a group of beaked whales is somewhere within 6 km of a hydrophone. Beaked whales produce stereotypic click trains during deep (<500 m) foraging dives. The presence of a vocalizing group can be readily detected by an analyst by examining the click structure and repetition rate. However, estimating position is possible only if the same train of clicks is detected on multiple hydrophones which is often precluded by the animal's narrow beam pattern. Currently, this is not an automated routine.

In summary, the analytical and technical capabilities required to use PAM such as M3R at SOAR as a required mitigation tool are not sufficiently robust to rely upon due to limitations with near real-time classification and determining estimated positions. The level of uncertainty as to a species presence or absence and location are too high to provide the accuracy required for real-time mitigation. As discussed in Chapter 5 (Mitigation) of the 2018 HSTT FEIS/OEIS, existing Navy visual mitigation procedures and measures, when performed by individual units at-sea, still remain the most effective and practical means of protection for marine species.

Comment 43: In a comment on the 2018 HSTT proposed rule, Commenters stated that NMFS should add mitigation for other marine mammal stressors such as dipping sonar, pile driving, and multiple exposures near homeports.

Response: The Navy implements a 200-yd shutdown for dipping sonar and a 100-yd exclusion zone for pile-driving. It is unclear what the Commenter means by adding mitigation for ''multiple exposures'' near homeports, and therefore no explanation can be provided.

Mitigation Areas

Introduction

The Navy included a comprehensive proposal of mitigation measures in their 2017 application that included procedural mitigations that reduce the likelihood of mortality, injury, hearing impairment, and more severe behavioral responses for most species. The Navy also included time/area mitigation that further protects areas where important behaviors are conducted and/or sensitive species congregate, which reduces the likelihood of takes that are likely to impact reproduction or survival (as described in the *Mitigation Measures* section of the final rule and the Navy's application). 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 necessary for NMFS to consider whether there are additional practicable measures that could also contribute to effecting the least practicable adverse impact on the species or stocks and their habitat. In the case of the Navy's HSTT application, we worked with the Navy prior to the publication of the 2018 HSTT proposed rule and ultimately the Navy agreed to increase geographic mitigation areas adjacent to the island of Hawaii to more fully encompass specific biologically important areas and the Alenuihaha Channel and to limit additional anti-submarine warfare mid-frequency active sonar (ASW) source bins (MF4) within some geographic mitigation areas.

During the public comment period on the 2018 HSTT proposed rule, NMFS received numerous recommendations for the Navy to implement additional mitigation measures, both procedural and time/area limitations. Extensive discussion of the recommended mitigation measures in the context of the factors considered in the least practicable adverse impact analysis (considered in the *Mitigation Measures* section of the final rule and described below), as well as considerations of alternate iterations or portions of the recommended measures considered to better address practicability concerns, resulted in the addition of several procedural mitigations and expansion of multiple time/area mitigations (see the *Mitigation Measures* section in the final rule). These additional areas reflect, for example, concerns about blue whales in SOCAL and small resident odontocete populations in Hawaii (which resulted in expanded time/area mitigation), focus on areas where important behaviors and habitat are found (*e.g.,* in BIAs), and enhancement of the Navy's ability to detect and reduce injury and mortality (which resulted in expanded monitoring before and after explosive events). Through extensive discussion, NMFS and the Navy worked to identify and prioritize additional mitigation measures that are likely to reduce impacts on marine mammal species or stocks and their habitat and are also possible for the Navy to implement.

Following the publication of the 2013 HSTT MMPA incidental take rule, the Navy and NMFS were sued and the resulting settlement agreement prohibited or restricted Navy activities within specific areas in the HSTT Study Area. These provisional prohibitions and restrictions on activities within the HSTT Study Area were derived pursuant to negotiations with the plaintiffs in that lawsuit and were specifically not evaluated or selected based on the type of thorough examination of best available science that occurs through the rulemaking process under the MMPA, or through related analyses conducted under the National Environmental Policy Act (NEPA) or the ESA. The agreement did not constitute a concession by the Navy as to the potential impacts of Navy activities on marine mammals or any other marine species, or to the practicability of the measures. The Navy's adoption of restrictions on its HSTT activities as part of a relatively short-term settlement did not mean that those restrictions were necessarily supported by the best available science, likely to reduce impacts to marine mammal species or stocks and their habitat, or practicable to implement from a military readiness standpoint over the longer term in the HSTT Study Area. Accordingly, as required by statute, NMFS analyzed the Navy's activities, impacts, mitigation and potential mitigation (including the settlement agreement measures) pursuant to the least practicable adverse impact standard to determine the appropriate mitigation to include in these regulations. Some of the measures included in the settlement agreement are included in the final rule, while some are not. Other measures that were not included in the settlement agreement are included in the final rule.

Ultimately, the Navy adopted all mitigation measures that are practicable without jeopardizing its mission and Title 10 responsibilities. In other words, a comprehensive assessment by Navy leadership of the final, entire list of mitigation measures concluded that the inclusion of any further mitigation beyond those measures identified here in the final rule would be impracticable. NMFS independently reviewed the Navy's practicability determinations for specific mitigation areas and concurs with the Navy's analysis.

As we outlined in the *Mitigation Measures* section of the 2018 HSTT final rule, NMFS reviewed Appendix K (Geographic Mitigation Assessment) in the 2018 HSTT FEIS/OEIS and the information contained there reflects the best available science as well as a robust evaluation of the practicability of different measures. NMFS used Appendix K to support our independent

least practicable adverse impact analysis. Below is additional discussion regarding specific recommendations for mitigation measures.

Comment 44: With respect to the national security exemption related to mitigation areas, in a comment on the 2018 HSTT proposed rule, a Commenter recommended that NMFS should specify that authorization may be given only by high-level officers, consistent with the Settlement Agreement or with previous HSTT rulings.

Response: The Navy provided the technical analyses contained in Appendix K (Geographic Mitigation Assessment) of the 2018 HSTT FEIS/OEIS that included details regarding changing the measure to the appropriate delegated Command designee (see specifically Appendix K, Section K.2.2.1 (Proposed Mitigation Areas within the HSTT Study Area), for each of the proposed areas). The Commenter proposed ''authorization may be given only by high-level officers'' and therefore appears to have missed the designations made within the cited sections since those do constitute positions that could only be considered ''high level officers.'' The decision would be delegated to high-level officers. This delegation has been clarified in this rule as ''permission from the appropriate designated Command authority.''

SOCAL Areas

Comment 45: In a comment on the 2018 HSTT proposed rule, a Commenter recommended that the Navy consider units of the National Park Service (NPS) system and similar areas that occur near the Navy's training and testing locations in Southern California and which may be affected by noise, including Channel Islands National Park and Cabrillo National Monument, as it plans its activities in the HSTT Study Area.

Response: Both NMFS and the Navy did consider the effects of Navy activities on NPS sites and National Monuments. National Parks (NP) and National Monuments are addressed in Chapter 6 of the 2018 HSTT FEIS/OEIS. The Channel Islands NP consists of the five islands and surrounding ocean environment out to 1 nmi of Anacapa Island, Santa Cruz Island, Santa Rosa Island, San Miguel Island, and Santa Barbara Island. Similarly, the Channel Islands National Marine Sanctuary (NMS) consists of the ocean waters within an area of 1,109 nmi^2 that also surround the same islands of Anacapa Island, Santa Cruz Island, Santa Rosa Island, San Miguel Island and Santa Barbara Island to the south. The Channel Islands NMS waters extend from mean high tide to 6 nmi offshore around each of these five islands which would also encompass the surrounding ocean waters of the Channel Islands NP. Only 92 nmi^2 of Santa Barbara Island, or about 8 percent of the Channel Islands NMS, occurs within the SOCAL portion of the HSTT Study Area, but the entirety of that piece is included in the Santa Barbara Mitigation Area. The Navy will continue to implement a mitigation area out to 6 nmi of Santa Barbara Island, which includes a portion of the Channel Islands NMS (inclusive of the Channels Island NP portion) where the Navy will restrict the use of MF1 sonar sources and some explosives during training. Therefore, no impacts are expected to occur within the waters of the Channel Islands NP. Please refer to Figure 5.4–4 in the 2018 HSTT FEIS/OEIS, which shows the spatial extent of the Santa Barbara Island Mitigation Area. Cabrillo National Monument in San Diego only contains some intertidal areas, but no marine waters. No Navy activities overlap with the Cabrillo National Monument; therefore, no impacts are expected.

Comment 46: In a comment on the 2018 HSTT proposed rule, a Commenter recommended to extend the seasonality of the San Diego Arc Mitigation Area to December 31 for blue whales that are present off southern California almost year round, and relatively higher levels from June 1 through December 31.

Response: Analysis of the San Diego Arc Mitigation Area and its consideration for additional geographic mitigation is provided in the 2018 HSTT FEIS/OEIS in Appendix K (Geographic Mitigation Assessment), Section K.4.1.6 (San Diego (Arc) Blue Whale Feeding Area; Settlement Areas 3–A through 3–C, California Coastal Commission 3 nmi Shore Area, and San Diego Arc Area), Section K.5.5 (Settlement Areas within the Southern California Portion of the HSTT Study Area), and Section K.6.2 (San Diego Arc: Area Parallel to the Coastline from the Gulf of California Border to just North of Del Mar). This analysis included consideration of seasonality and the potential effectiveness of restrictions to use of MFAS by the Navy in the area. Based on further discussion between NMFS and the Navy in consideration of the Appendix K (Geographic Mitigation Assessment) analyses, with the 2018 HSTT final rule the Navy implemented additional mitigation within the San Diego Arc Mitigation Area, as detailed in this 2020 rule and Chapter 5 (Mitigation) Section 5.4.3 (Mitigation Areas for Marine Mammals in the Southern California Portion of the Study Area) of the 2018 HSTT FEIS/OEIS, to further avoid or reduce impacts on marine mammals from acoustic and explosive stressors and vessel strikes from Navy training and testing in this location. The Navy is limiting MF1 surface ship hull-mounted MFAS even further in the San Diego Arc Mitigation Area. The Navy will not conduct more than 200 hrs of MF1 MFAS in the combined areas of the San Diego Arc Mitigation Area and newly added San Nicolas Island and Santa Monica/Long Beach Mitigation Areas. As described in the 2018 rule and this rule, the Navy will not use explosives that could potentially result in the take of marine mammals during large-caliber gunnery, torpedo, bombing, and missile (including 2.75-in rockets) activities during training and testing in the San Diego Mitigation Area. Regarding the recommended increase in seasonality to December 31, the San Diego Arc current seasonality is based on the Biologically Important Area associated with this mitigation area (Calambokidis *et al.,* 2015), which identifies the primary months for feeding. While blue whale calls have been detected in Southern California through December (Rice *et al.,* 2017, Lewis and Širović, 2018), given a large propagation range (10–50 km or more) for low-frequency blue whale vocalization, blue whale call detection from a Navy-funded single passive acoustic device near the San Diego Arc may not be a direct correlation with blue whale presence within the San Diego Arc from November through December. In addition, passive acoustic call detection data does not currently allow for direct abundance estimates. Calls may indicate some level of blue whale presence, but not abundance or individual residency time. In the most recent Navy-funded passive acoustic monitoring report including the one site in the northern San Diego Arc from June 2015 to April 2016, blue whale call detection frequency near the San Diego Arc started declining in November after an October peak (Rice *et al.,* 2017, Širović, personal communication). The Navy-funded research on blue whale movements from 2014 to 2017 along the U.S. West Coast based on satellite tagging, has shown that individual blue whale movement is wide ranging with large distances covered daily (Mate *et al.,* 2017). Nineteen (19) blue whales were tagged in 2016, the most recent reporting year available (Mate *et al.,* 2017). Only 5 of the 19 blue whales spent time in the SOCAL portion of the HSTT Study Area, and only spent a few days within the range complex (2–13 days). Average distance from shore for

blue whales was 113 km. None of the 19 blue whales tagged in 2016 spent time within the San Diego Arc. From previous year efforts (2014–2015), only a few tagged blue whales passed through the San Diego Arc. In addition, Navy and non-Navy-funded blue whale satellite tagging studies started in the early 1990s and have continued irregularly through 2017. In general, most blue whales start a south-bound migration from the ''summer foraging areas'' in the mid- to late-fall time period, unless food has not been plentiful, which can lead to a much earlier migration south. Therefore, while blue whales have been documented within the San Diego Arc previously, individual use of the area is variable, likely of short duration, and declining after October. Considering the newest passive acoustic and satellite tagging data, there is no scientific justification for extending the San Diego Arc Mitigation Area period from October 31 to December 31.

Comment 47: In a comment on the 2018 HSTT proposed rule, a Commenter recommended limiting all MF1 use within the San Diego Arc Mitigation Area. A Commenter also recommended NMFS should carefully consider prohibiting use of other LFAS and MFAS during the time period the San Diego Arc Mitigation Area is in place, and for the MTEs to be planned for other months of the year.

Response: Based on further discussion between NMFS and the Navy in consideration of the proposed mitigation presented in the 2018 HSTT proposed rule, the Navy is now limiting MF1 surface ship hull-mounted MFAS even further in the San Diego Arc Mitigation Area. The Navy will not conduct more than 200 hrs of MF1 MFAS in the *combined* areas of the San Diego Arc Mitigation Area and newly added San Nicolas Island and Santa Monica/Long Beach Mitigation Areas. The *Mitigation Measures* section of the 2018 HSTT final rule and Appendix K (Geographic Mitigation Assessment) of the 2018 HSTT FEIS/OEIS discuss MFAS restrictions within the San Diego Arc Mitigation Area. Other training MFAS systems are likely to be used less frequently in the vicinity of the San Diego Arc area than surface ship MFAS. Given water depths, the San Diego Arc area is not conducive for large scale anti-submarine warfare exercises, nor is it near areas where other anti-submarine warfare training and testing occurs. Due to the presence of existing Navy subareas in the southern part of the San Diego Arc, a limited amount of helicopter dipping MFAS could occur. These designated range areas are required for proximity to airfields in San Diego such as Naval Air Station North Island and for airspace management. However, helicopters only use these areas in the Arc for a Kilo Dip. A Kilo Dip is a functional check of approximately 1–2 pings of active sonar to confirm the system is operational before the helicopter heads to more remote offshore training areas. This ensures proper system operation and avoids loss of limited training time, expenditure of fuel, and cumulative engine use in the event of equipment malfunction. The potential effects of dipping sonar have been accounted for in the rule's analysis. Dipping sonar is further discussed below in Comment 48.

Comment 48: In a comment on the 2018 HSTT proposed rule, a Commenter recommended prohibiting the use of air-deployed MFAS in the San Diego Arc Mitigation Area.

Response: The 2018 HSTT FEIS/OEIS and specifically Appendix K (Geographic Mitigation Assessment) analyze MFAS and LFAS restrictions within the San Diego Arc. Other sonar systems are used less frequently in the vicinity of the San Diego Arc than surface ship MFAS. In regard to the recommendation to prohibit ''air-deployed'' or dipping MFAS, the only helicopter dipping sonar activity that would likely be conducted in the San Diego Arc area is a Kilo Dip, which occurs relatively infrequently and involves a functional check of approximately 1–2 pings of active sonar before moving offshore beyond the San Diego Arc to conduct the training activity. During use of this sonar, the Navy will implement the procedural mitigation described in the *Mitigation Measures* section of this rule. The Kilo Dip functional check needs to occur close to Naval Air Station North Island in San Diego to ensure all systems are functioning properly, before moving offshore. This ensures proper system operation and avoids loss of limited training time, expenditure of fuel, and cumulative engine use in the event of equipment malfunction. The potential effects of dipping sonar have been accounted for in the rule's analysis. Further, due to lower power settings for dipping sonar, potential behavioral impact ranges of dipping sonar are significantly lower than surface ship sonars. For example, the HSTT average modeled range to temporary threshold shift of dipping sonar for a 1-second ping on low-frequency cetacean (*i.e.,* blue whale) is 77 m (2018 HSTT FEIS/OEIS Table 3.7–7). This range is easily monitored for large whales by a hovering helicopter and is accounted for in the mitigation ranges for dipping sonars. Limited ping time and lower power settings therefore would limit the impact from dipping sonar to any marine mammal species. It should be pointed out that the Commenter's recommendation is based on new behavioral response research specific to beaked whales (Falcone *et al.,* 2017). The Navy relied upon the best science that was available to develop behavioral response functions in consultation with NMFS for the 2018 HSTT FEIS/OEIS. The article cited in the comment (Falcone *et al.,* 2017) was not available at the time the 2017 HSTT DEIS/OEIS was published. 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 2018 HSTT proposed rule was published would fundamentally change the assessment of impacts or conclusions in the 2018 HSTT FEIS/OEIS or in this rulemaking. Nonetheless, the new information and data presented in the new article were thoroughly reviewed by the Navy and will be quantitatively incorporated into future behavioral response functions, as appropriate, when and if other new data that would meaningfully change the functions would necessitate their revision. The new information and data presented in the article was thoroughly reviewed when it became available and further considered in discussions with some of the paper's authors. Many of the variables requiring further analysis for beaked whales and dipping sonar impact assessment are still being researched under continued Navy funding through 2023. The small portion of designated Kilo Dip areas that overlap the southern part of the San Diego Arc is not of sufficient depth for preferred habitat of beaked whales (see Figure 2.1–9 in the 2018 HSTT FEIS/OEIS). Further, passive acoustic monitoring for the past several years in the San Diego Arc confirms a lack of beaked whale detections (Rice *et al.,* 2017). Also, behavioral responses of beaked whales from dipping and other sonars cannot be universally applied to other species including blue whales. Navy-funded behavioral response studies of blue whales to simulated surface ship sonar has demonstrated there are distinct individual variations as well as strong behavioral state considerations that influence any response or lack of response (Goldbogen *et al.,* 2013).

Comment 49: In a comment on the 2018 HSTT proposed rule, a Commenter recommended requiring vessel speed

restrictions within the San Diego Arc Mitigation Area.

Response: Previously, the Navy commissioned a vessel density and speed report for the HSTT Study Area (CNA, 2016). Based on an analysis of Navy ship traffic in the HSTT Study Area between 2011 and 2015, median speed of all Navy vessels within Southern California is typically already low, with median speeds between 5 and 12 kn (CNA, 2016). Slowest speeds occurred closer to the coast including the general area of the San Diego Arc and approaches to San Diego Bay. The presence and transits of commercial and recreational vessels, numbering in the many hundreds, far outweighs the presence of Navy vessels. Regarding strikes by vessels other than Navy vessels, two blue whale ship strike deaths were observed during the most recent five-year period of 2013–2017 (Carretta *et al.* 2019, final 2018 SARs). There were no reported ship-strike related serious injuries during this time period (Carretta *et al.* 2019). Observations of blue whale ship strikes have been highly-variable in previous five-year periods, with as many as 10 observed (nine deaths and one serious injury) during 2007–2011 (Carretta *et al.,* 2013). The highest number of blue whale ship strikes observed in a single year (2007) was five whales (Carretta *et al.* 2013). Additionally, ship strike mortality was estimated for blue whales in the U.S. West Coast EEZ (Rockwood *et al.,* 2017), using an encounter theory model (Martin *et al.,* 2016) that combined species distribution models of whale density (Becker *et al.,* 2016), vessel traffic characteristics (size, speed, and spatial use), along with whale movement patterns obtained from satellite-tagged whales in the region to estimate encounters that would result in mortality and predicted higher annual numbers of mortality. But as discussed in this final rule, the SAR further cites to Monnahan *et al.* (2015), which used a population dynamics model to estimate that the Eastern North Pacific blue whale population was at 97 percent of carrying capacity in 2013 and to suggest that the observed lack of a population increase since the early 1990s was explained by density dependence, not impacts from ship strike. Ship strike in the West Coast EEZ continues to be complex with vessel speeds, types, and routes of travel all contributing to variability in ship traffic and animal vulnerability. That said, there has been no confirmed Navy ship strike to a blue whale in the entire Pacific over the 14-year period from 2005 to 2019. To minimize the possibility of ship strike in the San Diego Arc Mitigation Area, the Navy will implement procedural mitigation for vessel movements based on guidance from NMFS for vessel strike avoidance. The Navy will also issue seasonal awareness notification messages to all Navy vessels of blue, fin, and gray whale occurrence to increase ships awareness of marine mammal presence as a means of improving detection and avoidance of whales in SOCAL. When developing the mitigation for the 2018 HSTT final rule, NMFS and the Navy analyzed the potential for implementing additional types of mitigation, such as developing vessel speed restrictions within the HSTT Study Area. The Navy determined that based on how the training and testing activities will be conducted within the HSTT Study Area under the planned activities, vessel speed restrictions would be incompatible with the practicability assessment criteria for safety, sustainability, and Title 10 requirements, as described in Section 5.3.4.1 (Vessel Movement) of the 2018 HSTT FEIS/OEIS.

Comment 50: In a comment on the 2018 HSTT proposed rule, a Commenter recommended prohibiting the use of air-deployed MFAS in the Santa Barbara Island Mitigation Area.

Response: The Commenter's request to prohibit ''air-deployed'' MFAS is based on one paper (Falcone *et al.,* 2017), which is a Navy-funded project designed to study behavioral responses of a single species, Cuvier's beaked whales, to MFAS. The Navy in consultation with NMFS relied upon the best science that was available to develop behavioral response functions for beaked whales and other marine mammals for the 2018 HSTT FEIS/OEIS. NMFS and the Navy have reviewed the article and concur that neither this article (Falcone *et al.,* 2017) nor any other new information that has been published or otherwise conveyed since the 2018 HSTT proposed rule was published would fundamentally change the assessment of impacts or conclusions in the 2018 HSTT FEIS/OEIS or in this rulemaking. Nonetheless, the new information and data presented in the new article were thoroughly reviewed by the Navy and will be quantitatively incorporated into future behavioral response functions, as appropriate, when and if other new data that would meaningfully change the functions would necessitate their revision. Many of the variables requiring further analysis for beaked whales and dipping sonar impact assessment are still being researched under continued Navy funding through 2023.

Behavioral responses of beaked whales from dipping and other sonars cannot be universally applied to other marine mammal species. For example, Navy-funded behavioral response studies of blue whales to simulated surface ship sonar has demonstrated there are distinct individual variations as well as strong behavioral state considerations that influence any response or lack of response (Goldbogen *et al.,* 2013). The same conclusion on the importance of exposure and behavioral context was stressed by Harris *et al.* (2017). Therefore, it is expected that other species would also have highly variable individual responses ranging from some response to no response to any anthropogenic sound. This variability is accounted for in the current behavioral response curves described in the 2018 HSTT FEIS/OEIS and supporting technical reports, and used by NMFS in the MMPA rule.

The potential effects of dipping sonar have been rigorously accounted for in the analysis. Parameters such as power level and propagation range for typical dipping sonar use are factored into HSTT acoustic impact analysis along with guild specific criteria and other modeling variables as detailed in the 2018 HSTT FEIS/OEIS and associated technical reports for criteria and acoustic modeling. Due to lower power settings for dipping sonar, potential impact ranges of dipping sonar are significantly lower than surface ship sonars. For example, the HSTT average modeled range to temporary threshold shift of dipping sonar for a 1-second ping on low-frequency cetacean (*i.e.,* blue whale) is 77 m, and for mid-frequency cetaceans including beaked whales is 22 m (2018 HSTT FEIS/OEIS Table 3.7–7). This range is monitored for marine mammals by a hovering helicopter and is accounted for in the mitigation ranges for dipping sonars (200 yd or 183 m). Limited ping time and lower power settings therefore would limit the impact from dipping sonar to any marine mammal species.

For other marine mammal species, the small area around Santa Barbara Island does not have resident marine mammals, identified biologically important areas, nor is it identified as a breeding or persistent foraging location for cetaceans. Instead, the same marine mammals that range throughout the offshore Southern California area could pass at some point through the marine waters of Santa Barbara Island. As discussed in the mitigation section of the rule, the Navy will implement (and is currently implementing) year-round limitations to MFAS and larger

explosive use. The Navy will not use MF1 surface ship hull-mounted MFAS during training or testing, or explosives that could potentially result in the take of marine mammals during medium-caliber or large-caliber gunnery, torpedo, bombing, and missile (including 2.75-in rockets) activities during training in the Santa Barbara Island Mitigation Area. Other MFAS systems within SOCAL are used less frequently than surface ship sonars, and more importantly are of much lower power with correspondingly lower propagation ranges and reduced potential behavioral impacts.

Comment 51: In a comment on the 2018 HSTT proposed rule, a Commenter recommended prohibiting other sources of MFAS in the Santa Barbara Mitigation Area.

Response: Appendix K (Geographic Mitigation Assessment) of the 2018 HSTT FEIS/OEIS, which NMFS reviewed, concurred with, and used to support our MMPA least practicable adverse impact analysis, discusses the Navy's analysis of MFAS restrictions around Santa Barbara Island. Other training MFAS systems are likely to be used less frequently in the vicinity of Santa Barbara Island than surface ship MFASs. Although not prohibiting the use of other sources of MFAS, the Navy will not use MF1 surface ship hull-mounted MFAS during training or testing, or explosives that could potentially result in the take of marine mammals during medium-caliber or large-caliber gunnery, torpedo, bombing, and missile (including 2.75-in rockets) activities during training in the Santa Barbara Island Mitigation Area.

The relatively small area surrounding the Santa Barbara Island Mitigation Area represents less than 0.08 percent of the entire HSTT SOCAL area. An even smaller portion of this area meets the scientifically accepted minimum depth criteria expected for beaked whale habitat, in Southern California usually greater than 800 m. The bathymetric area greater than 800 m depth and within the Santa Barbara Island Mitigation Area is approximately 24 square Nmi (26 percent of the total Mitigation Area spatial extent or only 0.02 percent of the total HSTT SOCAL area). Beaked whale monitoring at other locations within SOCAL have shown that even in ocean basins thought to have Cuvier's beaked whale sub-population, there is still quite a bit of variation in occurrence and movement of beaked whales within a given basin (Schorr *et al.,* 2017, 2018, 2020). The small area around Santa Barbara Island is not known to have resident marine mammals, formally identified biologically important areas, nor is it identified as a breeding or persistent foraging location for cetaceans. Instead, the same marine mammals that range throughout the offshore Southern California area could pass at some point through the marine waters of Santa Barbara Island. As discussed in this rule the Navy is implementing year-round limitations to MFAS and larger explosive use. Other MFAS systems for which the Navy sought coverage within SOCAL are used less frequently than surface ship sonars, and more importantly are of much lower power with correspondingly lower propagation ranges and reduced potential behavioral impacts. Therefore, further limitations of active sonars within this area are not anticipated to be meaningfully more protective to marine mammal populations than existing mitigation measures within the entire SOCAL portion of the HSTT Study Area.

Comment 52: In a comment on the 2018 HSTT proposed rule, a Commenter recommended implementing vessel speed restrictions in the Santa Barbara Island Mitigation Area (Channel Islands Sanctuary Cautionary Area).

Response: The Channel Islands Sanctuary Cautionary Area was renamed the Santa Barbara Island Mitigation Area for the rule. All locations within the HSTT Study Area have been used for Navy training and testing for decades. There has not been any Navy ship strike to marine mammals in SOCAL over the 10-year period from 2010–2019, and there has never been a Navy strike within the boundary of the Channel Islands National Marine Sanctuary over the course of strike record collection dating back 20 years. Therefore, ship strike risk to marine mammals transiting the Santa Barbara Island Mitigation Area is minimal. Additionally, as discussed in this rule, the 2018 HSTT final rule, and the 2018 HSTT FEIS/OEIS Section 3.7.3.4.1 (Impacts from Vessels and In-Water Devices) and Appendix K (Geographic Mitigation Assessment), there are important differences between most Navy vessels and their operation and commercial ships that individually make Navy vessels much less likely to strike a whale. Navy vessels already operate at lower speeds given a particular transit or activity need. Mitigation measures include a provision to avoid large whales by 500 yd, so long as safety of navigation and safety of operations is maintained. Previously, the Navy commissioned a vessel density and speed report for HSTT (CNA, 2016). Based on an analysis of Navy ship traffic in HSTT between 2011 and 2015, the average speed of all Navy vessels within Southern California is typically already low, with median speeds between 5 and 12 kn (CNA, 2016). Slowest speeds occurred closer to the coast and islands. Given the history of no documented Navy ship strikes over the last 10 years (2010–2019) throughout SOCAL during Navy activities, lack of significant and repeated use of the small portion of waters within the Santa Barbara Island Mitigation Area by marine mammals, anticipated low individual residency times within the Santa Barbara Island Mitigation Area, application of mitigation and protective measures as outlined in this rule and the 2018 HSTT final rule, documented lower speeds Navy vessels already navigate by, detailed assessments of realistic training and testing requirements, and potential impacts of further restrictions, NMFS has determined that vessel speed restrictions in the Santa Barbara Island Mitigation Area are not warranted.

Comment 53: In a comment on the 2018 HSTT proposed rule, a Commenter recommended additional mitigation areas for important beaked whale habitat in the Southern California Bight. The Commenter asserted that it is important to focus substantial management efforts on beaked whales within the Navy's SOCAL Range Complex, which sees the greatest annual amount of sonar and explosives activity of any Navy range in the Pacific.

Response: The basis for this comment includes incorrect or outdated information or information that does not reflect the environment present in the HSTT Study Area, such as, ''. . . beaked whale populations in the California Current have shown significant, possibly drastic declines in abundance over the last twenty years.'' The citation provided in the footnote to the comment and postulated ''decline'' was for beaked whales up until 2008 (which does not take into account information from the last 10 years) and was a postulated trend for the entire U.S. West Coast, not data which is specific to the HSTT Study Area. As noted in Section 3.7.3.1.1.7 (Long-Term Consequences) of the 2018 HSTT FEIS/OEIS, the postulated decline was in fact not present within the SOCAL portion of the HSTT Study Area, where abundances of beaked whales have remained higher than other locations off the U.S. West Coast. In addition, the authors of the 2013 citation (Moore and Barlow, 2013) have published trends based on survey data gathered since 2008 for beaked whales in the California Current, which now includes the highest abundance estimate in the history of these surveys (Barlow 2016; Carretta *et al.,* 2017; Moore and Barlow,

2017). Also, when considering the portion of the beaked whale population within the SOCAL portion of the HSTT Study Area and as presented in the 2018 HSTT FEIS/OEIS, multiple studies have documented continued high abundance of beaked whales and the long-term residency of documented individual beaked whales, specifically where the Navy has been training and testing for decades (see for example Debich *et al.,* 2015a, 2015b; Dimarzio *et al.,* 2018, 2020; Falcone and Schorr, 2012, 2014, 2018, 2020; Hildebrand *et al.,* 2009; Moretti, 2016; Širović *et al.,* 2016; Smultea and Jefferson, 2014). There is no evidence that there have been any population-level impacts to beaked whales resulting from Navy training and testing in the SOCAL portion of the HSTT Study Area. NMFS and the Navy considered additional geographic mitigation for beaked whales in the Southern California Bight, as described in Appendix K (Geographic Mitigation Assessment), Section K.7.2 (Southern California Public Comment Mitigation Area Assessment) and specifically Section K.7.2.7 (Northern Catalina Basin and the San Clemente Basin) of the 2018 HSTT FEIS/OEIS, which NMFS used in support of this rule. See Chapter 5 (Mitigation), Section 5.4.1.2 (Mitigation Area Assessment) of the 2018 HSTT FEIS/OEIS for additional details regarding the assessments of areas considered for mitigation.

Comment 54: In a comment on the 2018 HSTT proposed rule, a Commenter recommended additional mitigation areas in the San Nicolas Basin. The Commenter noted that the settlement agreement established a ''refuge'' from sonar and explosives activities in a portion of the whales' secondary habitat, outside the Southern California Anti-submarine Warfare Range (SOAR), with more management effort being necessary in the long term. The Commenter recommended at a minimum that NMFS should prescribe the ''refuge'' during the next five-year operation period and should consider all possible habitat-based management efforts, including but not limited to the expansion of this area further south towards SOAR, to address impacts on the small population of Cuvier's beaked whales associated with San Clemente Island.

Response: NMFS and the Navy considered additional geographic mitigation for beaked whales in the San Nicolas Basin, as described in Appendix K (Geographic Mitigation Assessment), Section K.7.2 (Southern California Public Comment Mitigation Area Assessment), and specifically Section K.7.2.1 (San Nicolas Basin) of the 2018 HSTT FEIS/OEIS, which NMFS reviewed, concurred with, and used to support the mitigation analysis in the rule. See Chapter 5 (Mitigation), Section 5.4.1.2 (Mitigation Area Assessment) of the 2018 HSTT FEIS/OEIS for additional details regarding the assessments of areas considered for mitigation. Further, the *Mitigation Measures, Brief Comparison of 2015 Settlement Mitigation and Final HSTT Mitigation in the Rule* section of the 2018 HSTT final rule explicitly discusses NMFS consideration of mitigation that was included in the settlement agreement versus what was included in the final rule in the context of the MMPA least practicable adverse impact standard.

Within the San Nicolas Basin, there is a documented, recurring number of Cuvier's beaked whales strongly indicating that the Navy's activities are not having a population-level impact on this species. This is supported by repeated visual re-sighting rates of individuals, sightings of calves and, more importantly, reproductive females, and passive acoustic assessments of steady vocalization rates and abundance over at least the most recent seven-year interval. It is incorrect to conclude that there is a ''population sink,'' such as has been seen on the Navy's AUTEC range. In the citation provided (Claridge, 2013), that statement is merely a hypothesis, yet to be demonstrated.

The Navy has been funding Cuvier's beaked whale research specifically in the San Nicolas Basin since 2006. This research is planned to continue through the duration of this MMPA authorization. Cumulative from 2006 to 2016, over 170 individual Cuvier's beaked whales have been catalogued within the San Nicolas Basin. Schorr *et al.* (2018) stated for the field season from 2016 to 2017 that: Identification photos of suitable quality were collected from 69 of the estimated 81 individual Cuvier's beaked whales encountered in 2016–2017. These represented 48 unique individuals, with eight of these whales sighted on two different days, and another three on three different days during the study period. Nineteen (39 percent) of these whales had been sighted in previous years. Many more whales identified in 2016 had been sighted in a previous year (16/28 individuals, 57 percent), compared to 2017 (5/22 individuals, 23 percent), though both years had sightings of whales seen as early as 2007. There were three adult females photographed in 2016 that had been sighted with calves in previous years, one of which was associated with her second calf. Additionally, a fourth adult female, first identified in 2015 without a calf, was subsequently sighted with a calf. The latter whale was sighted for a third consecutive year in 2017, this time without a calf, along with two other adult females with calves who had not been previously sighted. These sightings of known reproductive females with and without calves over time (n = 45) are providing critically needed calving and weaning rate data for Population Consequences of Disturbance (PcoD) models currently being developed for this species on SOAR.

From August 2010 through October 2019, an estimate of overall abundance of Cuvier's beaked whales at the Navy's instrumented range in San Nicolas Basin was obtained using new dive-counting acoustic methods and an archive of passive acoustic M3R data representing 49,855 hours of data (DiMarzio *et al.,* 2020). Over the 10-year interval from 2010–2019, there was no observed change and perhaps a slight increase in annual Cuvier's beaked whale abundance within San Nicolas Basin (DiMarzio *et al.,* 2020). There does appear to be a repeated dip in population numbers and associated echolocation clicks during the fall centered around August and September (DiMarzio *et al.,* 2020; Moretti, 2017). A similar August and September dip was noted by researchers using stand-alone off-range bottom passive acoustic devices in Southern California (Rice *et al.,* 2017, 2019, 2020; Širović *et al.,* 2016). This dip in abundance documented over 10 years of monitoring may be tied to some as of yet unknown population dynamic or oceanographic and prey availability dynamic. It is unknown scientifically if this represents a movement to different areas by parts of the population, or a change in behavioral states without movement (*i.e.,* breeding versus foraging). Navy training and testing events are spatially and temporally spread out across the SOCAL portion of the HSTT Study Area. In some years events occur in the fall, yet in other years events do not. Yet, the same dip has consistently been observed lending further evidence this is likely a population biological function.

Comment 55: In a comment on the 2018 HSTT proposed rule, a Commenter recommended additional mitigation areas in the Santa Catalina Basin. A Commenter commented that there is likely a small, resident population of Cuvier's beaked whales that resides in the Santa Catalina Basin and that this population is subject to regular acoustic disturbance due to the presence of the Shore Bombardment Area (SHOBA) and 3803XX. The population may also be exposed to training activities that

occupy waters between Santa Catalina and San Clemente Islands. Similar to the San Nicolas population, the settlement agreement established a ''refuge'' from sonar and explosives activities in the northern portion of the Santa Catalina Basin. A Commenter recommended that, at a minimum, the Navy should carefully consider implementing the ''refuge'' during the next five-year authorization period and should continue to consider all possible habitat-based management efforts to address impacts on the population.

Response: The water space areas mentioned in the comment as ''(SHOBA)'' off the southern end of San Clemente Island are waters designated as Federal Danger and Safety Zones via formal rulemaking (Danger Zone—33 CFR 334.950 and Safety Zone—33 CFR 165.1141) because they are adjacent to the shore bombardment impact area that is on land at the southern end of San Clemente Island. Waters designated as ''3803XX,'' which are associated with the Wilson Cove anchorages and moorings, where ship calibration tests, sonobuoy lot testing, and special projects take place, are designated as Federal Safety and Restricted Zones via formal rulemaking (Safety Zone—33 CFR 165.1141 and Restricted Zone—33 CFR 334.920).

The comment states a concern that a population of Cuvier's beaked whale is, ''subject to regular acoustic disturbance due to the presence of the Shore Bombardment Area,'' is not correct. The SHOBA is a naval gun impact area located on land at the southern end of San Clemente Island. This area is an instrumented land training range used for a variety of bombardment training and testing activities. The in-water administrative boundary for SHOBA does not delineate the locations where a ship firing at land targets must be located and does not represent where gunfire rounds are targeted. The water area in Santa Catalina Basin is a controlled safety zone in the very unlikely event a round goes over the island and lands in the water. With the modern advent of better precision munitions, computers, and advanced fire control, that probability is very remote. Navy vessels use the waters south of San Clemente Island (SHOBA West and SHOBA East) from which to fire into land targets on southern San Clemente Island (see the 2018 HSTT FEIS/OEIS Figure 2.1–7). Therefore, there would not be any underwater acoustic disturbance to Cuvier's beaked whales located within the Santa Catalina Basin from in-water explosives or ship firing. Further, the *Mitigation Measures* subsection, *Brief Comparison of 2015 Settlement Mitigation and Final HSTT Mitigation in the Rule section,* of the 2018 HSTT final rule explicitly discusses NMFS' consideration of mitigation that was included in the settlement agreement versus what was included in the final rule in the context of the MMPA least practicable adverse impact standard.

Comment 56: In a comment on the 2018 HSTT proposed rule, a Commenter recommended additional mitigation areas for the southernmost edge of the California Current, west of Tanner and Cortes Banks. In light of the importance of the Southernmost edge of the California Current, west of Tanner and Cortes banks, Commenters recommend assessing the designation of the southern offshore waters of the Southern California Bight as a seasonal time-area management area for Cuvier's beaked whales between November and June. The approximate coordinates are 32.75 N., 119.46 W (referenced as Site E). As part of this assessment, the Commenter recommended that the boundaries be refined via expert consideration of acoustic and other relevant information pertaining to beaked whale biology and bathymetric and oceanographic data.

Response: Baumann-Pickering *et al.* (2014a, b, 2015), as the Commenter referenced, did not specify this area as biologically important and the author's data only indicated there have been detections of the Cuvier's beaked whales within this area. Further, the species is widely distributed within Southern California and across the Pacific with almost all suitable deep water habitat greater than 800 m in Southern California conceivably containing Cuvier's beaked whales. Only limited population vital rates exist for beaked whales, covering numbers of animals, populations vs. subpopulations determination, and residency time for individual animals (Schorr *et al.,* 2017, 2018). The science of passive acoustic monitoring is positioned to answer some questions on occurrence and seasonality of beaked whales, but cannot as of yet address all fundamental population parameters including individual residency time.

Furthermore, while passive acoustic monitoring within Southern California has been ongoing for 28 years, with many sites funded by the Navy, not all sites have been consecutively monitored for each year. All of the single bottom-mounted passive acoustic devices used for the analysis by Baumann-Pickering *et al.* (2014a, b, 2015), and used in the comment to support its argument, are not continuous and have various periodicities from which data have been collected. Specifically, devices have been deployed and removed from various locations with some sites having multiple years of data, and others significantly less, with perhaps just a few months out of a year. For instance, Site E, located west of Tanner and Cortes Banks and used by the Commenter to justify restrictions in this area, was only monitored for 322 days from September 2006 through July 2009 (obtaining slightly less than a full year's worth of data).

Site E was also used again for another 63 days from Dec 2010 through February 2011. During this second monitoring period at Site E, Gassman *et al.* (2015) reported detection of only three Cuvier's beaked whales over six separate encounters with time intervals of 10–33 minutes. As sources of data associated with a single monitoring point, the two monitoring episodes conducted at Site E may not be indicative of Cuvier's beaked whale presence at other locations within Southern California, which lack comparable monitoring devices. Nor would they be indicative of overall importance or lack of importance of the area west of Tanner and Cortes Banks. Further, more recent acoustic sampling of bathymetrically featureless areas off Southern California with drifting hydrophones conducted by NMFS, detected many beaked whales over abyssal plains and not associated with slope or seamount features. This counters a common misperception that beaked whales are primarily found over slope waters, in deep basins, or over seamounts (Griffins and Barlow, 2016).

Most importantly, older passive acoustic data prior to 2009 may not be indicative of current or future occurrence of beaked whales, especially in terms of potential impact of climate change on species distributions within Southern California. To summarize, these limited periods of monitoring (322 days in a three-year period prior to 2010 and 63 days in 2011) may or may not be reflective of current beaked whale distributions within Southern California and into the future. Furthermore, passive acoustic-only detection of beaked whales, without additional population parameters, can only determine relative occurrence, which could be highly variable over sub-regions and through time.

While Cuvier's beaked whales have been detected west of Tanner and Cortes Banks, as noted above this species is also detected in most all Southern California locations greater than 800 m in depth. Furthermore, the Navy has been training and testing in and around Tanner and Cortes Banks with the same

basic systems for over 40 years, with no evidence of any adverse impacts having occurred. Further, there are no indications that Navy training and testing in the SOCAL portion of the HSTT Study Area has had any adverse impacts on populations of beaked whales in Southern California. In particular, a reoccurring population of Cuvier's beaked whales co-exists within San Nicolas Basin to the east, an area with significantly more in-water sonar use than west of Tanner and Cortes Banks.

To gain further knowledge on the presence of beaked whales in Southern California, the Navy continues to fund additional passive acoustic field monitoring, as well as research advancements for density derivation from passive acoustic data. For the five-year period from 2013 to 2019, U.S. Pacific Fleet on behalf of the U.S. Navy funded $18 million in marine species monitoring within Hawaii and Southern California. Specifically, in terms of beaked whales, the Navy has been funding beaked whale population dynamics, tagging, and passive acoustic studies within the HSTT Study Area since 2007 (DiMarzio *et al.,* 2018, 2019, 2020; Moretti, 2017; Rice *et al.,* 2017, 2018, 2019, 2020; Schorr *et al.,* 2017, 2018, 2019, 2020; Širović, *et al.,* 2017). Variations of these efforts are planned to continue through the duration of the seven-year rule using a variety of passive acoustic, visual, tagging, photo ID, and genetics research tools. This Navy effort is in addition and complementary to any planned NMFS efforts for beaked whales and other marine mammals. For instance, the Navy co-funded with NMFS and the Bureau of Ocean Energy Management a summer-fall 2018 visual and passive acoustic survey along the U.S. West Coast and off Baja Mexico (Henry *et al.* in press). New passive detection technologies focusing on beaked whales were deployed during these surveys (similar to Griffiths and Barlow, 2016). The Navy continues SOCAL beaked whale occurrence and impact studies with additional effort anticipated through 2020.

Analysis of the southernmost edge of the California Current, west of Tanner-Cortes Bank and the presence of Cuvier's beaked whales was addressed in Appendix K (Geographic Mitigation Assessment), Section K.7.2.4 (Southernmost Edge of California Current, West of Tanner-Cortes Bank), and Section K.7.2.6 (Cuvier's Beaked Whale Habitat Areas Mitigation Assessment) of the 2018 HSTT FEIS/OEIS, which NMFS used to support its mitigation analysis described in this final rule. Also see Chapter 3, Section 3.7.2.3.24 (Cuvier's Beaked Whale (*Ziphius cavirostris*)) of the 2018 HSTT FEIS/OEIS for additional information regarding this species.

As noted in Appendix K (Geographic Mitigation Assessment), the waters west of Tanner and Cortes Banks are also critical to the Navy's training and testing activities; therefore, it is not practicable to preclude activities within that water space in the SOCAL portion of the HSTT Study Area. Reasonable mitigation measures, as discussed in Appendix K (Geographic Mitigation Assessment), would limit the impact of training and testing on marine mammals, and especially beaked whales, in this area. In addition, with new deployments of HARP buoys from 2019–2021, the Navy has expanded passive acoustic monitoring for beaked whales to include new areas west of Tanner Bank and areas off Baja Mexico.

Given that there is no evidence that Navy training and testing activities are having significant impacts to populations of beaked whales anywhere in the SOCAL portion of the HSTT Study Area, the uncertainty of current use by Cuvier's beaked whales of the area west of Tanner and Cortes Banks, the fact that general occurrence of beaked whales in Southern California may not necessarily equate to factors typically associated with biologically important areas, and consideration of the importance of Navy training and testing activities in the areas around Tanner and Cortes Banks discussed in Appendix K (Geographic Mitigation Assessment) of the 2018 HSTT FEIS/OEIS, additional geographic mitigation specifically for the area west of Tanner and Cortes Banks is not warranted.

As noted in Appendix K (Geographic Mitigation Assessment) and Chapter 5 (Mitigation), Section 5.3 (Procedural Mitigation to be Implemented) of the 2018 HSTT FEIS/OEIS, the Navy will continue to implement procedural mitigation measures throughout the HSTT Study Area.

Comment 57: In a comment on the 2018 HSTT proposed rule, a Commenter stated that the same long-term passive acoustic study of the Southern California Bight as discussed for Cuvier's beaked whales above in Comment 56 also suggests that southern-central waters represent biologically important habitat for Perrin's beaked whale. The Commenter recommended that the Northern Catalina Basin and the waters southeast of Santa Catalina Island (approximate coordinates of 33.28 N, –118.25 W), and the San Clemente Basin (approximate coordinates of 32.52 N, –118.32 W), both based on location of HARP deployments (referenced as sites ''A'' and ''S''), be considered as management areas for Perrin's beaked whales. The Commenter recommended that the boundaries of any restrictions be established via expert consideration.

Response: All of the single bottom-mounted passive acoustic devices used for the analysis by Baumann-Pickering *et al.* (2014b) and used by the Commenter to support their argument are not continuous and have various periodicities for which data have been collected. As single point sources of data, these passive acoustic devices may not be indicative of Perrin's beaked whale presence at other locations within Southern California without comparable devices. Nor would older data prior to 2009 be indicative of current or future occurrence especially in terms of potential impact of climate change on species distributions.

Navy-funded passive acoustic monitoring within the SOCAL portion of the HSTT Study Area has been ongoing for the past 21 years, but not all areas are monitored continuously, and devices have been deployed and removed from various locations. Santa Catalina Basin was only monitored from August 2005 to July 2009. Santa Catalina Basin has not been monitored under Navy funding since 2009 because other areas in Southern California were prioritized for passive acoustic device placement by the researchers. For San Clemente Island, the single monitoring site ''S'' used in Baumann-Pickering *et al.* (2014b) and cited as the source of the comment's claim for San Clemente Basin was only deployed for a limited time of approximately 1.5 years, resulting in 409 days of data (September 2009–May 2011). For both sites combined, only 41 hours of BW43 signal types were detected over a cumulative approximately five-and-a-half years of monitoring. The 41 hours of BW43 detections therefore only represents a small fraction of overall recording time (less than 1 percent).

The beaked whale signal type detected called BW43 has been suggested as coming from Perrin's beaked whales (Baumann-Pickering *et al.,* 2014b), but not yet conclusively and scientifically confirmed.

A different Navy-funded single site south of San Clemente Island within the San Clemente Basin has had a passive acoustic device in place from July 2014 through current. Širović *et al.* (2016) and Rice *et al.* (2017) contain the most current results from San Clemente Basin site ''N.'' While Širović *et al.* (2016) and Rice *et al.* (2017) do report periodic passive acoustic detections of

Mesoplodon beaked whales thought to be Perrin's beaked whale in San Clemente Basin, the overall detection rate, periodicity, and occurrence has not been high. Between May 2015 and June 2016, there were only seven weeks in which potential Perrin's beaked whale echolocation clicks were detected, with each week having less than 0.14 hours/week of detections. Acoustic sampling of bathymetrically featureless areas off Southern California with drifting hydrophones by NMFS detected many beaked whales over abyssal plains and not always associated with slope or seamount features, which counters a common misperception that beaked whales are primarily found over slope waters, in deep basins, or over seamounts (Griffins and Barlow, 2016). One of these devices was deployed within the SOCAL portion of the HSTT Study Area. In addition, analysis of NMFS visual survey data from 2014, the most recent year available, showed an increase in *Mesoplodon* beaked whales along the entire U.S. West Coast, which the authors attributed to an influx of tropical species of *Mesoplodon* during the unusually warm water condition that year (Barlow, 2016; Moore and Barlow, 2017). Perrin's beaked whale, part of the *Mesoplodon* guild, could be part of these sightings. In summary, San Clemente Basin and Santa Catalina Basin with similar low passive acoustic detection rates are likely to be part of Perrin beaked whale's general distribution along the U.S. West Coast and in particular Southern California and Baja Mexico. This distribution is likely to be wide ranging for Perrin's beaked whales as a species and highly correlated to annual oceanographic conditions. Santa Catalina and San Clemente basins do have infrequent suspected Perrin's beaked whale passive acoustic detections from a limited number of devices, but these areas may not specifically represent unique high occurrence locations warranting geographic protection beyond existing Navy protective measures. Current funded Navy passive acoustic monitoring for beaked whales continues to report limited BW43 detections (Rice *et al.* 2017, 2018, 2019, 2020).

The Navy has been training and testing in and around the Northern Catalina Basin and waters southeast of Santa Catalina Island with the same systems for over 40 years, and there is no evidence of any adverse impacts having occurred and no indications that Navy training and testing has had any adverse impacts on populations of beaked whales in Southern California. The main source of anthropogenic noise in the Catalina Basin and waters south of San Clemente Island are associated with commercial vessel traffic concentrated in the northbound and southbound lanes of the San Pedro Channel that runs next to Santa Catalina Island and leads to and from the ports of Los Angeles/Long Beach and other commercial traffic from San Diego and ports to the north and south of Southern California. These waters in and around Northern Catalina Basin and waters southeast of Santa Catalina Island are critical to the Navy's training and testing activities, and so it is not practicable to limit or reduce access or preclude activities within that water space in the SOCAL portion of the HSTT Study Area.

NMFS and the Navy considered the Santa Catalina Basin area and Perrin's beaked whales, as described in Appendix K (Geographic Mitigation Assessment), Section K.7.2.3 (Catalina Basin) and K.7.2.7 (Northern Catalina Basin and the San Clemente Basin) of the 2018 HSTT FEIS/OEIS. Also see Appendix K (Geographic Mitigation Assessment), Section K.7.2.7.2 (Northern Catalina Basin and Waters Southeast of Catalina Island Perrin's Beaked Whale Habitat Mitigation Considerations) of the 2018 HSTT FEIS/OEIS for additional information regarding this species. Additional limitations as discussed in Appendix K (Geographic Mitigation Assessment) would limit training and impact readiness. Given that there is no evidence of impacts to the population of beaked whales in the area, and low potential occurrence of Perrin's beaked whales in the Southern California portion of the HSTT Study Area, geographic mitigation would not effectively balance a reduction of biological impacts with an acceptable level of impact on military readiness activities and, as described in the *Mitigation Measures* section of this final rule, NMFS has included the mitigation requirements necessary to achieve the least practicable adverse impact on the affected species or stocks and their habitat. As noted in Appendix K (Geographic Mitigation Assessment) and Chapter 5, Section 5.3 (Procedural Mitigation to be Implemented) of the 2018 HSTT FEIS/OEIS, the Navy will continue to implement procedural mitigation measures throughout the HSTT Study Area.

Comment 58: In a comment on the 2018 HSTT proposed rule, Commenters recommended additional mitigation areas for important fin whale habitat off Southern California. The Commenters recommended that the waters between the 200 m and 1,000 m isobaths be assessed for time-area management so that, at minimum, ship strike awareness measures for fin whales can be implemented during the months of November through February, when the whales aggregate in the area.

Response: As described and detailed in the 2018 HSTT FEIS/OEIS, the Navy implements a number of ship-strike risk reduction measures for all vessels, in all locations and seasons, and for all marine mammal species. New research by Širović *et al.* (2017) supports a hypothesis that between the Gulf of California and Southern California, there could be up to four distinct sub-populations based on fin whale call types, including a Southern California resident population. There is also evidence that there can be both sub-population shifts and overlap within Southern California (Širović *et al.,* 2017). Scales *et al.* (2017) also postulated two Southern California sub-populations of fin whales based on satellite tagging and habitat modeling. Scales *et al.* (2017) stated that some fin whales may not follow the typical baleen whale migration paradigm, with some individuals found in both warm, shallow nearshore waters less than 500 m, and deeper cool waters over complex seafloor topographies. Collectively, the author's spatial habitat models with highest predicted occurrence for fin whales cover the entire core training and testing portion of the SOCAL portion of the HSTT Study Area, not just areas between 200 and 1,000 m. Results from Navy-funded long-term satellite tagging of fin whales in Southern and Central California still shows some individual fin whales engage in wide-ranging movements along the U.S. West Coast, as well as large daily movements well within subareas (Mate *et al.,* 2017; Schorr *et al.,* 2020). In support of further refining the science on Southern California fin whales, Falcone and Schorr (2014) examined fin whale movements through photo ID and short-to-medium term (days-to-several weeks) satellite tag tracking under funding from the Navy. The authors conducted small boat surveys from June 2010 through January 2014, approximately three-and-a-half years. Of interest in terms of the comment and the 200–1,000 m isobaths occurrence, more fin whale tag locations were reported off the Palos Verdes Peninsula and off of the Los Angeles/Long Beach commercial shipping ports in fall, both areas north of and outside of the Navy's SOCAL Range Complex. Compared to the above areas, there were not as many tag locations in the similar isobaths region off San Diego associated

with the Navy range area. Falcone and Schorr (2014) did document an apparent inshore-offshore distribution between Winter-Spring and Summer-Fall. Given the apparent resident nature of some fin whales in Southern California as discussed in Falcone and Schorr (2014), Scales *et al.* (2017), and Širović *et al.* (2017), it remains uncertain if the inshore-offshore seasonal pattern as well as sub-population occurrence will persist into the future, or if fin whales will change distribution based on oceanographic impacts on available prey (*e.g.* El Nino, climate change, *etc.*). The efforts from Falcone and Schorr on fin whales began in 2010, and Navy monitoring funding to further refine fin whale population structure and occurrence within Southern California is planned to continue for the duration of this rule.

The data from the various single bottom-mounted passive acoustic devices used in the analysis to support this comment are not continuous and have various periodicities for which data have been collected. Many of these devices are purposely placed in 200–1,000 m of water. Given these are point sources of data, they may or may not be indicative of fin whale calling or presence at other locations within Southern California without devices. Passive acoustic analysis is only useful for those individuals that are calling and may not indicate total population occurrence. Low-frequency fin whale calls by their very nature have relatively long underwater propagation ranges so detections at a single device could account for individuals 10–50 miles away if not further, depending on local propagation conditions. This would mean calling whales are not in the 200–1,000 m area. Širović *et al.* (2015) acknowledge in discussing their data biases, that their use of ''call index'' may best indicate a period of peak calling. But fin whales produce multiple call types depending on behavioral state. Based on technology limitations, some fin whale call types were not included in Širović *et al.* (2015). The following are factors supporting NMFS' determination that ship speed reduction is specifically not warranted in this area.

1. The study cited by a Commenter (Širović *et al.,* 2015) and used as the basis for ''Figure 3'' concerns trends seen within the Southern California Bight, not exclusively the SOCAL Range Complex;

2. The research used as the basis for Figure 3 was funded by the Navy to develop baseline information for the areas where Navy trains and tests and was by no means designed to or otherwise intended as a representative sample of all waters off California or the entire habitat of the fin whale population in the area;

3. It is not correct to assume detected vocalizations (a ''call index'') reported in Širović *et al.* (2015) for fin whales equates with where fin whales are aggregated in the Southern California Bight. For example, the acoustic monitoring data did not pick up or otherwise correspond to the observed seasonal distribution shift of fin whales indicated by visual survey data covering the same time periods (Campbell *et al.,* 2015; Douglas *et al.,* 2014);

4. Širović *et al.* (2015) make no such claim of aggregations during the winter months but instead compare call index rates and state that the purpose for the paper was to demonstrate that passive acoustics can be a powerful tool to monitor population trends, not relative abundances;

5. There is no science to support the contention that fin whales are ''at particular risk of ship-strike on the naval range.'' Two fin whales were struck by the Navy in 2009 in the SOCAL portion of the HSTT Study Area as Navy noted in Appendix K (Geographic Mitigation Assessment), but since that time there have been no fin whales struck or any species of whales struck despite a documented increase in the fin whale population inhabiting the area (Barlow, 2016; Moore and Barlow, 2011; Smultea and Jefferson, 2014). Furthermore, one of those vessel strikes occurred at the end of the recommended mitigation timeframe (February) and the other well outside the time period (May), so the proposed mitigation would only have been marginally effective, if at all. Neither of these Navy fin whale strike locations were close to shore (both >50–60 Nmi from shore), or associated with coastal shipping lanes. Based on an analysis of Navy ship traffic in the HSTT Study Area between 2011 and 2015, median speed of all Navy vessels within Southern California is typically already low, with median speeds between 5 and 12 kn (CNA, 2016). This includes areas within and outside of 200–1,000 m within Southern California, with slowest speeds closer to the coast; and

6. As presented in the 2018 HSTT FEIS/OEIS, fin whales are present off all the waters of Southern California year-round (Širović *et al.,* 2015, 2017). Using available quantitative density and distribution mapping, the best available science, and expert elicitation, definitive areas of importance for fin whales could not be determined by a panel of scientists specifically attempting to do so (Calambokidis *et al.,* 2015).

Navy vessels already operate at slower speeds given a particular transit or activity need. This also includes a provision to avoid large whales by 500 yd, so long as safety of navigation and safety of operations is maintained. Previously, the Navy commissioned a vessel density and speed report for HSTT (CNA, 2016). Based on an analysis of Navy ship traffic in the HSTT Study Area between 2011 and 2015, median speed of all Navy vessels within Southern California is typically already low, with median speeds between 5 and 12 kn (CNA, 2016). The slowest speeds occurred closer to the coast and islands.

Therefore, NMFS has determined that vessel speed restrictions within 200–1,000 m are not warranted given the wide range of fin whale movements along the U.S. West Coast including areas within and outside of 200–1,000 m contours, sometimes large-scale daily movements within regional areas as documented from Navy-funded satellite tagging, the current lack of ship strike risk from Navy vessels in Southern California (as well as throughout the HSTT Study Area) (2010–2019), the lower training and testing ship speeds Navy uses within the HSTT Study Area, and existing Navy mitigation measures including provisions to avoid large whales by 500 yds where safe to do so.

In addition, the Navy agreed to send out seasonal awareness messages of fin, blue, and gray whale occurrence to improve awareness of all vessels operating to the presence of these species in SOCAL from November through May (fin whales), November through March (gray whales), and June through October (blue whales). The Navy will also review WhaleWatch, a program coordinated by NMFS' West Coast Region as an additional information source to inform the drafting of the seasonal awareness message to alert vessels in the area to the possible presence of concentrations of large whales, including fin whales in SOCAL.

Hawaii Areas

Comment 59: In a comment on the 2018 HSTT proposed rule, a Commenter recommended that the Navy consider the following as it plans to conduct activities in the HSTT Study Area. The Commenter notes units of the NPS system that occur near training and testing areas around Hawaii and identifies which may be affected by noise. The Units are: Kaloko-Honokohau National Historical Park (NHP), Pu'uhonua o Honaunau NHP,

Pu'ukolhola Heiau National Historic Site, Kalaupapa NHP, Hawaii Volcanoes NP, Haleakala NP, and the World War II Valor in the Pacific National Monument.

Response: National Parks and National Monuments are addressed in Chapter 6 of the 2018 HSTT FEIS/OEIS. Kalaupapa NHP is discussed in Comment 60 below. No planned activities overlap with Kaloko-Honokohau NHP; therefore, no impacts are expected within the Kaloko-Honokohau NHP. The Pu'uhonua o Honaunau NHP, Haleakala NP, and Pu'ukolhola Heiau National Historic Site are not specifically addressed in Chapter 6 of the 2018 HSTT FEIS/OEIS, but none of these sites appear to contain any marine waters. The Navy's planned activities do not occur on land except in designated training areas on Navy properties (*i.e.,* for amphibious assaults, *etc.*); therefore, there are no activities that overlap with these sites and no impacts are expected. For the Hawaii Volcanoes NP, the Navy's planned activities addressed in the 2018 HSTT FEIS/OEIS do not include aircraft or unmanned aerial systems flights over or near the Hawaii Volcanoes National Park; therefore, no impacts are expected. The World War II Valor in the Pacific Monument is for the USS Arizona, which is a Navy war memorial. No activities occur within the boundary of the site itself, and the monument was not designated to protect marine species. There are training and testing activities that occur within Pearl Harbor as a whole, and impacts to marine mammals in the waters of Pearl Harbor were included in the Navy's proposed activities and therefore analyzed by NMFS in the final rule.

Comment 60: In a comment on the 2018 HSTT proposed rule, a Commenter noted the presence of marine mammal species in the Kalaupapa NHP (on the north shore of Molokai), and is concerned about potential take of protected species that inhabit water out to 1,000 fathoms, and recommended the Navy consider alternate training areas to avoid impacts to these species. Species that occur year-round include the false killer whale, sperm whale, pygmy sperm whale, spinner dolphin, and bottlenose dolphin. Humpback whales are seasonal visitors from November to April. The Hawaiian monk seal pups are within the Kalaupapa NHP during the spring and summer.

Response: Part of the Kalaupapa NHP (northern portion) is protected by the measures employed inside the 4-Islands Region Mitigation Area such as year-round prohibition on explosives and no use of MF1 surface ship hull mounted mid-frequency active sonar from November 15 through April 15.

We note, however, that the majority of the Kalaupapa NHP is not in the 4-Islands Region Mitigation Area as it is mainly land-based, but just outside it. The Kalaupapa NHP was designated to protect the two historic leper colonies on the property and was not designated with the purpose of protecting marine species. The boundaries of the Kalaupapa NHP extend a quarter mile offshore. The Navy does propose conducting activities associated with the planned activities in the boundary of the Kalaupapa NHP. There would be no effect to Hawaiian monk seal pupping on NHP land as the Navy does not have any planned activities in the boundary of the Kalaupapa NHP, especially on land. The Navy's planned activities do not include any land-based activities except for a few activities which are conducted on designated Navy property (*i.e.,* amphibious assaults on Silver Strand, *etc.*). Further, as the sea space adjacent to the Kalaupapa NHP is not an established training or testing area, it is unlikely naval activity would occur in this area.

Comment 61: In a comment on the 2018 HSTT proposed rule, a Commenter recommended expanding the Hawaii Island Mitigation Area westward to protect resident Cuvier's beaked whales and rough-toothed dolphins. The boundaries of the Hawaii Island Mitigation Area should be expanded westward to remain consistent with the boundaries of the BIAs defined in Baird *et al.* (2015), which informed the boundaries of Conservation Council Settlement Areas 1–C and 1–D. This expansion will cover habitat for Cuvier's beaked whales and toothed dolphins that are resident around the Big Island.

Response: Please see the *Mitigation Measures, Brief Comparison of 2015 Settlement Mitigation and Final HSTT Mitigation in the Rule* section of the 2018 HSTT final rule, which discusses NMFS analysis and decisions in regard to required mitigation areas with explicit consideration of areas that were previously required by the settlement agreement. Analyses of the marine mammal species mentioned in the comment and considered within the Hawaii Island Mitigation Area are discussed in Appendix K (Geographic Mitigation Assessment), Section K.3 (Biologically Important Areas within the Hawaii Range Complex Portion of the HSTT Study Area) and Sections K.5.1 (Settlement Areas Within the Hawaii Portion of the HSTT Study Area) through K.5.4 (Proposed Mitigation Areas that Overlap the Hawaii Portion of the HSTT Settlement Agreement Areas) of the 2018 HSTT FEIS/OEIS. NMFS concurs with the analysis included in this document and has used it to support our findings in this rule. Additional information on the marine mammals mentioned in the comment is also provided in the species-specific sub-sections in Chapter 3, Section 3.7.2 (Affected Environment) of the 2018 HSTT FEIS/OEIS. Based on these analyses, the Navy will implement additional mitigation within the Hawaii Island Mitigation Area (year-round), as described in the *Mitigation Measures* section in the 2018 HSTT final rule and this rule, to further avoid or reduce impacts on marine mammals from acoustic and explosive stressors from the planned activities.

The mitigation requirement of prohibiting the use of explosives year-round during training and testing across the entire Hawaii Island Mitigation Area satisfies the previous mitigation requirement of a prohibition on the use of in-water explosives for training and testing activities of the Settlement Agreement for Areas 1–A, 1–C, and 1–D, and further extends that requirement to the Alenuihāhā Channel (Area 1–B). The Hawaii Island Mitigation Area still includes 100 percent of Settlement Areas 1–C and 1–D and includes a large majority of the BIAs for Cuvier's beaked whale (Hawaii Island BIA) and rough-toothed Dolphins (Hawaii Island BIA) (the areas in question by this comment). Particularly, it covers 93.30 percent of the Cuvier's beaked whale BIA westward of Hawaii Island and 83.58 percent of rough-toothed dolphins Hawaii Island BIA westward of Hawaii Island.

Only the northern portion of the Cuvier's beaked whale BIA in Alenuihaha Channel and a smaller offshore portion of the BIA west of Hawaii are not covered by mitigations included in the Hawaii Island Mitigation Area on the west and east of Hawaii Island. The BIA is based on the known range of the island-associated population, and the authors suggest that ''the range of individuals from this population is likely to increase as additional satellite-tag data become available'' (Baird *et al.,* 2015). Cuvier's beaked whales are not expected to be displaced from their habitat due to training and testing activities further offshore in these small areas of the biologically important area, given that the BIA covers 23,583 km^2, is unbroken and continuous surrounding the island, and the BIA likely underrepresents their range. The small portion of the BIA that does not overlap the Hawaii Island Mitigation Area is offshore, and according to the most recent stock

assessment approximately 95 percent of all sighting locations were within 45 km of shore. Additionally, consequences to individuals or populations are not unknown. No PTS is estimated or authorized. A small number of TTS and Level B behavioral harassment takes for Cuvier's beaked whales are estimated across the entire Hawaii portion of the HSTT Study Area due to acoustic stressors. Most of the TTS and Level B behavioral harassment takes for Cuvier's beaked whales are associated with testing in the Hawaii Temporary Operating Area, impacting the pelagic population (see Figure 3.7–36 of the 2018 HSTT FEIS/OEIS). It is extremely unlikely that any modeled takes would be of individuals in this small portion of the BIA that extends outside the Hawaii Island Mitigation Area.

Long-term and relatively comprehensive research has found no evidence of any apparent effects while documenting the continued existence of multiple small and resident populations of various species as well as long-term residency by individual beaked whales spanning the length of the current studies that exceed a decade. Further, the Navy has considered research showing that in specific contexts (such as associated with urban noise, commercial vessel traffic, eco-tourism, or whale watching, Chapter 3, Section 3.7.2.1.5.2 (Commercial Industries)) of the 2018 HSTT FEIS/OEIS that chronic repeated displacement and foraging disruption of populations with residency or high site fidelity can result in population-level effects. As also detailed in the 2018 HSTT FEIS/OEIS, however, the Navy training and testing activities do not equate with the types of disturbance in this body of research, nor do they rise to the level of chronic disturbance where such effects have been demonstrated because Navy activities are typically sporadic and dispersed. There is no evidence to suggest there have been any population-level effects in the waters around Oahu, Kauai, and Niihau or anywhere in the HSTT Study Area. In the waters around Oahu, Kauai, and Niihau, documented long-term residency by individuals and the existence of multiple small and resident populations are precisely where Navy training and testing have been occurring for decades, strongly suggesting a lack of significant impact to those individuals and populations from the continuation of Navy training and testing.

Mark-recapture estimates derived from photographs of rough-toothed dolphins taken between 2003 and 2006 resulted in a small and resident population estimate of 198 around the island of Hawaii (Baird *et al.,* 2008), but those surveys were conducted primarily with 40 km of shore and may underestimate the population. Data do suggest high site fidelity and low population size for the island-associated population. There are no tagging data to provide information about the range of the island-associated population; the BIA is based on sighting locations and encompasses 7,175 km^2. Generally, this species is typically found close to shore around oceanic islands. Only approximately half of the BIA offshore is not covered by the Hawaii Island Mitigation Area, where the BIA overlaps with special use airspace. Consequences to individuals or populations are not unknown. No PTS is estimated or authorized. Some TTS and Level B behavioral harassment takes due to acoustic stressors are authorized for this species across the entire HSTT Study Area (see Figure 3.7–66 of the 2018 HSTT FEIS/OEIS). Significant impacts on rough-toothed dolphin natural behaviors or abandonment due to training with sonar and other transducers are unlikely to occur within the small and resident population area. A few minor to moderate TTS or Level B behavioral harassment takes to an individual over the course of a year are unlikely to have any significant costs or long-term consequences for that individual, and nothing in the planned activities is expected to cause a ''catastrophic event.'' The Navy operating areas west of Hawaii Island are used commonly for larger events for a variety of reasons described further in Section K.3 (Appendix K of the 2018 HSTT FEIS/OEIS, Biologically Important Areas Within the Hawaiian Range Complex Portion of the HSTT Study Area) (*e.g.,* the relatively large group of seamounts in the open ocean offers challenging bathymetry in the open ocean far away from civilian vessel traffic and air lanes where ships, submarines, and aircraft are completely free to maneuver) and sonar may be used by a variety of platforms. Enlarging the Hawaii Island Mitigation Area is not anticipated to realistically reduce adverse impacts. Expanding the Hawaii Island Mitigation Area has a limited likelihood of further reducing impacts on marine mammal species or stocks and their habitat, while these open ocean operating areas are important for training and testing and, in consideration of these factors (and the broader least practicable adverse impact considerations discussed in the introduction), NMFS has determined that requiring this additional mitigation is not appropriate.

Comment 62: In a comment on the 2018 HSTT proposed rule, a Commenter recommended limiting MTEs to reduce cumulative exposure in the Hawaii Island Mitigation Area.

Response: Prohibiting MTEs outright or spatially separating them within the Hawaii Island Mitigation Area was proposed as additional mitigation to ensure that ''marine mammal populations with highly discrete site fidelity . . . are not exposed to MTEs within a single year.'' The goal of geographic mitigation is not to be an absolute, outright barrier and stop exposing animals to exercises per se; it is to reduce adverse impacts to the maximum extent practicable. Impacts associated with MTEs, including cumulative impacts, are addressed in the 2018 HSTT proposed and final rules, as well as in Chapters 3 (Affected Environment and Environmental Consequences) and Chapter 4 (Cumulative Impacts) of the 2018 HSTT FEIS/OEIS. The Navy's quantitative analysis using the best available science has determined that training and testing activities will not have population-level impacts on any species, and the operational and time/area mitigation measures required by the MMPA rule further reduce impacts on marine mammals and their habitat. As determined in Chapter 3, Section 3.7.4 (Summary of Potential Impacts on Marine Mammals) of the 2018 HSTT FEIS/OEIS, it is not anticipated that the planned activities will result in significant impacts to marine mammals. To date, the findings from research and monitoring and the regulatory conclusions from previous analyses by NMFS are that the majority of impacts from Navy training and testing activities are not expected to have deleterious impacts on the fitness of any individuals or long-term consequences to populations of marine mammals the Commenter references.

MTEs cannot be further limited in space or time within the Hawaii Island Mitigation Area, given that those activities are specifically located to leverage particular features like the Alenuihaha Channel and the approaches to Kawaihae Harbor. This recommendation is not, therefore, appropriate in consideration of NMFS' least practicable adverse impact standard.

To limit impacts, the Navy will not conduct more than 300 hrs of MF1 surface ship hull-mounted MFAS or 20 hrs of MF4 dipping sonar, or use explosives that could potentially result in takes of marine mammals during training and testing in the Hawaii Island Mitigation Area.

Comment 63: In a comment on the 2018 HSTT proposed rule, a Commenter recommended prohibiting or restricting other sources of MFAS in the Hawaii Island Mitigation Area including prohibiting the use of helicopter-deployed MFAS in the Hawaii Island Mitigation Area.

Response: The Navy is already limiting other sources of MFAS. Between the application and the proposed rule, the Navy added new mitigation that includes a limit to the annual use of helicopter dipping sonar in the Hawaii Island Mitigation Area. Specifically, the Navy will not conduct more than 20 hrs of MF4 dipping sonar that could potentially result in takes of marine mammals during training and testing. Helicopters deploy MFAS from a hover position in bouts generally lasting under 20 minutes, moving rapidly between sequential deployment and their duration of use and source level (217 dB) are generally well below those of hull-mounted frequency sonar (235 dB). All locations within the HSTT Study Area have been used for Navy training and testing for decades. There has been no scientific evidence to indicate the Navy's activities are having adverse effects on populations of marine mammals, many of which continue to increase in number or are maintaining populations based on what regional conditions can support. Navy research and monitoring funding continues within the HSTT Study Area under current NMFS MMPA and ESA permits, and is planned through the duration of any future permits. Given the lack of effects to marine mammal populations in the HSTT Study Area from larger, more powerful surface ship sonars, the effects from intermittent, less frequent use of lower powered MF dipping sonar or other MFAS would also not significantly affect small and resident populations.

Comment 64: In a comment on the 2018 HSTT proposed rule, a Commenter recommended extending the 4-Islands Region Mitigation Area westward to encompass the Humpback Whale Special Reporting Area in Kaiwi Channel. Additionally, they argue that the 4-Island Region Mitigation Area is inadequate to protect endangered Main Hawaiian Island insular false killer whales as the Main Hawaiian Island insular false killer whale is highly range-restricted to certain high-use areas, one of which includes the ESA critical habitat and the BIA north of Maui and Molokai (''False killer whale Hawaii Island to Niihau'' BIA).

Response: In regard to extending the 4-Islands Region Mitigation Area westward to encompass the Humpback Whale Special Reporting Area in Kaiwi Channel, reducing or limiting Navy training and testing in the Southeast Oahu area is not likely to be effective in reducing or avoiding impacts given that the Navy does not routinely conduct activities that involve sonar or other transducers or explosives in this portion of the Humpback Whale Reproduction Area (included in the Humpback Whale Special Reporting Area in Kaiwi Channel). The portion of the special reporting area that extends into Kaiwi Channel over Penguin Bank (equivalent to settlement area 2A) is generally not a higher use area for Main Hawaiian Island insular false killer whales and does not overlap significantly with the BIA. As presented in Chapter 3 of the 2018 HSTT FEIS/OEIS (Affected Environment and Environmental Consequences), which supports NMFS' analysis for the rule, the Navy's quantitative analysis indicates that significant impacts on false killer whale natural behaviors or abandonment due to training with sonar and other transducers are unlikely to occur within the entire small and resident population area, let alone in the small sub-portion of the biologically important area that overlaps the proposed extension. Additionally, most of the modeled takes are for the Hawaii pelagic population of false killer whale (see Figure 3.7–46 and Table 3.7–31 in the 2018 HSTT FEIS/OEIS). Also, as described in more detail in Appendix K of the 2018 HSTT FEIS/OEIS, due to training and testing needs, the expansion of this area is considered impracticable.

Comment 65: In a comment on the 2018 HSTT proposed rule, a Commenter recommended extending the seasonal restrictions to year-round restrictions in the 4-Islands Region Mitigation Area and proposed extending the Mitigation Area into the Kaiwi Channel Humpback Whale Special Reporting Area.

Response: The proposed extension of the 4-Islands Region Mitigation Area into Kaiwi Channel was addressed above in Comment 64. The additional expansion requested in the comment is not expected to reduce adverse impacts to an extent that would outweigh the negative impacts if unit commanders were unable to conduct unit-level training and testing, especially as they pass over Penguin Bank while transiting between Pearl Harbor and other parts of the Study Area. Prohibiting mid-frequency active sonar would preclude the Submarine Command Course from meeting its objectives and leveraging the important and unique characteristics of the 4-Islands Region, as described in multiple sections of Appendix K of the 2018 HSTT FEIS/OEIS (*e.g.,* Section K.3.1.6 (4-Islands Region and Penguin Bank Humpback Whale Reproduction Area, and Settlement Area 2–A and 2–B)), which NMFS concurs with and used to support the mitigation analysis for the rule. Penguin Bank is particularly used for shallow water submarine testing and anti-submarine warfare training because of its large expanse of shallow bathymetry. The conditions in Penguin Bank offer ideal bathymetric and oceanographic conditions allowing for realistic training and testing and serve as surrogate environments for active theater locations.

Additionally, this mitigation would further increase reporting requirements. As discussed in Chapter 5 (Mitigation) Section 5.5.2.6 (Increasing Reporting Requirements) of the 2018 HSTT FEIS/OEIS, the Navy developed its reporting requirements in conjunction with NMFS, balancing the usefulness of the information to be collected with the practicability of collecting it. An increase in reporting requirements as a mitigation would draw the event participants' attention away from the complex tactical tasks they are primarily obligated to perform (such as driving a warship), which would adversely impact personnel safety, public health and safety, and the effectiveness of the military readiness activity. Expanding the Mitigation Area and extending the restrictions is not, therefore, appropriate in consideration of NMFS' least practicable adverse impact standard.

Comment 66: In a comment on the 2018 HSTT proposed rule, a Commenter recommended implementing vessel speed restrictions within the 4-Islands Region Mitigation Area.

Response: This mitigation measure was proposed to address impacts on humpback whales due to both ship noise and ship strikes. As described and detailed in the *Mitigation Measures* section of the 2018 HSTT final rule, this rule, and the 2018 HSTT FEIS/OEIS, the Navy already implements a number of ship-strike risk reduction measures for all vessels, in all locations and seasons, and for all marine mammal species. The Navy cannot implement mitigation that restricts vessel speed during training or testing in the HSTT Study Area because it is not practicable. Vessels must be able to maneuver freely as required by their tactics in order for training events to be effective. Imposition of vessel speed restrictions would interfere with the Navy's ability to complete tests that must occur in specific bathymetric and oceanic conditions and at specific speeds. Navy vessel operators must test and train with vessels in such a manner that ensures their ability to operate

vessels as they would in military missions and combat operations (including being able to react to changing tactical situations and evaluate system capabilities). Furthermore, testing of new platforms requires testing at the full range of propulsion capabilities and is required to ensure the delivered platform meets requirements. Based on an analysis of Navy ship traffic in the HSTT Study Area between 2011 and 2015, median speed of all Navy vessels within Hawaii is typically already low, with median speeds between 8–16 kn (CNA, 2016). Speed restrictions in the Cautionary Area (renamed the 4-Islands Region Mitigation Area) are unwarranted given the movement of all social groups throughout the islands outside the Mitigation Area, the current lack of ship strike risk from Navy vessels in Hawaii (2010–2017), the already safe training and testing ship speeds the Navy uses within the HSTT Study Area, and existing Navy mitigation measures, including provisions to avoid large whales by 500 yards where safe to do so. Implementing speed restrictions in the Mitigation Area is not, therefore, appropriate in consideration of NMFS' least practicable adverse impact standard.

Information on the response of baleen whales to vessel noise is presented in Section 3.7.3.1.1.5 (Behavioral Reactions) and Section 3.7.3.1.5 (Impacts from Vessel Noise) of the 2018 HSTT FEIS/OEIS, which supports NMFS analyses. Impacts, if they did occur, would most likely be short-term masking and minor behavioral responses. Therefore, significant impacts on humpback whale reproductive behaviors from vessel noise associated with training activities are not expected. Navy vessels are intentionally designed to be quieter than civilian vessels, and ship speed reductions are not expected to reduce adverse impacts on humpback whales due to vessel noise.

Comment 67: In a comment on the 2018 HSTT proposed rule, a Commenter recommended prohibiting the use of in-water explosives in the 4-Islands Region Mitigation Area.

Response: The Navy has agreed to implement a year-round restriction on the use of in-water explosives that could potentially result in takes of marine mammals during training and testing. Should national security present a requirement to use explosives that could potentially result in the take of marine mammals during training or testing, naval units will obtain permission from the appropriate designated Command authority prior to commencement of the activity. The Navy will provide NMFS with advance notification and include the information (*e.g.,* sonar hours or explosives usage) in its annual activity reports submitted to NMFS.

Comment 68: In a comment on the 2018 HSTT proposed rule, a Commenter recommended prohibiting other sources of MFAS in the 4-Islands Region Mitigation Area.

Response: NMFS fully assessed the mitigation for the 4-Islands Region Mitigation Area (see the *Mitigation Measures* section in the 2018 HSTT final rule). As the Navy has described, this area provides a unique and irreplaceable shallow water training capability for units to practice operations in littoral areas that are both shallow and navigationally constrained (2018 HSTT FEIS/OEIS Appendix K (Geographic Mitigation Assessment), Section K.3.3.1.6). The 4-Islands Region provides an environment for anti-submarine warfare search, tracking and avoidance of opposing anti-submarine warfare forces. The bathymetry provides unique attributes and unmatched opportunity to train in searching for submarines in shallow water. Littoral training allows units to continue to deploy improved sensors or tactics in littoral waters. In the Hawaii portion of the HSTT Study Area specifically, anti-submarine warfare training in shallow water is vitally important to the Navy since diesel submarines typically hide in that extremely noisy and complex marine environment (Arabian Gulf, Strait of Malacca, Sea of Japan, and the Yellow Sea all contain water less than 200 m deep). There is no other area in this portion of the HSTT Study Area with the bathymetry and sound propagation analogous to seas where the Navy conducts real operations that this training could relocate to. The Navy cannot conduct realistic shallow water training exercises without training in and around the 4-Islands Region Mitigation Area. In addition, this area includes unique shallow water training opportunities for unit-level training, including opportunity to practice operations in littoral areas that are both shallow, and navigationally constrained, and in close proximity to deeper open ocean environments. While MFAS is used infrequently in this area, a complete prohibition of all active sonars would impact Navy training readiness in an area identified as important for the Navy based on its unique bathymetry. However, the Navy recognizes the biological importance of this area to humpback whales during the reproductive season and in the 4-Islands Region Mitigation Area the Navy will not use MF1 surface hull-mounted MFAS (the source that results in, by far, the highest numbers of take) from November 15 through April 15 or use explosives in this area at any time of the year. While the Navy has been training and testing in the area with the same basic systems for over 40 years, there is no evidence of any adverse impacts having occurred, and there are multiple lines of evidence demonstrating the small odontocete population high site fidelity to the area.

Comment 69: In a comment on the 2018 HSTT proposed rule, a Commenter recommended prohibiting the use of helicopter-deployed mid-frequency active sonar in the 4-Islands Region Mitigation Area.

Response: The Commenter's request to prohibit ''air-deployed'' MFAS is based on one paper (Falcone *et al.,* 2017), which is a Navy-funded project designed to study the behavioral responses of a single species, Cuvier's beaked whales, to MFAS. The Navy relied upon the best science that was available to develop behavioral response functions for beaked whales and other marine mammals in consultation with NMFS for the 2018 HSTT FEIS/OEIS. 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 2018 HSTT proposed rule was published would fundamentally change the assessment of impacts or conclusions in the 2018 HSTT FEIS/OEIS or in this rulemaking. Nonetheless, the new information and data presented in the new article were thoroughly reviewed by the Navy and will be quantitatively incorporated into future behavioral response functions, as appropriate, when and if other new data that would meaningfully change the functions would necessitate their revision. The new information and data presented in the article was thoroughly reviewed when it became available and further considered in discussions with some of the paper's authors following its first presentation in October 2017 at a recent scientific conference. Many of the variables requiring further analysis for beaked whales and dipping sonar impact assessment are still being researched under continued Navy funding through 2023.

There are no beaked whale biologically important areas in the 4-Islands Region Mitigation Area, and the Mitigation Area is generally shallower than beaked whales' preferred habitat. Behavioral responses of beaked whales from dipping and other sonars cannot be universally applied to other marine mammal species. Research indicates that there are distinct individual

variations as well as strong behavioral state considerations that influence any response or lack of response (Goldbogen *et al.,* 2013; Harris *et al.,* 2017). Therefore, it is expected that other species would have highly variable individual responses ranging from some response to no response to any anthropogenic sound. This variability is accounted for in the Navy's current behavioral response curves described in the 2018 HSTT FEIS/OEIS and supporting technical reports.

Furthermore, the potential effects of dipping sonar have been rigorously accounted for in the Navy's analysis. Parameters such as power level and propagation range for typical dipping sonar use are factored into HSTT acoustic impact analysis along with guild specific criteria and other modeling variables, as detailed in the 2018 HSTT FEIS/OEIS and associated technical reports for criteria and acoustic modeling. Further, due to lower power settings for dipping sonar, potential impact ranges of dipping sonar are significantly lower than surface ship sonars. For example, the HSTT average modeled range to TTS of dipping sonar for a 1-second ping on low-frequency cetacean (*i.e.,* blue whale) is 77 m, and for mid-frequency cetaceans including beaked whales is 22 m (2018 HSTT FEIS/OEIS Table 3.7–7). This range is easily monitored for marine mammals by a hovering helicopter and is accounted for in the Navy's proposed mitigation ranges for dipping sonars (200 yds or 183 m). Limited ping time (*i.e.,* less dipping sonar use as compared to typical surface ship sonar use) and lower power settings therefore would limit the impact from dipping sonar to any marine mammal species.

This is an area of extremely low use for air-deployed MFAS. Prohibiting air-deployed MFAS in the Mitigation Area would not be any more protective to marine mammal populations generally, or the Main Hawaiian Islands insular false killer whale in particular, than currently implemented procedural mitigation measures for air-deployed MFAS and is not, therefore, appropriate in consideration of NMFS' least practicable adverse impact standard.

Comment 70: In a comment on the 2018 HSTT proposed rule, a Commenter recommended prohibiting use of LFAS in the 4-Islands Region Mitigation Area.

Response: The Commenter suggested that ''Baleen whales are vulnerable to the impacts of LFAS, particularly in calving areas where low-amplitude communication calls between mothers and calves can be easily masked.'' As described in Chapter 3, Section 3.7.2.3.1 (Humpback Whale (*Megaptera novaeangliae*), Hawaii DPS) of the 2018 HSTT FEIS/OEIS, the best available science has demonstrated humpback whale population increases and an estimated abundance greater than some pre-whaling estimates. This data does not indicate any population-level impacts from decades of ongoing Navy training and testing in the Hawaiian Islands. The LFAS sources used in the HSTT Study Area are typically low powered (less than 200 dB source level). Restrictions on the use of LFAS would have a significant impact on the testing of current systems and the development of new systems. This would deny research, testing, and development program managers the flexibility to rapidly field or develop necessary systems requiring testing in the area and the ability to conduct these activities in the unique bathymetric environment of the 4-Islands Region.

Comment 71: In a comment on the 2018 HSTT proposed rule, a Commenter recommended additional mitigation areas including critical habitat for the Main Hawaiian Islands insular false killer whale. NMFS issued the Final Rule designating critical habitat under the ESA on July 24, 2018. The Commenter stated that in light of the 2018 listing under the ESA, NMFS must protect this species from the noise and other disturbance resulting from naval activities, including by mitigating impacts within its critical habitat. The Commenter recommended that, at minimum, the Navy establish protective Mitigation Areas in all the BIAs identified for this species by NOAA and that NMFS should revisit and revise its Mitigation Areas and mitigation requirements based on the final critical habitat designation.

Response: Critical habitat includes waters from the 45-m depth contour to the 3,200-m depth contour around the main Hawaiian Islands from Niihau east to Hawaii (82 FR 51186). With regard to the analysis of the identified Biologically Important Areas for the Main Hawaiian Islands insular false killer whales, see Section K.3.3 in the 2018 HSTT FEIS/OEIS (False Killer Whale Small and Resident Population Area: Main Hawaiian Island Insular stock), which NMFS used to support our analysis for the MMPA rule. With regard to the identified threats to the species, see Section 3.7.2.2.7.5 in the 2018 HSTT FEIS/OEIS (Species-Specific Threats) and specifically the documented incidental take by commercial fisheries (Bradford and Forney, 2016; Oleson *et al.,* 2010; Reeves *et al.,* 2009; West, 2016).

The Navy is implementing the Hawaii Island Mitigation Area which encompasses all of the BIA for Main Hawaiian Islands insular false killer whales around that island, and the 4-Islands Region Mitigation Area (which captures approximately 40 percent of the BIAs in the 4-Islands area). As discussed in the *Mitigation Areas in Hawaii* section of the 2018 HSTT final rule, these mitigation areas are expected to significantly reduce impacts to this stock and its habitat. NMFS has determined that the Navy's current training and testing activities are not expected to have fitness consequences for individual Main Hawaiian Islands insular false killer whales and are not likely to reduce the viability of the populations those individual whales represent. Further limitation of activities in the area identified by the commenter would not be practicable and is not included as a measure.

Comment 72: In a comment on the 2018 HSTT proposed rule, Commenters recommended additional mitigation areas for important habitat areas off Oahu, Kauai, and Niihau, providing mitigation measures for select activities during even a limited season within some important habitat areas. The waters off Oahu, Kauai, and Niihau include a number of important habitat areas for a variety of species, including false killer whale critical habitat (see above), five NOAA-identified BIAs off Oahu (false killer whale, humpback whale, pantropical spotted dolphin, bottlenose dolphin, and spinner dolphin) and three BIAs off Kauai and Niihau (humpback whale, spinner dolphin, and bottlenose dolphin) (Baird *et al.,* 2012).

Response: The 2018 HSTT FEIS/OEIS considered the science, the Navy requirements, and the mitigation value of identified habitat areas off Oahu, Kauai, and Niihau as presented in Appendix K (Geographic Mitigation Assessment) Section K.3 (Biologically Important Areas within the Hawaii Range Complex Portion of the HSTT Study Area), which NMFS used to support our analysis for the MMPA rule. This includes the five identified BIAs off Oahu (false killer whale, humpback whale, pantropical spotted dolphin, bottlenose dolphin, and spinner dolphin) and three BIAs off Kauai and Niihau (humpback whale, spinner dolphin, and bottlenose dolphin) as well as a discussion in Appendix K (Geographic Mitigation Assessment), Section K.1.1.5 (Mitigation Areas Currently Implemented) regarding the 4-Islands Region Mitigation Area. See aslo the discussion in Appendix K (Geographic Mitigation Assessment), Section K.2.1.2 (Biological Effectiveness

Assessment) of the 2018 HSTT FEIS/OEIS.

The *Mitigation Areas in Hawaii* section of the 2018 HSTT final rule describes in detail the significant reduction of impacts afforded by the required 4-Islands Region Mitigation Area and Hawaii Island Mitigation Area to the species and stocks cited by the Commenters. Together, these two areas significantly reduce impacts in this important calving and breeding area for Humpback whales—please see the response to Comment 74 for additional details regarding why additional mitigation areas for humpback whales off Oahu, Niihua, or Kauai are not included. Further, the Hawaii Island Mitigation Area overlaps multiple small resident populations (BIAs) of odontocetes that span multiple islands, and this mitigation area overlaps all of the stock's range around the island of Hawaii for false killer whales (Main Hawaiian Island insular stock) and spinner dolphins (Hawaiian Islands stock), and approximately 90 percent of the range around the island of Hawaii for pantropical spotted dolphins (Hawaii stock). Additionally, critical habitat has been designated, pursuant to the ESA, for false killer whales (Main Hawaiian Island insular stock) in waters between 45 and 3,200 m depth around all of the Main Hawaiian Islands, and this mitigation area captures more than 95 percent of this area around the island of Hawaii. The 4-Islands Region Mitigation Area also overlaps multiple small resident populations of marine mammals (BIAs) that span multiple islands, including about 80 percent of the pantropical spotted dolphin (Hawaii stock) area adjacent to these four islands (one of three discrete areas of the BIA), about 40 percent of the portion of the false killer whale's (Main Hawaiian Island insular stock) range that spans an area north of Molokai and Maui (one of the two significantly larger areas that comprise the false killer whale BIA), and a good portion of the BIA for spinner dolphins (Hawaiian Islands stock), which spans the Main Hawaiian Islands in one large continuous area. As noted above, the ESA-designated critical habitat for false killer whales extends fairly far offshore (to 3,200 m depth) around all the Main Hawaiian Islands. As described in the Hawaii Island Mitigation Area section noted above, by limiting exposure to the most impactful sonar source and explosives for these stocks in this 4-Islands Region Mitigation Area, in addition to the Hawaii Island Mitigation Area, both the magnitude and severity of both behavioral impacts and potential hearing impairment are greatly reduced. See the responses to comments 71 and 64 for additional discussion of false killer whale mitigation.

The Commenters cite concerns for population-level effects. As detailed in the 2018 HSTT FEIS/OEIS and indicated in this final rule, the planned Navy training and testing activities are not likely to result in impacts on reproduction or survival. There is no evidence to suggest there have been any population-level effects in the waters around Oahu, Kauai, and Niihau or in the HSTT Study Area resulting from the training and testing activities that have been ongoing for decades, which the Commenters recommend the need to stop, or at a minimum, be mitigated. In the waters around Oahu, Kauai, and Niihau, documented long-term residency by individuals and the existence of multiple small and resident populations precisely where Navy training and testing have been occurring for decades strongly suggests a lack of significant impact to those individuals and populations from the continuation of Navy training and testing. Appendix K of the 2018 HSTT FEIS/OEIS further describes the importance of these areas for Navy training and testing and why implementation of additional mitigation areas would be impracticable.

Last, as discussed previously, the Navy adopted all mitigation measures that are practicable without jeopardizing its mission and Title 10 responsibilities. In other words, a comprehensive assessment by Navy leadership of the final, entire list of mitigation measures concluded that the inclusion of any further mitigation beyond those measures identified here in the final rule would be impracticable. NMFS independently reviewed the Navy's practicability determinations for specific mitigation areas and concurs with the Navy's analysis. Given the significant protection already afforded by the required measures, and the impracticability of further geographic restrictions, NMFS has determined that these measures are not warranted.

Comment 73: In a comment on the 2018 HSTT proposed rule, a Commenter recommended an additional mitigation area for Cross Seamount, as Cross Seamount represents important foraging habitat for a potentially rare or evolutionary distinct species of beaked whale. The Commenter strongly recommended that the 2018 HSTT EIS/OEIS assess the designation of a year-round management area to protect the seamount. Such a designation would have secondary benefits for a variety of other odontocete species foraging at Cross Seamount seasonally between November and May. NMFS should also consider habitat-based management measures for other nearby seamounts.

Response: NMFS and the Navy considered Cross Seamount and ''other nearby seamounts'' for additional geographic mitigation as described in Appendix K (Geographic Mitigation Assessment), Section K.7.1 (Hawaii Public Comment Mitigation Area Assessment), including sub-sections K.7.1.1 (General Biological Assessment of Seamounts in the Hawaii Portion of the Study Area) and K.7.1.2 (Cross Seamount) of the 2018 HSTT FEIS/OEIS, which was used to support NMFS mitigation evaluation for this rule.

As discussed in Appendix K (Geographic Mitigation Assessment), Section 4.7.1.3 (Mitigation Assessment) of the 2018 HSTT FEIS/OEIS, implementing new geographic mitigation measures in addition to ongoing procedural mitigation within the vicinity of Cross Seamount would not be effective at reducing adverse impacts on beaked whales or other marine mammal populations. The Navy has been training and testing in the broad ocean area around Cross Seamount with the same basic systems for over 40 years, and there is no evidence of any adverse impacts to marine species. Additionally, the suggested mitigation would not be practicable for the Navy to implement. The broad ocean area around Cross Seamount and the seamounts to the north are unique in that there are no similar broad ocean areas in the vicinity of the Hawaiian Islands that are not otherwise encumbered by commercial vessel traffic and commercial air traffic routes. In addition, beaked whales may be more widely distributed than currently believed. For example, Martin *et al.* (2019) detected Cross Seamount beaked whale vocalizations at PMRF. Ongoing passive acoustic efforts from NMFS and Navy within the Pacific have documented beaked whale detections at many locations beyond slopes and seamounts to include areas over abyssal plains (Klinck *et al.* 2015, Griffiths and Barlow 2016, Rice *et al.,* 2018).

Comment 74: In a comment on the 2018 HSTT proposed rule, a Commenter stated that NMFS must ensure that the activities are having the least practicable adverse impact, so it must do a comprehensive analysis of whether the proposed mitigation areas sufficiently protect marine mammals. They asserted that NMFS must require the Navy to implement additional, practicable measures to mitigate further the adverse impacts of its activities. To ensure least practicable adverse impacts, NMFS must consider additional mitigation

time/area restrictions, including but not limited to: (1) Expanded areas in Southern California to include all of the biologically important areas for whales; (2) add a Cuvier's beaked whale mitigation area in Southern California to protect that small, declining population that has high site fidelity; (3) add mitigation areas for the biologically important areas off of Oahu and Kauai; (4) the entire Humpback National Marine Sanctuary should be afforded protections from Navy activities because it is an important habitat for breeding, calving and nursing; and (5) limits on sonar and explosives should be adopted in the designated critical habitat for the Hawaiian monk seal and false killer whale.

Response: In regard to expanded areas in Southern California to include all of the biologically important areas for whales, the Navy has agreed to expanded areas in SOCAL, a portion of the San Nicolas Island BIA and the Santa Monica/Long Beach BIA are now included as part of the San Diego Arc Mitigation Area but also named the San Nicolas Island Mitigation Area and the Santa Monica/Long Beach Mitigation Area. The Santa Monica Bay/Long Beach and San Nicolas Island BIA only partially overlaps a small portion of the northern part of the SOCAL portion of the HSTT Study Area. The Santa Monica Bay/Long Beach BIA overlap in SOCAL is 13.9 percent. The San Nicolas Island BIA overlap in SOCAL is 23.5 percent.

The Navy will limit surface ship sonar and not exceed 200 hours of MFAS sensor MF1 June 1 through October 31 during unit-level training and MTEs in the Santa Monica Bay/Long Beach BIA and San Nicolas Island Mitigation Areas (as well as San Diego Arc Mitigation Area). The Navy has also agreed to limit explosives. Specifically, within the San Nicolas Island Mitigation Area, the Navy will not use explosives that could potentially result in the take of marine mammals during mine warfare, large-caliber gunnery, torpedo, bombing, and missile (including 2.75 in rockets) activities during training. Within the Santa Monica/Long Beach Mitigation Area, the Navy will not use explosives that could potentially result in the take of marine mammals during mine warfare, large-caliber gunnery, torpedo, bombing, and missile (including 2.75-in rockets) activities during training and testing.

For the Tanner–Cortes Bank BIA, NMFS and the Navy have discussed this extensively, and the Navy is unable to incorporate this area into geographic mitigation because it is impracticable. Specifically, it would not be practical for the Navy to implement and would prevent the Navy from meeting training and testing missions. As discussed in detail in Appendix K (Geographic Mitigation Assessment) of the 2018 HSTT FEIS/OEIS, during the Navy's practicability and biological review of the Tanner Bank BIA, it was concluded that implementation of a mitigation area was not practical for this species. The area in and around Tanner Banks is a core high priority training and testing venue for SOCAL combining unique bathymetry and existing infrastructure. This includes an existing bottom training minefield adjacent to Tanner Banks, future Shallow Water Training Range (SWTR West) expansion as well as proximity to critical tactical maneuver areas to the south and the Navy's underwater instrumented range to the northeast. Furthermore, the general area is in or adjacent to critical Navy training that cannot occur at other locations due to available, existing infrastructure, operationally relevant bathymetry, sea space, proximity to San Clemente Island and San Diego, *etc.* Of all the blue whale BIAs designated, the Tanner Banks BIA had the fewest blue whale sighting records supporting its designation. New science since designation funded by the Navy further highlights how infrequently Tanner Bank is used by blue whales as compared to the rest of their movements in SOCAL. Out of 73 blue whales tagged with satellite transmitters, only a few transits through Tanner Banks were documented between 2014 and 2017. The longest cumulative time any individual whale stayed within the boundaries of the Tanner Banks BIA was less than one-and-a-half days. Typical average blue whale daily movement along the U.S. West Coast is often up to 13–27 nautical miles a day (Oregon State University, unpublished data). Most blue whale area restricted foraging occurred around the northern Channel Islands, north of and outside of the HSTT SOCAL Study Area.

The feeding areas as recommended by the Commenter north of Los Angeles for humpbacks (Santa Barbara Channel—San Miguel BIA and Morro Bay to Pt Sal) and blue whales (Santa Barbara Channel to San Miguel BIA, Pt Conception/Arguello to Pt Sal) are outside of the HSTT Study Area; therefore, they are not applicable for inclusion.

In regard to adding a Cuvier's beaked whale mitigation area in Southern California to protect that small, declining population that has high site fidelity, NMFS is assuming the Commenter is referring to the area west of San Clemente Island as the comment letter did not specify an exact location. The beaked whale species detected most frequently in Southern California is Cuvier's beaked whale. Cuvier's beaked whales are widely distributed within Southern California and across the Pacific with almost all suitable deep water habitat >800 m conceivably containing Cuvier's beaked whales. In new unpublished Navy funded data, beaked whales have even been detected over deep water, open abyssal plains (>14,000 ft). The Commenter's declining beaked whale statement does not fully represent the current state of the science. Moore and Barlow (2013) noted a decline in the overall beaked whale population in a broad area of the Pacific Ocean along the U.S. West Coast. New data has been published raising uncertainties over whether a decline in the beaked whale population occurred off the U.S. West Coast between 1996 and 2014 (Barlow, 2016). Moore and Barlow (2017) have since incorporated information from the entire 1991 to 2014 time series, which suggests an increasing abundance trend and a reversal of the declining trend along the U.S. West Coast that had been noted in their previous (2013) analysis. Furthermore, there is no evidence of any declining beaked whale populations in Southern California. Schorr *et al.* (2020) and DiMarzio *et al.* (2020) continue to document repeated sightings of the same beaked whales and steady if not increasing population in SOAR. Only limited population vital rates exist for beaked whales, covering numbers of animals, populations vs. subpopulations determination, and residency time for individual animals. While Cuvier's beaked whales have been detected north and west of Tanner and Cortes Banks, as noted above this species is also detected in most all Southern California locations 800 m in depth. The Navy's Marine Mammal Monitoring on Navy Ranges (M3R) program has documented continual Cuvier's beaked whale presence on SOAR over ten years from 2010–2019 with slight abundance increases through 2019 (DiMarzio *et al.,* 2018, 2019, 2020).

Navy-funded research on Cuvier's beaked whales within the SOCAL Range Complex began in 2006. In 2008, researchers began deploying satellite tags as a part of this research. To date, 27 Low-Impact Minimally-Percutaneous External-electronics Transmitting (LIMPET) tags have been deployed within the complex. Twenty-five of those whales were tagged within the San Nicolas Basin and two were tagged in the Catalina Basin. Average transmission duration was 36.6 days (sd

= 29.8), with the longest transmitting for 121.3 days. Movement data suggest that Cuvier's beaked whales have a high degree of site-fidelity to the Southern California Range Complex, and the San Nicolas basin in particular. Overall, there were 3,207 filtered location estimates from the 27 tagged whales, 91 percent of which were within the SoCal Range Complex. 54 percent of all location estimates were within the San Nicolas Basin, with twelve tagged whales spending more than 80 percent of their transmission duration within the basin. The two whales tagged in the Catalina Basin never entered the San Nicolas Basin. Only three whales tagged in the San Nicolas Basin crossed into the Catalina Basin (1.3 percent of all locations); two of those whales had just one Catalina Basin location each, though the remaining whale had 28 percent of its locations there. Five whales tagged in the San Nicolas Basin moved into the Santa Cruz Basin for anywhere from 1–62 percent of their time (6 percent of all locations). In contrast, 20 of 25 whales tagged in the San Nicolas Basin moved south of the basin at some point. Of these 20 whales, most remained within either Tanner Canyon or the San Clemente Basin immediately to the south, but one traveled north to near San Miguel Island and four traveled south towards Guadalupe Island. Three of these whales have not been documented in the San Nicolas basin since, though to date at least six whales tagged in the San Nicolas Basin have been re-sighted there a year or more after the deployment. Additionally, one of the whales that was south of San Nicolas when the tag stopped transmitting has since been sighted three times since.

Given the uncertainty regarding residence of Cuvier's beaked whales in the areas north and west of SOAR, the fact that general occurrence of beaked whales in Southern California may not necessarily relate to factors typically associated with biologically important areas (*i.e.,* one area not being more important than another), the likely increasing abundance trend in Cuvier's beaked whales in the area, and consideration of the importance of Navy training and testing in the areas around SOAR and Tanner and Cortes Banks (*i.e.,* the impracticability of additional area mitigation in this area; see Appendix K (Geographic Mitigation Assessment)), additional geographic mitigation to create a ''refuge'' in the recommended area is not scientifically supported or warranted.

In regard to the comment proposing that the entire Humpback Whale National Marine Sanctuary should be afforded protections from Navy activities because it is an important habitat for breeding, calving and nursing, the Humpback National Marine Sanctuary largely overlaps both the Hawaii Island Mitigation Area as well as the 4-Islands Region Mitigation Area. In the Hawaii Island Mitigation Area (year-round), the Navy will not conduct more than 300 hours of MF1 surface ship hull-mounted mid-frequency active sonar or 20 hours of MF4 dipping sonar, or use explosives that could potentially result in takes of marine mammals during training and testing. In the 4-Islands Region Mitigation Area (November 15–April 15 for active sonar; year-round for explosives), the Navy will not use MF1 surface ship hull-mounted mid-frequency active sonar or explosives that could potentially result in takes of marine mammals during training and testing. This seasonal limitation is specifically during important breeding, calving, and nursing times/habitat for humpback whales and was expanded for humpback whales as the previous season for this mitigation area was December 15–April 15.

There are areas of the Humpback Whale National Marine Sanctuary around the islands of Niihau, Kauai, Oahu, and west of Molokai (Penguin Bank) that are outside of the Navy's mitigation areas. However, none of the Navy's training and testing areas for explosives around Kauai and Niihau are within the Hawaiian Islands Humpback Whale National Marine Sanctuary. There may be limited sonar use as units transit to/from PMRF ranges.

Part of the Humpback Whale National Marine Sanctuary, west of the island of Molokai, Penguin Bank, is not included in the 4-Islands Region Mitigation Area. Penguin Bank particularly is used for shallow water submarine testing and anti-submarine warfare training because of its large expanse of shallow bathymetry. While submarines do not typically use mid-frequency active sonar, relying primarily on passive sonar (listening mode) to avoid detection from adversaries, submarines are required to train in counter detection tactics, techniques and procedures against threat surface vessels, airborne anti-submarine warfare units and other threat submarines using mid-frequency active sonar as part of both their perspective Commanding Officers qualification course and pre-deployment certification. The ability for surface vessels and air assets to simulate opposing forces, using mid-frequency active sonar when training with submarines, is critical to submarine crew training for deployed and combat operations. Surface ships and aircraft mimicking opposition forces present submarines with a realistic and complicated acoustic and tactical environment. The Navy expects real-world adversaries to target our submarines with active sonar. Without active sonar from opposition forces, submarines do not get a realistic picture regarding if they successfully evaded detection. Surface warfare training is designed to support unit-level training requirements and group cross-platform events in 28 mission areas for surface ship certification prior to deployment.

Additionally, the Navy will implement the Humpback Whale Special Reporting Area (December 15 through April 15), comprised of additional areas of high humpback whale densities that overlap the Humpback Whale National Marine Sanctuary. This reporting is included in the exercise and monitoring reports that are an ongoing Navy requirement and are submitted to NMFS annually. Special reporting data, along with all other reporting requirements, are considered during adaptive management to determine if additional mitigation may be required. The Navy currently reports to NMFS the total hours (from December 15 through April 15) of all hull-mounted mid-frequency active sonar usage occurring in the Humpback Whale Special Reporting Area, plus a 5 km buffer, but not including the Pacific Missile Range Facility. The Navy will continue this reporting for the Humpback Whale Special Reporting Area.

In regard to the comment that limits on sonar and explosives should be adopted in the ESA-designated critical habitat for the Hawaiian monk seal and false killer whale, the Navy will cap MFAS for the entire false killer whale BIA adjacent to the island of Hawaii and a portion of the false killer whale BIA north of Maui and Molokai as follows. The Navy already will limit explosive use in the entire false killer whale BIA adjacent to the island of Hawaii. Per the 2018 HSTT final rule, the Navy currently implements year-round limitation on explosives to the 4-Islands Region Mitigation Area, which includes a portion of the false killer whale BIA north of Maui and Molokai.

For the Hawaii Island Mitigation Area (year-round): The Navy will not conduct more than 300 hours of surface ship hull-mounted MFAS sonar MF1 (MF1) or 20 hours of MFAS dipping sonar MF4 (MF4), or use explosives during training and testing year-round.

For the 4-Islands Region Mitigation Area (November 15–April 15 for active sonar, year-round for explosives): The

Navy will not use surface ship hull-mounted MFAS sonar MF1 from November 15–April 15 and explosives year-round during training or testing activities. The remaining false killer whale BIA overlaps with areas (*e.g.,* Kaiwi Channel) where additional mitigations were found to be impractical.

In regard to limits on sonar and explosives in ESA-designated critical habitat for Hawaiian monk seal, the Navy's training and testing activities do occur in a portion of the ESA-designated critical habitat for Hawaiian monk seals, which is of specific importance to the species. However, monk seals in the main Hawaiian Islands have increased while the Navy has continued its activities, even though the Hawaiian monk seal overall population trend has been on a decline from 2004 through 2013, with the total number of Hawaiian monk seals decreasing by 3.4 percent per year (Carretta *et al.,* 2017). While the decline has been driven by the population segment in the northwestern Hawaiian Islands, the number of documented sightings and annual births in the main Hawaiian Islands has increased since the mid-1990s (Baker, 2004; Baker *et al.,* 2016). In the main Hawaiian Islands, the estimated population growth rate is 6.5 percent per year (Baker *et al.,* 2011; Carretta *et al.,* 2017). Of note, in the 2013 HRC Monitoring Report, tagged monk seals did not show any behavioral changes during periods of MFAS.

The Hawaii Island Mitigation Area overlaps all of their critical habitat around the Island of Hawaii (as well as the southern end of Maui) and, by not using explosives or the most impactful sonar sources in this, thereby reduces the likelihood that take might impact reproduction or survival by interfering with important feeding or resting behaviors (potentially having adverse impacts on energy budgets) or separating mothers and pups in times when pups are more susceptible to predation and less able to feed or otherwise take care of themselves. The 4-Islands Mitigation Area overlaps with ESA-designated critical habitat around Maui, Lanai, and Molokai.

Comment 75: In a comment on the 2018 HSTT proposed rule, a Commenter noted that in the 2018 HSTT proposed rule, NMFS estimates 588 takes annually will cause multiple instances of exposure to insular false killer whales, taking 400 percent of the population. As the potential biological removal (PBR) is 0.18 animals, the loss of a single individual, or an impairment to its health and fitness, could place the species on an extinction trajectory. The Commenter asserted NMFS must consider additional mitigation in the designated critical habitat, as well as excluded areas, to ensure a negligible impact on false killer whales.

Response: The Commenter is conflating expected numbers of Level B behavioral harassment take with the PBR number presented in the SAR. There are no insular false killer whale mortality takes modeled, anticipated, or authorized. Four hundred percent of the population would mean that all animals would be behaviorally harassed an average of four times per year, or once per season. The short term biological reaction of an animal for periods of minutes to hours a few times a year would not have any fitness impacts to the individual let alone any population level impacts. NMFS confirms that these impacts are negligible. Additionally, much of the Navy's mitigations on Hawaii and the 4 islands region encompass areas that overlap with high use insular false killer whale habitat and thus already mitigate impacts. From the Navy consultation with NMFS under the ESA for insular false killer whale critical habitat, less than 12 percent of modeled takes would take place in or near insular false killer whale critical habitat. These takes as explained previously would be transitory (short-duration), and spread out in time and space.

Comment 76: In a comment on the 2018 HSTT proposed rule, a Commenter recommended establishing stand-off distances around the Navy's mitigation areas to the greatest extent practicable, allowing for variability in size given the location of the area, the type of operation at issue, and the species of concern.

Response: Mitigation areas are typically developed in consideration of both the area that is being protected and the distance from the stressor in question that is appropriate to maintain to ensure the protection. Sometimes this results in the identification of the area plus a buffer, and sometimes both the protected area and the buffer are considered together in the designation of the edge of the area. We note that the edges of a protected area are typically of less importance to a protected stock or behavior, since important areas often have a density gradient that lessens towards the edge. Also, while a buffer of a certain size may be ideal to alleviate all impacts of concern, a lessened buffer does not mean that the protective value is significantly reduced, as the core of the area is still protected. Also, one should not assume that activities are constantly occurring in the area immediately adjacent to the protected area.

These issues were considered here, and the Navy has indicated that the mitigation included in the final rule represents the maximum mitigation within mitigation areas and the maximum size of mitigation areas that are practicable to implement under the specified activities. The Navy has communicated (and NMFS concurs with the assessment) that implementing additional mitigation (*e.g.,* stand-off distances that would extend the size of the mitigation areas) beyond what is described here would be impracticable due to implications for safety (the ability to avoid potential hazards), sustainability (based on the amount and type of resources available, such as funding, personnel, and equipment), and the Navy's ability to continue meeting its Title 10 requirements.

Comment 77: In a comment on the 2019 HSTT proposed rule, Commenters noted that Southall *et al.* (2019c) investigated Cuvier's beaked whale prey dynamics on SOAR and found that Cuvier's beaked whales, as well as their prey, were concentrated on the western side of SOAR. They stated that if beaked whales were to leave their preferred habitat on SOAR due to disturbance, Southall *et al.* (2019c) stipulated that the animals could encounter both the energetic costs of moving and substantially poorer foraging options in the alternative areas (both offshore of SOAR and on the eastern side of SOAR). Given the very large differences in prey quality measured between those areas, the researchers asserted that it may prove challenging for individual beaked whales to meet basic energetic requirements in some of those areas, which could have population-level consequences (Southall *et al.* 2019c). The Commenters note that it is unclear the timescale over which the prey surveys were conducted by Southall *et al.* (2019) and whether the prey dynamics were reflective of seasonal or year-round patterns. However, they noted that the researchers' contention that mitigation measures that would concentrate MFA sonar operations to the eastern rather than western side of SOAR would be beneficial for reducing the potential consequences of disturbance, particularly for those operations that use higher-intensity sonar. Commenters asserted that the findings of Southall *et al.* (2019c) suggest that the off-range refuge areas established by consent order in *Conservation Council for Hawaii* v. *NMFS,* while presenting foraging habitat that is superior to that on the eastern side of the range, are markedly inferior

to the whales' preferred foraging habitat on the western side. Commenters recommended NMFS investigate whether the findings of Southall *et al.* (2019) are applicable to seasonal or year-round conditions at SOAR and whether implementation of mitigation areas on the western side of SOAR would be a prudent approach for meeting its negligible impact and least practicable adverse impact determinations under the MMPA.

Response: Prey data analyzed by Southall *et al.* (2019c) were published in Benoit-Bird *et al.* (2016) and collected in 2013. The field effort only encompassed four days of survey in September 2013 to include five transits in Western SOAR, five transits in eastern SOAR, and two transits off-range. Southern, western, and eastern SOAR, areas also used by beaked whales as shown by satellite tracking, were not surveyed. Furthermore, based on passive acoustic monitoring from two different sensor types, there is a repeated dip in Southern California beaked whale occurrence in the August and September timeframes. Therefore, there appears to be a factor, such as oceanography, prey availability, or other biological parameter from August to September that influences beaked whale occurrence unrelated to Navy activities. Given ocean basin level oceanographic fluctuations since 2013, it is also unclear if the 2013 prey results from Benoit-Bird *et al.* (2016) remain unchanged as of 2019. Recent research has also suggested that Cuvier's beaked whales tend to be visually sighted and passively acoustically detected more frequently in the western portion of SOAR (DiMarzio *et al.,* 2020, Schorr *et al.,* 2020). An important fact remains that cumulatively throughout the entire year, beaked whale occurrence and overall population abundance remains consistently stable in a heavily used training area as discussed previously (DiMarzio *et al.,* 2020; Schorr *et al.,* 2020). Given the parameters of Southall *et al.* (2019) and Benoit-Bird *et al.* (2016) which include short-term seasonal sampling and limited sampling throughout SOAR, as well as potential variations in oceanographic parameters, it is premature and speculative to designate additional mitigation areas specifically for western SOAR. Also, current and ongoing beaked whale research on SOAR appears to demonstrate a stable beaked whale population using SOAR (DiMarzio *et al.,* 2020; Schorr *et al.,* 2020). Further, as noted in Appendix K (Geographic Mitigation Assessment) of the 2018 HSTT FEIS/OEIS, the waters in SOAR are critical to the Navy's training and testing activities and it is not practicable to preclude activities within that water space. Given the lack of sufficient evidence to support the specific significance of the western side of SOAR and the stability of beaked whale populations across SOAR, which suggests that Navy training and testing activities are not having significant impacts to the population of beaked whales anywhere in SOAR (DiMarzio *et al.,* 2020, Schorr *et al.,* 2020), and in consideration of the importance of Navy training and testing activities in this area discussed in Appendix K (Geographic Mitigation Assessment) of the 2018 HSTT FEIS/OEIS, additional geographic mitigation specifically for SOAR is not warranted.

Comment 78: In a comment on the 2019 HSTT proposed rule, Commenters stated that the California (or Eastern North Pacific) gray whale is presently experiencing a major die-off which was declared an Unusual Mortality Event (UME). They asserted 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 (Wright *et al.,* 2007). They noted that 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. The Commenters further asserted that 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.

Due to the circumstances for gray whales, the Commenters recommended that NMFS strengthen the geographic protections proposed by the Navy to reduce activities in habitat used seasonally by gray whales. They noted that new scientific information on spatial and temporal interannual changes in the eastern North Pacific gray whale migration across seven migration seasons (2008–2009 to 2014–2015) indicates that an increasing proportion of the population is using the nearshore migration corridor in the Southern California Bight, especially near Los Angeles (Guazzo *et al.,* 2019). In addition, the time period over which gray whales are detected visually off Los Angeles, and acoustically across the broader region, is extending into April (for acoustic detections) and May (for visual observations) (Guazzo *et al.,* 2019). The Commenters strongly recommended that a Mitigation Area excluding sonar and explosives activities be established in, at minimum, the Gray Whale Awareness Notification Message Area, and that the mitigation period be extended from November–March (the current period of operations for the Message Area) to November–May.

Response: The Gray Whale Awareness Notification Message Area includes all waters in the SOCAL portion of the HSTT Study Area. As discussed in Appendix K (Geographic Mitigation Assessment Section K4.2) of the 2018 HSTT FEIS/OEIS, the gray whale migration BIA overlaps with a significant portion of the SOCAL portion of the HSTT Study Area out to 100 nmi from shore over 10 months of the year. There is no indication that infrequent behavioral disruptions from Navy activities interrupt or significantly delay transit, and gray whales are not anticipated to be foraging in this area. Therefore, creating a new mitigation area excluding sonar and explosive activities for the SOCAL portion of the HSTT Study Area is not warranted. The Navy's current awareness notification message includes information that gray whales may be present in the SOCAL portion of the HSTT Study Area from mid-October through mid-July every year, which includes the November–May timeframe suggested by the Commenters.

Comment 79: In a comment on the 2019 HSTT proposed rule, Commenters noted that long-term passive acoustic monitoring conducted in the Navy's SOCAL Range Complex from January 2013 to January 2017 detected a peak in Northeast Pacific blue whale B calls from summer through late winter with a peak from September through December, and a peak in Northeast Pacific blue whale D calls in May and June (Baumann-Pickering *et al.,* 2018; Rice *et al.,* 2017). They further asserted that the fall peak in blue whale vocalizations coincides with a peak in detections of mid-frequency active sonar in September through November. Resulting maximum cumulative sound exposure levels of wave trains during these times were greater than 170 dB re: 1 μPa2 -s, and the majority of mid-frequency active sonar wave trains occurred in November 2016 during a major training exercise (Rice *et al.,* 2017). Explosions (including those associated with Naval training exercises and fishing activity) occurred relatively constantly throughout the monitoring period at the sites where Northeast Pacific blue whale vocalizations were detected most frequently (Rice *et al.,* 2017). The Commenters asserted that this new information demonstrates a peak in Northeast Pacific blue whale

presence in the late fall, a time that has historically coincided with heightened periods of MFA sonar deployment and explosives use. The Commenters recommended that the seasonality of the San Diego Arc Mitigation Area and the Blue Whale Awareness Notification Message Area be extended from June–October to May–December, and again urge the Navy to strengthen its restrictions on activities during this period.

Response: Rice *et al.* 2020 (the most recent report referenced by the Commenters was Rice *et al.* 2017) reports on Navy supported monitoring at various locations within the Southern California Range Complex portion of the HSTT Study Area. While the blue whale switch from D calls to B calls has been documented by Rice *et al.* 2018 and others, call detection may not be representative of the total blue whale population or relative proportion in the SOCAL area. Nor do the call data collected by offshore passive acoustic devices necessarily reflect the amount of time or number of animals that would be in the San Diego Arc Mitigation Area. For example, over four years of blue whale tagging in SOCAL, most whales with long-term satellite tracking tags typically have begun their southern migration by October (Mate *et al.* 2018). The amount of time blue whales spent in the San Diego Arc as a proportion of the total tag attachment time was very small. Based on 90 blue whales tagged from 2014–2017, blue whales spent an average total of 1.2 days in the San Diego Mitigation Area (1.5 days 2014, 1.0 days 2015, 0 days 2016, 0.3 days 2017) (Mate *et al.,* 2018). Furthermore, the Navy reports that MTEs and unit level training spread throughout the year. There is no basis for the Commenters' statement of heightened sonar and explosive use in the fall. Rice *et al.* (2017) captured a MTE in November in one year's data at one of the recording sites (Site N). Site N is where trains with cSELs >170 dB were observed (not the other sites in Rice *et al.* 2017), however, Site N is not near the San Diego Arc Mitigation Area—it is south of San Clemente Island. Therefore, extending the timeframe of these mitigation areas is not warranted.

Comment 80: In a comment on the 2019 HSTT proposed rule, Commenters stated that the least practicable adverse impact requirement imposes a ''stringent standard'' on NMFS to ensure that marine mammals are protected to the greatest extent practical without interfering with military readiness. The Commenters noted that the Navy's agreement to restrict the use of sonar and explosives in specified habitat areas around the Hawaiian Islands and off Southern California demonstrates the practicability of implementing those specific time/area restrictions. The Navy implemented these measures for over three years during which time it never invoked its right under the settlement agreement to train in these areas if necessary for national security. The Commenters asserted that the Navy has a heavy burden to show these areas are now required for training and testing activities when it successfully maintained military readiness subject to the settlement agreement restrictions for over three years and that NMFS has not held the Navy to its burden.

The Commenters note that of particular concern are areas to the northeast and southeast of Moloka'i leading into the Ka'iwi Channel as this area includes biologically important areas (BIAs) for the humpback whale, the Main Hawaiian Island Insular (MHI) stock of false killer whales, and spinner dolphins. This area was partially protected as part of settlement areas 2A, 2C, and 2D, all of which included a year-round ban on the use of explosives, as well as a prohibition on use of mid-frequency active sonar during multi-unit training exercises (areas 2A and 2C). They asserted that the 2018 HSTT final rule and the proposed extension rule provide no protections for the BIAs located to the northeast and southeast of Moloka'i. They noted that the Navy admits that the primary use of the northeast Ka'iwi Channel is for transit, and some limited unit-level straits training when ships are transiting through the area, however, straits training is primarily conducted in the 'Alenuihāhā channel and the Pailolo and Kalohi channels. The Commenters asserted that the inconvenience associated with longer transit times around northeast Moloka'i and Ka'iwi Channel which the Navy invoked to explain the alleged impracticability of additional protections for this area does not meet the ''stringent standard'' test imposed by courts. The Commenters also noted that the Penguin Bank training area, which is located wholly in previous settlement area 2A and to the southeast of Moloka'i, is used for specific submarine training and testing activities identified by the Navy. However, the Navy proffers no explanation why sonar and explosive restriction cannot be imposed for a limited five-month period annually, as in the rest of the 4-Islands Region Mitigation Area, leaving the remaining seven months free for military readiness activities. The Commenters noted that an increased reporting burden is exactly the type of inconvenience that the Court considered insufficient to meet the stringent practicability standard during the last round of HSTT authorizations. They asserted that NMFS cannot simply ''summarize the Navy's indication of impracticality without analyzing it all,'' but that is exactly what it has done here. The Commenters state that NMFS should reinstate additional protections around eastern Moloka'i and other biologically important marine habitat included in the 2015 settlement agreement, and expand protections throughout the Ka'iwi Channel area as described above.

Response: Appendix K (Geographic Mitigation Assessment) of the 2018 HSTT FEIS/OEIS described the comprehensive method for analyzing potential geographic mitigation that included consideration of both a biological assessment of how the potential time/area limitation would benefit the species or stock 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 (*e.g.,* including an assessment of the specific importance of that area for training, considering proximity to training ranges and emergency landing fields and other issues). The analysis included an extensive list of areas, including areas in which certain Navy activities were limited under the terms of the 2015 HSTT settlement agreement, areas identified by the California Coastal Commission, and areas suggested during scoping. As discussed in the 2018 HSTT final rule and applicable to this rule, NMFS also specifically considered the measures from the 2015 settlement agreement and how they compared to both new procedural mitigation measures and mitigation areas (see the section *Brief Comparison of 2015 Settlement Mitigation and Final HSTT Mitigation in the Rule* in the 2018 HSTT final rule). For those areas that were previously covered under the 2015 settlement agreement, 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. The 2018 HSTT final rule then provided the rationale, again applicable to this final rule, for not adopting the relatively small subset of measures that were not carried forward (*i.e.,* why some areas from the 2015 settlement agreement were fully or partially retained, and others were not, based upon the standards of the MMPA).

As explained in more detail in the 2018 HSTT final rule and in the full analysis in Section 3 of Appendix K (Geographic Mitigation Assessment) of the 2018 HSTT FEIS/OEIS, Penguin Bank offers critical shallow and constrained conditions for Navy training (especially submarines) that are not available anywhere else in Hawaii. The areas north of Molokai and Maui that are not included in the current 4-Islands Mitigation Area are similarly critical for certain exercises that specifically include torpedo exercises, deliberately conducted in this area north of the islands to avoid the other suitable training areas between the four islands where humpback whale density is higher. The 2015 settlement agreement mitigation restricted all MFAS and explosive use on Penguin Bank (area 2–A), however, as the Navy explained, this MFAS restriction is impracticable for the period covered by this rule because it would have unacceptable impacts on their training and testing capabilities. In addition, the Navy does not typically use explosives in this area. For the settlement areas north of Molokai and Maui that are not covered in the rule (area 2–B and part of area 2–C), the settlement agreement restricted explosive use but did not restrict MFAS in the 2–B area. Explosive use in these areas is also already rare, but for the reasons described in Appendix K of the 2018 HSTT FEIS/OEIS, restricting MFAS use is impracticable and would have unacceptable impacts on training and testing. We also note that while it is not practicable to restrict MFAS use on Penguin Bank, MFAS use is relatively low and we have identified it as a special reporting area for which the Navy reports the MFAS use in that area to inform adaptive management discussions in the future. Additionally, some of the areas that the 2015 settlement agreement identified included language regarding extra vigilance intended to avoid vessel strikes. Neither NMFS nor the Navy thought that inclusion of this term as written would necessarily reduce the probability of a vessel strike, so instead we have included the Humpback Whale Awareness Notification provision, which sends out a message to all Navy vessels in Hawaii during the time that humpback whales are present. Last, we note that the 2015 settlement mitigation areas with MFAS restrictions sometimes excluded all MFAS, while sometimes they limited the number of MTEs that could occur (with no limit on any particular type of sonar, meaning that hull-mounted surface ship sonar could be operated), whereas the sonar restrictions in this final rule limit the use of surface ship hull-mounted sonar, which is the source that results in the vast majority of incidental takes.

Additional Mitigation Research

Comment 81: In a comment on the 2018 HSTT proposed rule, a Commenter recommended NMFS consider additional mitigation measures to prescribe or research including: (1) Research into sonar signal modifications; (2) mitigation and research on Navy ship speeds (the Commenter recommended that the agency require the Navy to collect and report data on ship speed as part of the EIS process); and (3) compensatory mitigation for the adverse impacts of the activities on marine mammals and their habitat that cannot be prevented or mitigated.

Response: NMFS consulted with the Navy regarding potential research into additional mitigation measures and discussion is included below.

1. Research into sonar signal modification—Sonar signals are designed explicitly to provide optimum performance at detecting underwater objects (*e.g.,* submarines) in a variety of acoustic environments. The Navy acknowledges that there is very limited data, and some suggest that up or down sweeps of the sonar signal may result in different animal reactions; however, this is a very small data sample, and this science requires further development. If future studies indicate this could be an effective approach, then NMFS and the Navy will investigate the feasibility and practicability to modify signals, based on tactical considerations and cost, to determine how it will affect the sonar's performance.

2. Mitigation and research on Navy ship speeds inclusive of Navy collecting and reporting data on ship speed as part of the EIS—The Navy conducted an operational analysis of potential mitigation areas throughout the entire Study Area to consider a wide range of mitigation options, including but not limited to vessel speed restrictions. As discussed in Chapter 3, Section 3.0.3.3.4.1 (Vessels and In-Water Devices) of the HSTT FEIS/OEIS, Navy ships transit at speeds that are optimal for fuel conservation or to meet operational requirements. Operational input indicated that implementing additional vessel speed restrictions beyond what is identified in Chapter 5 (Mitigation), Section 5.4 (Mitigation Areas to be Implemented) of the 2018 HSTT FEIS/OEIS would be impracticable to implement due to implications for safety and sustainability. In its assessment of potential mitigation, the Navy considered implementing additional vessel speed restrictions (*e.g.,* expanding the 10 kn restriction to other activities). The Navy determined that implementing additional vessel speed restrictions beyond what is described in Chapter 5 (Mitigation), Section 5.5.2.2 (Restricting Vessel Speed) of the 2018 HSTT FEIS/OEIS would be impracticable due to implications for safety (the ability to avoid potential hazards), sustainability (maintain readiness), and the Navy's ability to continue meeting its Title 10 requirements to successfully accomplish military readiness objectives. Additionally, as described in Chapter 5 (Mitigation), Section 5.5.2.2 (Restricting Vessel Speed) of the HSTT FEIS/OEIS, any additional vessel speed restrictions would prevent vessel operators from gaining skill proficiency, would prevent the Navy from properly testing vessel capabilities, or would increase the time on station during training or testing activities as required to achieve skill proficiency or properly test vessel capabilities, which would significantly increase fuel consumption. NMFS thoroughly reviewed and considered this information and determined that additional vessel speed restrictions would be impracticable. As discussed in Chapter 5 (Mitigation), Section 5.3.4.1 (Vessel Movement) of the HSTT FEIS/OEIS, the Navy implements mitigation to avoid vessel strikes throughout the Study Area. As directed by the Chief of Naval Operations Instruction (OPNAVINST) 5090.1D, Environmental Readiness Program and as discussed in this rule and the 2018 HSTT final rule, Navy vessels report all marine mammal incidents worldwide, including ship speed. Therefore, the data required for ship strike analysis discussed in the comment is already being collected. Any additional data collection required would create an unnecessary and impracticable administrative burden on the Navy.

3. Compensatory mitigation—For years, the Navy has implemented a very broad and comprehensive range of measures to mitigate potential impacts to marine mammals from military

readiness activities. As described in this rule, the 2018 HSTT final rule, and the 2018 HSTT FEIS/OEIS documents in Chapter 5 (Mitigation), NMFS and the Navy have expanded these measures further where practicable. Aside from direct mitigation, as noted by the Commenter, the Navy engages in an extensive spectrum of other activities that greatly benefit marine species in a more general manner that is not necessarily tied to just military readiness activities. As noted in Chapter 3, Section 3.0.1.1 (Marine Species Monitoring and Research Programs) of the HSTT FEIS/OEIS, the Navy provides extensive investment for research programs in basic and applied research. The U.S. Navy is one of the largest sources of funding for marine mammal research in the world, which has greatly enhanced the scientific community's understanding of marine species more generally. The Navy's support of marine mammal research includes: Marine mammal detection, including the development and testing of new autonomous hardware platforms and signal processing algorithms for detection, classification, and localization of marine mammals; improvements in density information and development of abundance models of marine mammals; and advancements in the understanding and characterization of the behavioral, physiological (hearing and stress response), and potentially population-level consequences of sound exposure on marine life. Compensatory mitigation is not required to be imposed upon LOA holders under the MMPA. Importantly, the Commenter did not recommend any specific measure(s), rendering it impossible to conduct any meaningful evaluation of its recommendation. Finally, many of the methods of compensatory mitigation that have proven successful in terrestrial settings (purchasing or preserving land with important habitat, improving habitat through plantings, *etc.*) are not applicable in a marine setting with such far-ranging species. Thus, any presumed conservation value from such an idea would be purely speculative at this time.

Comment 82: In a comment on the 2019 HSTT proposed rule, Commenters asserted that NMFS should consider source-based approaches to mitigate impacts on frequently exposed populations. They stated that several recent studies (described in their comments on the 2018 HSTT proposed rule) suggest that modifying the sonar signal might reduce behavioral response in at least some species of marine mammals, and certain promising types of modifications, such as converting upsweeps to downsweeps—which would not alter the signal's spectral output in any way—may well be practicable and should be studied further, especially for reducing impacts in cases where spatial conflicts are unavoidable.

Response: As described in the 2018 HSTT final rule, sonar signals are designed explicitly to provide optimum performance at detecting underwater objects (*e.g.,* submarines) in a variety of acoustic environments. NMFS and the Navy acknowledge that there is very limited data available on behavioral responses to modified sonar signals, and some suggest that up or down sweeps of the sonar signal may result in different animal reactions; however, this science requires further development. Further, the references cited by the Commenter pertain to harbor porpoises and harbor seals. Harbor porpoises are not found in the HSTT Study Area. The reaction of these two more coastal species may not be indicative of how all other species may react to the same stimuli. The Navy's research programs continue to support new hearing and response studies and results of these studies will be incorporated into future analyses. If future studies indicate this could be an effective approach, then NMFS and the Navy will investigate the feasibility and practicability to modify signals, based on tactical considerations and cost, to determine how it will affect the sonar's performance.

Comment 83: In a comment on the 2019 HSTT proposed rule, Commenters asserted that NMFS should require the Navy, through the Center for Naval Analyses or a similar organization, to study whether active sonar activities in the HSTT Study Area can be reduced through the use of simulators.

Response: The Navy has extensively studied and evaluated the degree to which simulations can be utilized to meet their mission requirements, and NMFS and the Navy have further considered the information in the context of measures that could potentially reduce impacts to marine mammals. We disagree that NMFS should require additional study.

As described by the Navy, it already uses simulators, and the proposed activities were specifically built with the assumption that a certain percentage of training activities would be accomplished through simulation versus live training. The Navy currently uses, and will continue to use, computer simulation to augment training whenever possible. Simulators and synthetic training are critical elements that provide early skill repetition and enhance teamwork; however, they cannot duplicate the complexity faced by Navy personnel during military missions and combat operations for the types of active sonar used for the proposed activities (*e.g.,* hull-mounted mid-frequency active sonar). Simulators are used at unit-level training for basic system familiarity and refresher training. In addition, several annual exercises in the Pacific Ocean, simulating many hundreds of hours of sonar use are conducted virtually for command staff training.

As described in Chapter 5 (Mitigation) of the 2018 HSTT FEIS/OEIS, the Navy needs to train and test in the conditions in which it fights—and these types of modifications would fundamentally change the activity in a manner that would not support the purpose and need for the training and testing (*i.e.,* are entirely impracticable). NMFS finds the Navy's explanation for why adoption of these recommendations would unacceptably undermine the purpose of the testing and training persuasive. As described in the *Mitigation Measures* section of the 2018 HSTT final rule, after independent review, NMFS finds Navy's judgment on the impacts of potential mitigation measures, including simulators, to personnel safety, practicality of implementation, and the undermining of the effectiveness of training and testing persuasive.

Comment 84: In a comment on the 2019 HSTT proposed rule, due to the circumstances for gray whales (described in Comment 78) Commenters recommended that consistent with its responsibilities under the MMPA's provisions on UMEs (*e.g.,* 16 U.S.C. 1421c), as well as with the requirements under NEPA to obtain information essential to its analysis of reasonable alternatives (40 CFR 1502.22), that NMFS 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: Since January 1, 2019, elevated gray whale strandings have occurred along the west coast of North America, from Mexico to Canada. This event has been declared an Unusual Mortality Event (UME). 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, and determine the next steps for the investigation. The investigative team has not as of yet identified a primary cause for the UME. The team is investigating various causes that could

be contributing to the increased strandings including disease, biotoxins, human interactions, environmental drivers, carrying capacity, *etc.* For the environmental and oceanographic impacts, the team is working with (and in part, financially supporting) a subgroup of researchers (both internal and external to NMFS) that are currently researching changes in oceanographic temperatures, primary productivity, and prey impacts (and other indicators) during the UME to help us understand what if any environmental drivers may be impacting the whales.

Comment 85: In a comment on the 2018 HSTT proposed rule, a Commenter recommended that given the paucity of information on marine mammal habitat currently available for the HSTT Study Area, efforts should be undertaken in an iterative manner by NMFS, and the Navy, to identify additional important habitat areas across the HSTT Study Area, using the full range of data and information available to the agencies (*e.g.,* habitat-based density models, NOAA-recognized BIAs, survey data, oceanographic and other environmental data, *etc.*).

Response: NMFS and the Navy used the best available scientific information (*e.g.,* SARs and numerous study reports from Navy-funded monitoring and research in the specific geographic region) in assessing density, distribution, and other information regarding marine mammal use of habitats in the HSTT Study Area. In addition, NMFS consulted LaBrecque *et al.* (2015), which provides a specific, detailed assessment of known BIAs. These BIAs may be region-, species-, and/or time-specific, include reproductive areas, feeding areas, migratory corridors, and areas in which small and resident populations are concentrated. While the science of marine mammal occurrence, distribution, and density resides as a core NMFS mission, the Navy does provide extensive support to the NMFS mission via ongoing HSTT specific monitoring as detailed in this final rule. The Navy also provides funding support to NMFS for programmatic marine mammal surveys in Hawaii and the U.S. West Coast, and spatial habitat model improvements. NMFS and the Navy in collaboration with experts are currently working to assess and update current BIAs, and identify new BIAs for marine mammals.

Comment 86: In a comment on the 2018 HSTT proposed rule, a Commenter recommended integration of important habitat areas to improve resolution of operations. The delineation of BIAs by NOAA, the updates made by the Navy to its predictive habitat models, and evidence of additional important habitat areas within the HSTT 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 offered the following thoughts for consideration.

They state 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 derived from the NAEMO model 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 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. While the 2018 HSTT proposed rule, in assessing environmental impacts on marine mammals, breaks down estimated impacts by general region (*i.e.,* HRC and SOCAL), the resolution is seldom greater than range complex or homeport and is not specifically focused on areas of higher biological importance. Current and ongoing efforts to identify important habitat areas for marine mammals should be used by NMFS and by the Navy as a guide to the most appropriate scale(s) for the analysis of operations.

Response: In their take request and effects analysis provided to NMFS, the Navy considered historic use (number and nature of training and testing activities) and locational information of training and testing activities when developing modelling boxes. The timing of training cycles and testing needs varies based on deployment requirements to meet current and emerging threats. Due to the variability, the Navy's description of its specified activities is structured to provide flexibility in training and testing locations, timing, and number. In addition, information regarding the exact location of sonar usage is classified. Due to the variety of factors, many of which influence locations that cannot be predicted in advance (*e.g.,* weather), the analysis is completed at a scale that is necessary to allow for flexibility. The purpose of the Navy's quantitative acoustic analysis is to provide the best estimate of impact/take to marine mammals and ESA listed species for the MMPA regulatory and ESA section 7 consultation analyses. Specifically, the analysis must take into account multiple Navy training and testing activities over large areas of the ocean for multiple years; therefore, analyzing activities in multiple locations over multiple seasons produces the best estimate of impacts/take to inform the 2018 HSTT FEIS/OEIS and NMFS. Also, the scale at which spatially explicit marine mammal density models are structured is determined by the data collection method and the environmental variables that are used to build the model. Therefore, altogether, given the variables that determine when and where the Navy trains and tests, as well as the resolution of the density data, the analysis of potential impacts is scaled to the level that the data fidelity will support. NMFS has worked with the Navy over the years to increase the spatio-temporal specificity of the descriptions of activities planned in or near areas of biological importance (*e.g.,* in BIAs or national marine sanctuaries), when possible, and NMFS is confident that the granularity of information provided sufficiently allows for an accurate assessment of both the impacts of the Navy's activities on marine mammal populations and the protective measures evaluated to mitigate those impacts.

Monitoring Recommendations

Comment 87: In a comment on the 2018 HSTT proposed rule, a Commenter recommended that NMFS require that the Navy continue to conduct long-term monitoring with the aim to provide baseline information on occurrence, distribution, and population structure of marine mammal species and stocks, and baseline information upon which the extent of exposure to disturbance from training and testing activities at the individual, and ultimately, population level-impacts, and the effectiveness of mitigation measures, can be evaluated. The Commenter recommended individual-level behavioral-response studies, such as focal follows and tagging using DTAGs, be carried out before, during, and after Navy training and testing activities. The Commenter recommended prioritizing DTAG studies that further characterize the suite of vocalizations related to social interactions. The Commenter recommends the use of unmanned aerial vehicles. The Commenter recommended that NMFS require the Navy to use these

technologies for assessing marine mammal behavior before, during, and after Navy training and testing (*e.g.,* swim speed and direction, group cohesion). Additionally, the Commenter recommended that the Navy support studies to explore how these technologies can be used to assess body condition, as this can provide an important indication of energy budget and health, which can inform the assessment of population-level impacts.

Response: 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 the Navy and other stakeholders that is based on rigorous reporting out from the Navy and the researchers doing the work. Further, the Navy is pursuing many of the topics that the Commenter identifies, either through the Navy monitoring required under the MMPA and ESA, or through Navy-funded research programs (ONR and LMR). We are confident that the monitoring conducted by the Navy satisfies the requirements of the MMPA.

With extensive input from NMFS, the Navy established the Strategic Planning Process under the marine species monitoring program to help structure the evaluation and prioritization of projects for funding. Chapter 5 (Mitigation), Section 5.1.2.2.1.3 (Strategic Planning Process) of the 2018 HSTT FEIS/OEIS provides a brief overview of the Strategic Planning Process. More detail, including the current intermediate scientific objectives, is available on the monitoring portal 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 steering committee evaluate how well a potential project would address the primary objectives of the monitoring program. NMFS has opportunities to provide input regarding the Navy's intermediate scientific objectives as well as providing 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/.*

Details on 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. 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. (1) Individual-level behavioral-response studies—In addition to the Navy's marine species monitoring program, investments for individual-level behavioral-response studies, the Office of Naval Research Marine Mammals and Biology program and the Navy's Living Marine Resources program continue to heavily invest in this topic. For example, as of March, 2020 the following representative studies are currently being funded:

- Behavioral Responses of Cetaceans to Naval Sonar 2016–2021 (Organizations: Norwegian Defense Research Establishment, Forsvarets forskningsinstitutt, University of St. Andrews Sea Mammal Research Unit);
- ACCURATE: ACoustic CUe RATEs for Passive Acoustics Density Estimation 2019–2023 (Organization: University of St. Andrews);
- Acoustic Metadata Management for Navy Fleet Operations 2015–2020 (Organization: San Diego State University);
- Acoustic startle responses as aversive reactions and hearing indicators in cetaceans 2016–2020 (Organization: University of St. Andrews);
- Analytical Methods to Support the Development of Noise Exposure Criteria for Behavioral Response 2018–2022 (Organizations: University of St. Andrews Centre for Research into Ecological and Environmental Modelling and Harris);
- Assessing resilience of beaked whale populations to human impacts: Population structure and genetic diversity in impacted and semi-pristine areas 2016–2020 (Organization: University of La Laguna);
- Behavioral and physiological response studies (BPRS) with social delphinid cetaceans using operational and simulated military mid-frequency active sonar 2019–2022 (Organization: Southall Environmental Associates Inc.);
- Behavioral Assessment of Auditory Sensitivity in Hawaiian Monk Seals 2018–2020 (Organization: University of California Santa Cruz);
- Behavioral response evaluations employing robust baselines and actual Navy training (BREVE) 2016–2020 (Organizations: Naval Information Warfare Center Pacific, National Marine Mammal Foundation Inc.);
- Blue and Fin Whale Density Estimation in the Southern California Offshore Range Using PAM Data 2015–2020 (Organization: Texas A&M University Galveston);
- Cetaceans, pinnipeds, and humans: Monitoring marine mammals in the Arctic and characterizing their acoustic spaces 2018–2021 (Organization: University of Washington);
- Collection of auditory evoked potential hearing thresholds in minke whales 2019–2023 (Organization: National Marine Mammal Foundation Inc.) [in partnership with Subcommittee on Ocean Science and Technology (SOST)];
- Cuvier's Beaked Whale and Fin Whale Behavior During Military Sonar Operations: Using Medium-term Tag Technology to Develop Empirical Risk Functions 2017–2021 (Organization: Marine Ecology and Telemetry Research);
- Demographics and diving behavior of Cuvier's beaked whales at Guadalupe Island, Mexico: A comparative study to better understand sonar impacts at SCORE 2018–2021 (Organization: Marine Ecology and Telemetry Research);
- Demonstration and Validation of Passive Acoustic Density Estimation for Right Whales 2019–2022 (Organization: Syracuse University, University of St. Andrews Centre for Research into Ecological and Environmental Modelling);
- DenMod: Working Group for the Advancement of Marine Species Density Surface Modeling 2017–2021 (Organization: University of St. Andrews Centre for Research into Ecological and Environmental Modelling);
- Dynamic marine mammal distribution estimation using coupled acoustic propagation, habitat suitability and soundscape models 2018–2020 (Organization: Woods Hole Oceanographic Institution);
- Environmentally influenced Behavioral Response Evaluations (E–BREVE) 2019–2022 (Organization: Naval Information Warfare Center Pacific);
- Frequency-dependent Growth and Recovery of TTS in Bottlenose Dolphins 2017–2020 (Organization: Naval Information Warfare Center Pacific);
- Integrating information on displacement caused by mid-frequency

active sonar and measurements of prey field into a population consequences of disturbance model for beaked whales 2018–2021 (Organizations: Naval Undersea Warfare Center Newport, University of St. Andrews, Monterey Bay Aquarium Research Institute);

- Investigating bone conduction as a pathway for mysticete hearing 2019–2023 (Organization: San Diego State University);
- Measuring the Effect of Range on the Behavioral Response of Marine Mammals Through the Use of Navy Sonar 2017–2021 (Organization: Naval Undersea Warfare Center Newport);
- Multi-spaced Measurement of Underwater Sound Fields from Explosive Sources 2019–2020 (Organization: University of Washington);
- Off-range beaked whale study: Behavior and demography of Cuvier's beaked whale at the Azores 2017–2020 (Organization: Kelp);
- Passive and active acoustic tracking mooring 2019–2020 (Organization: Scripps Institution of Oceanography);
- Single sensor and compact array localization methods 2016–2020 (Organization: University of Hawaii);
- Standardizing Methods and Nomenclature for Automated Detection of Navy Sonar 2018–2021 Project #LMR–34 (Organization: Naval Information Warfare Center Pacific, Naval Undersea Warfare Center Newport);
- The diet composition of pilot whales, dwarf sperm whales and pygmy sperm whales in the North Pacific 2017–2020 (Organization: University of Hawaii);
- The use of Navy range bottom-mounted, bi-directional transducers for long-term, deep-ocean prey mapping 2017–2020 (Organization: Monterey Bay Aquarium Research Institute);
- Towards a mysticete audiogram using humpback whales' behavioral response thresholds 2019–2023 (Organization: University of Queensland Cetacean Ecology and Acoustics Laboratory) [in partnership with SOST];
- Unifying modeling approaches for better understanding and characterizing the effects of sound on marine mammals 2019–2022 (Organization: University of California Santa Cruz);
- Use of 'Chirp' Stimuli for Non-invasive, Low-frequency Measurement of Marine Mammal Auditory Evoked Potentials 2019–2021 Project #LMR–39 (Organization: Naval Information Warfare Center Pacific); and
- Using context to improve marine mammal classification 2017–2020 (Organization: San Diego State University).

(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 tag. From the Navy's Office of Naval Research and Living Marine Resource 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 March 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); and
- The wide-band detection and classification system 2018–2020 (Organization: Woods Hole Oceanographic Institution).

(3) Unmanned Aerial Vehicles to assess marine mammal behavior before, during, and after Navy training and testing activities (*e.g.,* swim speed and direction, group cohesion)—Studies that use unmanned aerial vehicles to assess marine mammal behaviors and body condition are being funded by the Office of Naval Research 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 Office of Naval Research 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, relevant data that is 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. General population level trend analysis is conducted by NMFS through its stock assessment reports and regulatory determinations. The Navy's analysis of effects to populations (species and stocks) of all potentially exposed marine species, including marine mammals and sea turtles, is based on the best available science as discussed in Sections 3.7 (Marine Mammals) and 3.8 (Reptiles) of the 2018 HSTT FEIS/OEIS. PCoD models, similar to many fisheries stock assessment models, once developed will be powerful analytical tools when mature. However, currently they are dependent on too many unknown factors for these types of models to produce a reliable answer. Current ONR and LMR projects supporting improved modeling include (as of March, 2020):

- A model for linking physiological measures of individual health to population vital rates for cetaceans

2017–2020 (Organization: National Marine Mammal Foundation Inc.);

- Body condition as a predictor of behavioral responses of cetaceans to sonar 2019–2021 (Organization: University of St. Andrews);
- Integrating the results of behavioral response studies into models of the population consequences of disturbance 2019–2021 (Organizations: University of Washington, Naval Undersea Warfare Center Newport);
- Developing metrics of animal condition and their linkage to vital rates: Further development of the PCoD model 2018–2021 (Organization: University of California Santa Cruz);
- Development of an index to measure body condition of free-ranging cetaceans 2016–2020 (Organization: University of California Santa Cruz);
- Double Mocha: Phase II Multi-Study Ocean acoustic Human effects Analysis 2018–2021 (Organization: University of St. Andrews Centre for Research into Ecological and Environmental Modelling);
- Dynamics of eDNA 2018–2020 (Organization: Oregon State University);
- Further investigation of blow or exhaled breath condensate as a non-invasive tool to monitor the physiological response to stressors in cetaceans 2018–2020 (Organization: Mystic Aquarium);
- Heart rate logging in deep diving toothed whales: A new tool for assessing responses to disturbance 2016–2020 (Organization: San Jose State University);
- Measuring heart rate to assess the stress response in large whales 2019–2021 (Organization: Stanford University);
- Measuring stress hormone levels and reproductive rates in two species of common dolphins relative to mid-frequency active sonar within the greater region of the SOAR range, San Clemente Island, California 2017–2020 (Organization: Southwest Fisheries Science Center);
- MSM4PCoD: Marine Species Monitoring for the Population Consequences of Disturbance 2019–2023 (Organization: University of St. Andrews, Sea Mammal Research Unit);
- Neurobiological and physiological measurements from free swimming marine mammals 2019–2022 (Organization: Fundacion Oceanografic);
- Physiological consequences of flight responses in diving mammals: Critical metrics for assessing the impacts of novel environmental stimuli on cetaceans and other marine living species 2017–2020 (Organization: University of California Santa Cruz); and
- Reconstructing stress and stressor profiles in baleen whale earplugs 2017–2020 (Organization: Baylor University).

As discussed in the *Monitoring* section of the final 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/atlantic/current-projects/.* A list of the monitoring studies that the Navy will be conducting under this rule are listed at the bottom of the *Monitoring* section of the 2018 HSTT final rule.

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 HSTT Study Area. Given the scale of the HSTT 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, but is not recommending any changes at this time.

Negligible Impact Determination

General

Comment 88: In a comment on the 2018 HSTT proposed rule, Commenters stated that NMFS' analytical approach for negligible impact determination is not transparent and that the methods and resulting data cannot be substantiated with the information provided. Commenters stated that in general, NMFS has based negligible impact determinations associated with incidental take authorizations on abundance estimates provided either in its Stock Assessment Reports (SARs) or other more recent published literature. For the HSTT proposed rule, NMFS used abundance estimates as determined by the Navy's underlying density estimates rather than abundance estimates from either the SARs or published literature. NMFS also did not specify how it determined the actual abundance given that many of the densities differ on orders of kilometers. Interpolation or smoothing, and potentially extrapolation, of data likely would be necessary to achieve NMFS' intended goal—it is unclear whether any such methods were implemented. In addition, it is unclear whether NMFS estimated the abundances in the same manner beyond the U.S. EEZ as it did within the U.S. EEZ for HRC and why it did not compare takes within the U.S. EEZ and beyond the U.S. EEZ for SOCAL, given that a larger proportion of the Navy's SOCAL action area is beyond the U.S.EEZ than HRC. Furthermore, NMFS did not specify how it determined the proportion of total takes that would occur beyond the U.S. EEZ. Moreover, the ''instances'' of the specific types of taking (*i.e.,* mortality, Level A and B harassment) do not match the total takes ''inside and outside the EEZ'' in Tables 69–81 (where applicable) or those take estimates in Tables 41–42 and 67–68 of the 2018 HSTT proposed rule. It also appears the ''instances'' of take columns were based on only those takes in the U.S. EEZ for HRC rather than the area within and beyond the U.S. EEZ. It further is unclear why takes were not apportioned within and beyond the U.S. EEZ for SOCAL. Given that the negligible impact determination is based on the total taking in the entire study area, NMFS should have partitioned the takes in the ''instances'' of take columns in Tables 69–81 of the 2018 HSTT proposed rule for all activities that occur within *and* beyond the U.S. EEZ. One Commenter further asserts that any ''small numbers'' determination that relies on abundance estimates derived simplistically from modeled densities is both arbitrary and capricious. The Commenters assert that NMFS should, at least for data rich species, derive its absolute abundance estimates from NMFS' SARs or more recently published literature.

Response: NMFS' *Analysis and Negligible Impact Determination* section was updated and expanded in the 2018 HSTT final rule to clarify the issues the

Commenters raised here (as well as others). Specifically, though, NMFS uses both the Navy-calculated abundance (based on the Navy-calculated densities described in detail in the *Estimated Take of Marine Mammal* section) and the SARs abundances, where appropriate, in the negligible impact analysis—noting that the nature of the overlap of the Navy Study Area with the U.S. EEZ is different in Hawaii versus SOCAL, supporting different analytical comparisons.

NMFS acknowledges that there were a few small errors in the take numbers in the proposed rule; however, they have been corrected (*i.e.,* the take totals in Tables 41 and 42 of the 2018 HSTT proposed rule for a given stock now equal the ''in and outside the U.S. EEZ'' take totals in Tables 41 and 42 (of the HSTT final rule) and the minor changes do not affect the analysis or determinations in the rule.

Also, the Commenters are incorrect that the instances of take for HRC do not reflect the take both within and outside the U.S. EEZ. They do. Lastly, the Commenter mentions the agency making a ''small numbers'' determination, but such a determination is not applicable in the context of military readiness activities.

Comment 89: In a comment on the 2018 HSTT proposed rule, a Commenter stated that the activities proposed by the Navy include high-intensity noise pollution, vessel traffic, explosions, pile driving, and more at a massive scale. According to the Commenter, NMFS has underestimated the amount of take and the adverse impact that it will have on marine mammals and their habitat.

Response: NMFS has provided extensive information demonstrating that the best available science has been used to estimate the amount of take, and further to analyze the impacts that all of these takes combined will have on the affected species and stocks. As described in the *Analysis and Negligible Impact Determination* section, this information and our associated analyses support the negligible impact determinations necessary to issue these regulations.

Comment 90: In a comment on the 2018 HSTT proposed rule, a Commenter stated that blue whales exposed to mid-frequency sonar (with received levels of 110 to 120 dB re: 1 μPa) are less likely to produce calls associated with feeding behavior. They cite the Goldbogen *et al.* (2013) study (and a subsequent study) as extremely concerning because of the potential impacts of sonar on the essential life functions of blue whales as it found that sonar can disrupt feeding and displace blue whales from high-quality prey patches, significantly impacting their foraging ecology, individual fitness, and population health. They also state that mid-frequency sonar has been associated with several cases of blue whale stranding events and that low-frequency anthropogenic noise can mask calling behavior, reduce communication range, and damage hearing. These impacts from sonar on blue whales suggest that the activities' impacts would have long-term, non-negligible impacts on the blue whale population.

Response: As described in this final rule in the *Analysis and Negligible Impact Determination* section, NMFS has fully considered the effects that exposure to sonar can have on blue whales, including impacts on calls and feeding and those outlined in the Goldbogen study. However, as discussed, any individual blue whale is not expected to be exposed to sonar and taken on more than several days per year. Thus, while vocalizations may be impacted or feeding behaviors temporarily disrupted, this small scale of impacts is not expected to affect reproductive success or survival of any individuals, especially given the limitations on sonar and explosive use within blue whale BIAs. Of additional note, while the blue whale behavioral response study (BRS) in Southern California documented some foraging responses by blue whales to simulated Navy sonar, any response was highly variable by individual and context of the exposure. There were, for instance, some individual blue whales that did not respond. Recent Navy-funded blue whale tracking has documented wide ranging movements through Navy areas such that any one area is not used extensively for foraging. More long-term blue whale residency occurs north of and outside of the HSTT Study Area. Further, we disagree with the assertion that MFAS has been causally associated with blue whale strandings. This topic was discussed at length in the proposed rule and there is no data causally linking MFAS use with blue whale strandings.

Comment 91: In a comment on the 2018 HSTT proposed rule, a Commenter stated that NMFS cannot consider the additional mortality/serious injury, including the 0.2 in the proposed authorization for ship strike for blue whales in the 2018 HSTT proposed rule, to have a negligible impact for this stock. They also state that counts of mortality/serious injury do not account for the additional takes proposed to be authorized that cumulatively can have population level impacts from auditory injury and behavioral disturbance. Similarly, the Commenter stated that NMFS cannot consider the proposed authorization for 0.4 annual mortality/serious injury to have a negligible impact on the CA/OR/WA stock of humpback whales in the 2018 HSTT proposed rule because take is already exceeding the potential biological removal, and especially concerning is any take authorized for the critically endangered Central America population that would have significant adverse population impacts.

Response: As described in detail in the *Estimated Take of Marine Mammals* section, the Navy and NMFS revisited and re-analyzed the Navy's initial request of takes by mortality of blue and humpback whales from vessel strike and determined that only one strike of either would be possible over the course of five years in the 2018 HSTT final rule, and therefore authorized the lesser amount. Further, NMFS has expanded and refined the discussion of mortality take, PBR, and our negligible impact finding in the *Serious Injury and Mortality* subsection of the *Analysis and Negligible Impact Determination* section and does not repeat it here.

Comment 92: In a comment on the 2018 HSTT proposed rule, a Commenter stated that the estimated population size for the Hawaii stock of sei whales is only 178 animals, and the potential biological removal is 0.2 whales per year. According to the Commenter, NMFS admits that the mortality for the Hawaii stock of sei whales is above potential biological removal. The Commenter asserted that the conclusion that the action will have a negligible impact on this stock is arbitrary and capricious.

Response: As described in detail in the *Estimated Take of Marine Mammals* section, the Navy and NMFS revisited and re-analyzed the Navy's initial request for the take of a sei whale from vessel strike and determined that this take is unlikely to occur and, therefore, it is not authorized.

Comment 93: In a comment on the 2018 HSTT proposed rule, a Commenter stated that any take of Hawaiian monk seal by the proposed activities will have a non-negligible impact given the precarious status of this species.

Response: NMFS' rationale for finding that the Navy's activity will have a negligible impact on monk seals is included in the *Pinniped* subsection of the *Analysis and Negligible Impact Determination* section and is not re-printed here. Nonetheless, we reiterate that no mortality or injury due to tissue damage is anticipated or authorized, only one instance of PTS is estimated

and authorized, and no individual monk seal is expected to be exposed to stressors that would result in take more than a few days a year. Further, the Hawaii Island and 4-Island Region mitigation areas provide significant protection of monk seal critical habitat in the Main Hawaiian Islands, reducing impacts from sonar and explosives around a large portion of pupping beaches and foraging habitat, as described in the *Mitigation Measures* section.

Comment 94: In a comment on the 2019 HSTT proposed rule, Commenters stated that satellite telemetry data and eight years' worth of photo-identification and mark-recapture data, representing the best available science, indicate that San Nicolas Basin represents an area of high site fidelity, and residency, for a small population of Cuvier's beaked whales associated with San Clemente Island (Falcone *et al.,* 2009; Falcone *et al.,* 2014; Schorr *et al.,* 2014). They stated that the population's primary habitat overlaps directly with the SOAR Range. They asserted that many factors—their repeated exposure to Navy activities, their clear foraging-related responses to both controlled sonar playbacks (DeRuiter *et al.,* 2013) and live exercises (Falcone *et al.,* 2017), and their small abundance and apparently limited range—raise obvious concerns about population-level consequences for these whales (Claridge and Dunn, 2014, Moretti *et al.,* 2015). The Commenters asserted that without meaningful additional mitigation, they do not see how NMFS can conclude that population-level harm would not occur or, ultimately, how NMFS can credibly reach a finding of negligible impact with respect to this population.

Response: As noted in our response to a similar comment (Comment 97 below) on the 2018 HSTT proposed rule, NMFS acknowledges the sensitivity of small resident populations both in our analyses and in the identification of mitigation measures, where appropriate. However, we are required to make our negligible impact determination in the context of the MMPA-designated stock, which, in the case of the CA/OR/WA stock of Cuvier's beaked whale, spans the U.S. EEZ off the U.S. West Coast. As described in our responses to previous comments, NMFS and the Navy have fully accounted for the sensitivity of Cuvier's beaked whales in the behavioral thresholds and the estimation of take. NMFS has also considered the potential impacts of repeated takes on individuals that show site fidelity. Nonetheless, in 2020, an estimate of overall abundance of Cuvier's beaked whales at the Navy's instrumented range in San Nicolas Basin was obtained using new dive-counting acoustic methods and an archive of passive acoustic M3R data representing 49,855 hrs of data (DiMarzio *et al.,* 2020; Moretti, 2017). Over the ten-year period from 2010–2019, there was no observed decrease and perhaps a slight increase in annual Cuvier's beaked whale abundance within San Nicolas Basin (DiMarzio *et al.,* 2020). There does appear to be a repeated dip in population numbers and associated echolocation clicks during the fall centered around August and September (Moretti, 2017, DiMarzio *et al.,* 2020). A similar August and September dip was noted by researchers using stand-alone off-range bottom passive acoustic devices in Southern California (Širović *et al.,* 2016; Rice *et al.,* 2017, 2019, 2020). This dip in abundance may be tied to some as of yet unknown population dynamic or oceanographic and prey availability dynamics.

Comment 95: In a comment on the 2019 HSTT proposed rule, due to the circumstances for gray whales (described in Comment 78) Commenters asserted that in considering the effects of acoustic exposure on gray whales, NMFS cannot presume that the consequences of the Navy's behavioral disruption will be ''minor'' or ''short-term.'' They asserted that NMFS must carefully consider the biological context of behavioral disruption on that species and evaluate the meaningful risk of serious or severe consequences, including mortality.

Response: NMFS acknowledges that individual marine mammals that are emaciated or have underlying health issues, such as some gray whales have experienced, may be impacted more severely by exposure to additional stressors than healthy animals. However, the expected nature and short duration of any individual gray whale's exposure to Navy activity is still such that impacts would not be expected to be compounded to the point where individual fitness is affected. Specifically, gray whales seasonally migrate through the Southern California portion of the HSTT Study Area and are not known to forage in the HSTT Study Area. Most gray whales spend only brief periods of time (days) in the HSTT Study Area and we have no reason to expect that the anticipated incremental, short term, and predominately low-level behavioral responses to transitory stressors such as Navy training and testing activities will have impacts on individual gray whale fitness, much less adversely affect the stock at the population level. Also, as noted previously, both the Eastern Pacific stock (not ESA listed) and the Western Pacific stock of gray whales is described as increasing in the 2018 final SARs (the most recent SARs for these stocks). The population size of the Eastern North Pacific gray whale stock has increased over several decades despite an UME in 1999 and 2000.

Cumulative and Aggregate Effects

Comment 96: In a comment on the 2018 HSTT proposed rule, a Commenter asserted that NMFS has not apparently considered the impact of Navy activities on a population basis for many of the marine mammal populations within the HSTT Study Area. Instead, it has lodged discussion for many populations within broader categories, most prominently ''mysticetes'' (14 populations) and ''odontocetes'' (37 populations), that in some cases correspond to general taxonomic groups. Such grouping of stocks elides important differences in abundance, demography, distribution, and other population-specific factors, making it difficult to assume ''that the effects of an activity on the different stock populations'' are identical. That is particularly true where small, resident populations are concerned, and differences in population abundance, habitat use, and distribution relative to Navy activities can be profoundly significant. Additionally, the Commenter stated that NMFS assumed that all of the Navy's estimated impacts would not affect individuals or populations through repeated activity—even though the takes anticipated each year would affect the same populations and, indeed, would admittedly involve extensive use of some of the same biogeographic areas.

Response: NMFS provides information regarding broader groups in order to avoid repeating information that is applicable across multiple species or stocks, but analyses have been conducted and determinations made specific to each stock. The method used to avoid repeating information applicable to a number of species or stocks while also presenting and integrating all information applicable to particular species or stocks is described in the rule. Also, NMFS' analysis does address the fact that some individuals may be repeatedly impacted and how those impacts may or may not accrue to more serious effects. The *Analysis and Negligible Impact Determination* section has been expanded and refined to better explain this.

Comment 97: In a comment on the 2018 HSTT proposed rule, a Commenter stated that NMFS' negligible impact analysis for Cuvier's beaked whales is

predicated on a single take estimate for the CA/OR/WA stock. This is deeply problematic as the species is known to occur in small, resident populations within the SOCAL Range Complex. These populations are acutely vulnerable to Navy sonar. Cuvier's beaked whales have repeatedly been associated with sonar-related pathology, are known to react strongly to sonar at distances up to 100 kilometers, and are universally regarded to be among the most sensitive of all marine mammals to anthropogenic noise (Falcone *et al.,* 2017). Some populations, such as the one in San Nicolas Basin that coincides with the Navy's much-used Southern California ASW Range (SOAR), are repeatedly exposed to sonar, posing the same risk of population-wide harm documented on a Navy range in the Bahamas (Falcone and Schorr, 2013). The broad take estimates presented in the 2018 HSTT proposed rule, and the negligible impact analysis that they are meant to support, provide no insight into the specific impacts proposed for these small populations.

Response: NMFS acknowledges the sensitivity of small resident populations both in our analyses and in the identification of mitigation measures, where appropriate. However, we are required to make our negligible impact determination in the context of the MMPA-designated stock, which, in the case of the CA/OR/WA stock of Cuvier's beaked whale, spans the U.S. EEZ off the West Coast. As described in our responses to previous comments, NMFS and the Navy have fully accounted for the sensitivity of Cuvier's beaked whales in the behavioral thresholds and the estimation of take. Further, contrary to the assertions of the Commenter, NMFS has absolutely considered the potential impacts of repeated takes on individuals that show site fidelity and that analysis can be found in the *Analysis and Negligible Impact Determination s*ection, which has been refined and updated since the proposed rule based on public input. Nonetheless, in 2020, an estimate of overall abundance of Cuvier's beaked whales at the Navy's instrumented range in San Nicolas Basin was obtained using new dive-counting acoustic methods and an archive of passive acoustic M3R data representing 49,855 hrs of data (DiMarzio *et al.,* 2020; Moretti, 2017). Over the ten-year period from 2010–2019, there was no observed decrease and perhaps a slight increase in annual Cuvier's beaked whale abundance within San Nicolas Basin (DiMarzio *et al.,* 2020). There does appear to be a repeated dip in population numbers and associated echolocation clicks during the fall centered around August and September (Moretti, 2017, DiMarzio *et al.,* 2020). A similar August and September dip was noted by researchers using stand-alone off-range bottom passive acoustic devices in Southern California (Širović *et al.,* 2016; Rice *et al.,* 2017, 2019, 2020). This dip in abundance may be tied to some as of yet unknown population dynamic or oceanographic and prey availability dynamics.

Comment 98: In a comment on the 2018 HSTT proposed rule, a Commenter asserted that with respect to mortalities and serious injuries, NMFS' application of potential biological removal (PBR) is unclear and may not be consistent with its prior interpretations. The agency recognizes that PBR is a factor in determining whether the negligible impact threshold has been exceeded, but argues that, since PBR and negligible impact are different statutory standards, NMFS might find that an activity that kills marine mammals beyond what PBR could support would not necessarily exceed the negligible impact threshold. Regardless, however, of whether Congress intended PBR as a formal constraint on NMFS' ability to issue incidental take permits under section 101(a)(5), NMFS' own definition of ''negligible impact'' prevents it from authorizing mortalities or other takes that would threaten the sustainability of marine mammal stocks. Mortalities and serious injuries exceeding potential biological removal levels would do just that.

Additionally, in assessing the consequences of authorized mortality below PBR, NMFS applies an ''insignificance'' standard, such that any lethal take below 10 percent of residual PBR is presumed not to exceed the negligible impact threshold. This approach seems inconsistent, however, with the regulatory thresholds established for action under the commercial fisheries provision of the Act, where bycatch of 1 percent of total PBR triggers mandatory take reduction procedures for strategic marine mammal stocks. See 16 U.S.C. 1387(f)(1); 83 FR 5349, 5349 (Feb. 7, 2018). NMFS should clarify why it has chosen 10 percent rather than, for example, 1 percent as its ''insignificance'' threshold, at least for endangered species and other populations designated as strategic under the MMPA.

Response: NMFS disagrees that the consideration of PBR is unclear and notes that the narrative describing the application of PBR has been updated in this final rule to further explain how the agency considers this metric in the context of the negligible impact determination under section 101(a)(5)(A) (see the *Serious Injury and Mortality* sub-section of the *Analysis and Negligible Impact Determination* section) and is not repeated here. That discussion includes how PBR is calculated and therefore how it is possible for anticipated M/SI to exceed PBR or residual PBR and yet not adversely affect a particular species or stock through effects on annual rates of recruitment and survival.

Regarding the insignificance threshold, as explained in the rule, residual PBR is a metric that can be used to inform the assessment of M/SI impacts, and the insignificance threshold is an analytical tool to help prioritize analyst effort. But the insignificance threshold is not applied as a strict presumption as described by the Commenter. Although it is true that as a general matter M/SI that is less than 10 percent of residual PBR should have no effect on rates of recruitment or survival, the agency will consider whether there are other factors that should be considered, such as whether an UME is affecting the species or stock.

The 10 percent insignificance threshold is an analytical tool that indicates that the potential mortality or serious injury is an insignificant incremental increase in anthropogenic mortality and serious injury that alone (in the absence of any other take and any other unusual circumstances) would clearly not affect rates of recruitment or survival. As such, potential mortality and serious injury at the insignificance-threshold level or below is evaluated in light of other relevant factors (such as an ongoing UME) and then considered in conjunction with any anticipated Level A or Level B harassment take to determine if the total take would affect annual rates of recruitment or survival. Ten percent was selected because it corresponds to the insignificance threshold under the MMPA framework for authorizing incidental take of marine mammals resulting from commercial fisheries. There the insignificance threshold, which also is 10 percent of PBR, is ''the upper limit of annual incidental mortality and serious injury of marine mammal stocks by commercial fisheries that can be considered insignificant levels approaching a zero mortality and serious injury rate'' (see 50 CFR 229.2). A threshold that represents an insignificant level of mortality or serious injury approaching a zero mortality and serious injury rate was thought to be an appropriate level to indicate when, absent other factors, the

agency can be confident that expected mortality and serious injury will not affect annual rates of recruitment and survival, without the need for significant additional analysis.

Regarding the claim that NMFS' interpretation of PBR may be inconsistent with prior interpretations, we disagree. Rather, NMFS' interpretation of PBR has been utilized appropriately within the context of the different MMPA programs and associated statutory standards it has informed. The application of PBR under section 101(a)(5)(A) also has developed and been refined in response to litigation and as the amount of and nature of M/SI requested pursuant to this section has changed over time, thereby calling for the agency to take a closer look at how M/SI relative to PBR relates to effects on rates of recruitment and survival.

Specifically, until recently, NMFS had used PBR relatively few times to support determinations outside of the context of MMPA commercial fisheries assessments and decisions. Indeed, in *Georgia Aquarium, Inc.* v. *Pritzker,* 135 F. Supp.3d 1280 (N.D. Ga. 2015), in ruling on a lawsuit in which the plaintiffs sought to use PBR as the reason they should be allowed to import animals from the Sahklin-Amur stock of beluga whales for public display, the Court summarized a ''handful'' of cases where NMFS had used PBR to support certain agency findings. The Court agreed that the agency does not have a ''practice and policy'' of applying PBR in all circumstances. Importantly, the Court stated that ''NMFS has shown that where the Agency has considered PBR outside of the U.S. commercial fisheries context, it has treated PBR as only one 'quantitative tool' and that it is not used as the sole basis for its impact analyses,'' just as NMFS has done here for its negligible impact analyses.

The examples considered by the *Georgia Aquarium* Court involved scientific research permits or subsistence harvest decisions where reference to PBR was one consideration among several. Thus, in one of the examples referenced by the Court, PBR was included to evaluate different alternatives in a 2007 EIS developed in support of future grants and permits related to research on northern fur seals and Steller sea lions (*available at https://repository.library.noaa.gov/view/noaa/17331*). Similarly, in the 2015 draft EIS on the Makah Tribe's request to hunt gray whales, different levels of harvest were compared against PBR along with other considerations in the various alternatives (*available at https://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mammals/cetaceans/gray_whales/makah_deis_feb_2015.pdf*). Consistent with what the *Georgia Aquarium* Court found, in both of those documents PBR was one consideration in developing alternatives for the agency's EIS and not determinative in any decision-making process.

After 2013 in response to an incidental take authorization request from NMFS' Southwest Fisheries Science Center that contained PBR analysis and more particularly in response to a District Court's March 2015 ruling that NMFS' failure to consider PBR when evaluating lethal take under section 101(a)(5)(A) violated the requirement to use the best available science (see *Conservation Council for Hawaii* v. *National Marine Fisheries Service,* 97 F. Supp.3d 1210 (D. Haw. 2015)), NMFS began to systematically consider the role of PBR when evaluating the effects of M/SI during section 101(a)(5)(A) rulemakings. Previously, in 1996 shortly after the PBR metric was first introduced, NMFS denied a request from the U.S. Coast Guard for an incidental take authorization for their vessel and aircraft operations, seemingly solely on the basis of the potential for ship strike in relation to PBR. The decision did not appear to consider other factors that might also have informed the potential for ship strike of a North Atlantic right whale in relation to the negligible impact standard.

During the following years and until the Court's decision in *Conservation Council* and the agency issuing the proposed incidental take authorization for the Southwest Fisheries Science Center, NMFS issued incidental take regulations without referencing PBR. Thereafter, however, NMFS began considering and articulating the appropriate role of PBR when processing incidental take requests for M/SI under section 101(a)(5)(A). Consistent with the interpretation of PBR across the rest of the agency, NMFS' Permits and Conservation Division has been using PBR as a tool to inform the negligible impact analysis under section 101(a)(5)(A), recognizing that it is not a dispositive threshold that automatically determines whether a given amount of M/SI either does or does not exceed a negligible impact on the affected species or stock.

Comment 99: In a comment on the 2018 HSTT proposed rule, a Commenter stated that NMFS failed to adequately assess the aggregate effects of all of the Navy's activities included in the rule. The Commenter alleges that NMFS' lack of analysis of these aggregate impacts, which is essential to any negligible impact determination, represents a glaring omission from the proposed rule. While NMFS states that Level B behavioral harassment (aside from those caused by masking effects) involves a stress response that may contribute to an animal's allostatic load, it assumes without further analysis that any such impacts would be insignificant.

Response: NMFS did analyze the potential for aggregate effects from mortality, injury, masking, habitat effects, energetic costs, stress, hearing loss, and behavioral harassment from the Navy's activities in reaching the negligible impact determinations. Significant additional discussion has been added to the *Analysis and Negligible Impact Determination* section of the final rule to better explain the potential for aggregate or cumulative effects on individuals as well as how these effects on individuals relate to potential effects on annual rates of recruitment and survival for each species or stock.

In addition, NMFS fully considers the potential for aggregate effects from all Navy activities. We also consider UMEs and previous environmental impacts, where appropriate, to inform the baseline levels of both individual health and susceptibility to additional stressors, as well as stock status. Further, the species and stock-specific assessments in the *Analysis and Negligible Impact Determination* section (which have been updated and expanded) pull together and address the combined mortality, injury, behavioral harassment, and other effects of the aggregate HSTT 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. We refer the reader to the *Analysis and Negligible Impact Determination* section for this analysis.

Widespread, extensive monitoring since 2006 on Navy ranges that have been used for training and testing for decades has demonstrated no evidence of population-level impacts. Based on the best available research from NMFS and Navy-funded marine mammal studies, there is no evidence that ''population-level harm'' to marine mammals, including beaked whales, is occurring in the HSTT Study Area. The presence of numerous small, resident populations of cetaceans, documented high abundances, and populations trending to increase for many marine mammals species in the area suggests there are not likely population-level

consequences resulting from decades of ongoing Navy training and testing activities. Through the process described in the rule and the LOAs, the Navy will work with NMFS to assure that the aggregate or cumulative impacts remain at the negligible impact level.

Regarding the consideration of stress responses, NMFS does not assume that the impacts are insignificant. There is currently neither adequate data nor a mechanism by which the impacts of stress from acoustic exposure can be reliably and independently quantified. However, stress effects that result from noise exposure likely often occur concurrently with behavioral harassment and many are likely captured and considered in the quantification of other takes by harassment that occur when individuals come within a certain distance of a sound source (behavioral harassment, PTS, and TTS).

Comment 100: In a comment on the 2018 HSTT proposed rule, Commenters asserted that in reaching our MMPA negligible impact finding, NMFS did not adequately consider the cumulative impacts of the Navy's activities when combined with the effects of other non-Navy activities.

Response: Both the statute and the agency's implementing regulations call for analysis of the effects of the applicant's activities on the affected species and stocks, not analysis of other unrelated activities and their impacts on the species and stocks. That does not mean, however, that effects on the species and stocks caused by other non-Navy activities are ignored. The preamble for NMFS' implementing regulations under section 101(a)(5) (54 FR 40338; September 29, 1989) explains in response to comments that the impacts from other past and ongoing anthropogenic activities are to be incorporated into the negligible impact analysis via their impacts on the environmental baseline. Consistent with that direction, NMFS has factored into its negligible impact analyses the impacts of other past and ongoing anthropogenic activities via their impacts on the baseline (*e.g.,* as reflected in the density/distribution and status of the species, population size and growth rate, and other relevant stressors (such as incidental mortality in commercial fisheries or UMEs)). See the *Analysis and Negligible Impact Determination* section of this rule and the 2018 HSTT final rule.

Our 1989 final rule for the MMPA implementing regulations also addressed public comments regarding cumulative effects from future, unrelated activities. There we stated that such effects are not considered in making findings under section 101(a)(5) concerning negligible impact. We indicated that NMFS would consider cumulative effects that are reasonably foreseeable when preparing a NEPA analysis and also that reasonably foreseeable cumulative effects would be considered under section 7 of the ESA for ESA-listed species.

Also, as described further in the *Analysis and Negligible Impact Determination* section of the final rule, NMFS evaluated the impacts of HSTT authorized mortality on the affected stocks in consideration of other anticipated human-caused mortality, including the mortality predicted in the SARs for other activities along with other NMFS-permitted mortality (*i.e.,* authorized as part of the Southwest Fisheries Science Center rule), using multiple factors, including PBR. As described in more detail in the *Analysis and Negligible Impact Determination* section, PBR was designed to identify the maximum number of animals that may be removed from a stock (not including natural mortalities) while allowing that stock to reach or maintain its OSP and is also helpful in informing whether mortality will adversely affect annual rates of recruitment or survival in the context of a section 101(a)(5)(A).

NEPA

Comment 101: In a comment on the 2018 HSTT proposed rule, Commenters stated that NMFS cannot rely on the 2018 HSTT FEIS/OEIS to fulfill its obligations under NEPA because the purpose and need is too narrow and does not support NMFS' MMPA action, and therefore the 2018 HSTT FEIS/OEIS does not explore a reasonable range of alternatives.

Response: The proposed action at issue is the Navy's proposal to conduct testing and training activities in the HSTT Study Area. NMFS is a cooperating agency for that proposed action, as it has jurisdiction by law and special expertise over marine resources impacted by the proposed action, including marine mammals and federally-listed threatened and endangered species. Consistent with the regulations published by the Council on Environmental Quality (CEQ), it is common and sound NEPA practice for NOAA to adopt a lead agency's NEPA analysis when, after independent review, NOAA determines the document to be sufficient in accordance with 40 CFR 1506.3. Specifically here, NOAA must be satisfied that the EIS adequately addresses the impacts of issuing the MMPA incidental take authorization and that NOAA's comments and concerns have been adequately addressed. There is no requirement in CEQ regulations that NMFS, as a cooperating agency, issue a separate purpose and need statement in order to ensure adequacy and sufficiency for adoption. Nevertheless, the Navy, in coordination with NMFS, has clarified the statement of purpose and need in the 2018 HSTT FEIS/OEIS to more explicitly acknowledge NMFS' action of issuing an MMPA incidental take authorization. NMFS also clarified how its regulatory role under the MMPA related to the Navy's activities. NMFS' early participation in the NEPA process and role in shaping and informing analyses using its special expertise ensured that the analysis in the 2018 HSTT FEIS/OEIS is sufficient for purposes of NMFS' own NEPA obligations related to its issuance of incidental take authorization under the MMPA.

Regarding the alternatives, NMFS' early involvement in development of the 2018 HSTT FEIS/OEIS and role in evaluating the effects of incidental take under the MMPA ensured that the 2018 HSTT FEIS/OEIS would include adequate analysis of a reasonable range of alternatives. The 2018 HSTT FEIS/OEIS includes a No Action Alternative specifically to address what could happen if NMFS did not issue an MMPA authorization. The other two Alternatives address two action options that the Navy could potentially pursue while also meeting their mandated Title 10 training and testing responsibilities. More importantly, these alternatives fully analyze a comprehensive variety of mitigation measures. This mitigation analysis supported NMFS' evaluation of our options in potentially issuing an MMPA authorization, which, if the authorization may be issued, 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. NOAA has independently reviewed and evaluated the EIS, including the purpose and need statement and range of alternatives, and determined that the 2018 HSTT FEIS/OEIS fully satisfies NMFS' NEPA obligations related to its decision to issue the MMPA final rule and associated LOAs, and we have adopted it.

Endangered Species Act

Comment 102: In a comment on the 2018 HSTT proposed rule, a Commenter stated that under the ESA NMFS has the discretion to impose terms, conditions, and mitigation on any authorization.

They believe the proposed action clearly affects listed whales, sea turtles, and Hawaiian monk seals, triggering the duty to consult. The Commenter urged NMFS to fully comply with the ESA and implement robust reasonable and prudent alternatives and conservation measures to avoid harm to endangered species and their habitats.

Response: NMFS has fully complied with the ESA. The agency consulted pursuant to section 7 of the ESA and NMFS' ESA Interagency Cooperation Division provided a biological opinion concluding that NMFS' action of issuing MMPA incidental take regulations for the Navy HSTT activities would not jeopardize the continued existence of any threatened or endangered species and nor would it adversely modify any designated critical habitat. The biological opinion may be viewed at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities.*

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 HSTT Study Area are presented in Table 10 along with the best/minimum abundance estimate and associated coefficient of variation value. The Navy anticipates the take of individuals from 38 marine mammal species [3] by Level A harassment and Level B harassment incidental to training and testing activities from the use of sonar and other transducers, in-water detonations, air guns, and impact pile driving/vibratory extraction activities. The Navy requested authorization for 13 serious injuries or mortalities combined of two marine mammal stocks from explosives, and three takes of large whales by serious injury or mortality from vessel strikes over the seven-year period. Two marine mammal species, the Hawaiian monk seal and the Main Hawaiian Islands Insular Distinct Population Segment (DPS) of false killer whale, have critical habitat designated under the Endangered Species Act (16 U.S.C. 1531 *et seq.;* ESA) in the HSTT Study Area.

We presented a detailed discussion of marine mammals and their occurrence in the HSTT Study Area, inclusive of important marine mammal habitat (*e.g.,* ESA-designated critical habitat, biologically important areas (BIAs), national marine sanctuaries (NMSs)), and unusual mortality events (UMEs) in the 2018 HSTT proposed rule and 2018 HSTT final rule; please see these rules and the 2017 and 2019 Navy applications for complete information. There have been no changes to important marine mammal habitat, BIAs, NMSs, or ESA designated critical habitat since the issuance of the 2018 HSTT final rule; therefore the information that supports our determinations here can be found in the 2018 HSTT proposed and final rules. However, since publication of the 2018 HSTT final rule, NMFS published a proposed rule to designate ESA critical habitat for the Central America and Mexico DPSs of humpback whales on October 9, 2019 (84 FR 54354). In the proposed rule only critical habitat Unit 19 overlapped with the HSTT Study Area, and NMFS proposed to exclude this unit from the critical habitat designation based on consideration of national security. A final rule designating critical habitat for these two DPSs of humpback whales has not been published.

NMFS also has reviewed the most recent 2019 draft Stock Assessment Reports (SARs) and 2018 final SARs (Carretta *et al.,* 2019, which can be found at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*); information on relevant UMEs; and new scientific literature (see the *Potential Effects of Specified Activities on Marine Mammals and their Habitat* section), and determined that none of these nor any other new information changes our determination of which species or stocks have the potential to be affected by the Navy's activities or the pertinent information in the *Description of Marine Mammals and Their Habitat in the Area of the Specified Activities* section in the 2018 HSTT proposed and final rules. Therefore, the information presented in those sections of the 2018 HSTT proposed and final rules remains current and valid.

The species considered but not carried forward for analysis are two American Samoa stocks of spinner dolphins—(1) the Kure and Midway stock and (2) the Pearl and Hermes stock. There is no potential for overlap with any stressors from Navy activities and therefore there would be no incidental takes, in which case, these stocks are not considered further.

TABLE 10—MARINE MAMMAL OCCURRENCE WITHIN THE HSTT STUDY AREA

Common name	Scientific name	Stock	Status [1]		Occurrence	Seasonal absence	Stock abundance (CV)/minimum population [2]
			MMPA	ESA			
Blue whale	*Balaenoptera musculus*	Eastern North Pacific.	Strategic, Depleted	Endangered	Southern California		1,496 (0.44)/1,050
		Central North Pacific.	Strategic, Depleted	Endangered	Hawaii	Summer	133 (1.09)/63
Bryde's whale	*Balaenoptera brydei/edeni*	Eastern Tropical Pacific.			Southern California		unknown
		Hawaii			Hawaii		1,751 (0.29)/1,378
Fin whale	*Balaenoptera physalus*	CA/OR/WA	Strategic, Depleted	Endangered	Southern California		9,029 (0.12)/8,127
		Hawaii	Strategic, Depleted	Endangered	Hawaii	Summer	154 (1.05)/75
Gray whale	*Eschrichtius robustus*	Eastern North Pacific.			Southern California		26,960 (0.05)/25,849
		Western North Pacific.	Strategic, Depleted	Endangered	Southern California		290 (NA)/271
Humpback whale	*Megaptera novaeangliae*	CA/OR/WA	Strategic, Depleted	Threatened/ Endangered [3].	Southern California		2,900 (0.05)/2,784
		Central North Pacific.	Strategic		Hawaii	Summer	10,103 (0.30)/7,891
Minke whale	*Balaenoptera acutorostrata*	CA/OR/WA			Southern California		636 (0.72)/369
		Hawaii			Hawaii	Summer	unknown
Sei whale	*Balaenoptera borealis*	Eastern North Pacific.	Strategic, Depleted	Endangered	Southern California		519 (0.40)/374
		Hawaii	Strategic, Depleted	Endangered	Hawaii	Summer	391 (0.90)/204
Sperm whale	*Physeter macrocephalus*	CA/OR/WA	Strategic, Depleted	Endangered	Southern California		1,997 (0.57)/1,270
		Hawaii	Strategic, Depleted	Endangered	Hawaii		4,559 (0.33)/3,478
Pygmy sperm whale	*Kogia breviceps*	CA/OR/WA			Southern California	Winter and Fall	4,111 (1.12)/1,924
		Hawaii			Hawaii		unknown

[3] In the 2018 HSTT final rule the number of species was unintentionally presented incorrectly as 39 and is corrected here. This transcription error does not affect the analysis or conclusions reached in the 2018 HSTT final rule.

TABLE 10—MARINE MAMMAL OCCURRENCE WITHIN THE HSTT STUDY AREA—Continued

Common name	Scientific name	Stock	Status [1]		Occurrence	Seasonal absence	Stock abundance (CV)/minimum population [2]
			MMPA	ESA			
Dwarf sperm whale	*Kogia sima*	CA/OR/WA			Southern California		unknown
		Hawaii			Hawaii		unknown
Baird's beaked whale.	*Berardius bairdii*	CA/OR/WA			Southern California		2,697 (0.60)/1,633
Blainville's beaked whale.	*Mesoplodon densirostris*	Hawaii			Hawaii		2,105 (1.13)/980
Cuvier's beaked whale.	*Ziphius cavirostris*	CA/OR/WA			Southern California		3,274 (0.67)/2,059
		Hawaii			Hawaii		723 0.69/428
Longman's beaked whale.	*Indopacetus pacificus*	Hawaii			Hawaii		7,619 (0.66)/4,592
Mesoplodon beaked whales.	*Mesoplodon spp.*	CA/OR/WA			Southern California		3,044 (0.54)/1,967
Common Bottlenose dolphin.	*Tursiops truncatus*	California Coastal			Southern California		453 (0.06)/346
		CA/OR/WA Offshore			Southern California		1,924 (0.54)/1,255
		Hawaii Pelagic			Hawaii		21,815 (0.57)/13,957
		Kauai and Niihau			Hawaii		NA NA/97
		Oahu			Hawaii		NA
		4-Islands			Hawaii		NA
		Hawaii Island			Hawaii		NA NA/91
False killer whale	*Pseudorca crassidens*	Main Hawaiian Islands Insular.	Strategic, Depleted	Endangered	Hawaii		167 (0.14)/149
		Hawaii Pelagic			Hawaii		1,540 (0.66)/928
		Northwestern Hawaiian Islands.			Hawaii		617 (1.11)/290
Fraser's dolphin	*Lagenodelphis hosei*	Hawaii			Hawaii		51,491 (0.66)/31,034
Killer whale	*Orcinus orca*	Eastern North Pacific Offshore.			Southern California		300 (0.1)/276
		West Coast Transient.			Southern California		243 unknown/243
		Hawaii			Hawaii		146 (0.96)/74
Long-beaked common dolphin.	*Delphinus capensis*	California			Southern California		101,305 (0.49)/68,432
Melon-headed whale	*Peponocephala electra*	Hawaiian Islands			Hawaii		8,666 (1.00)/4,299
		Kohala Resident			Hawaii		447 (0.12)/404
Northern right whale dolphin.	*Lissodelphis borealis*	CA/OR/WA			Southern California		26,556 (0.44)/18,608
Pacific white-sided dolphin.	*Lagenorhynchus obliquidens*	CA/OR/WA			Southern California		26,814 (0.28)/21,195
Pantropical spotted dolphin.	*Stenella attenuata*	Oahu			Hawaii		unknown
		4-Islands			Hawaii		unknown
		Hawaii Island			Hawaii		unknown
		Hawaii Pelagic			Hawaii		55,795 (0.40)/40,338
Pygmy killer whale	*Feresa attenuata*	Tropical			Southern California	Winter & Spring	unknown
		Hawaii			Hawaii		10,640 (0.53)/6,998
Risso's dolphins	*Grampus griseus*	CA/OR/WA			Southern California		6,336 (0.32)/4,817
		Hawaii			Hawaii		11,613 (0.43)/8,210
Rough-toothed dolphin.	*Steno bredanensis*	NSD[4]			Southern California		unknown
		Hawaii			Hawaii		72,528 (0.39)/52,833
Short-beaked common dolphin.	*Delphinus delphis*	CA/OR/WA			Southern California		969,861 (0.17)/839,325
Short-finned pilot whale.	*Globicephala macrorhynchus.*	CA/OR/WA			Southern California		836 (0.79)/466
		Hawaii			Hawaii		19,503 (0.49)/13,197
Spinner dolphin	*Stenella longirostris*	Hawaii Pelagic			Hawaii		unknown
		Hawaii Island			Hawaii		665 (0.09)/617
		Oahu and 4-Islands			Hawaii		NA
		Kauai and Niihau			Hawaii		NA
		Kure and Midway			Hawaii		unknown
		Pearl and Hermes			Hawaii		unknown
Striped dolphin	*Stenella coeruleoalba*	CA/OR/WA			Southern California		29,211 (0.20)/24,782
		Hawaii			Hawaii		61,021 (0.38)/44,922
Dall's porpoise	*Phocoenoides dalli*	CA/OR/WA			Southern California		25,750 (0.45)/17,954
Harbor seal	*Phoca vitulina*	California			Southern California		30,968 (NA)/27,348
Hawaiian monk seal	*Neomonachus schauinslandi*	Hawaii	Strategic, Depleted	Endangered	Hawaii		1,351 (0.03)/1,325
Northern elephant seal.	*Mirounga angustirostris*	California			Southern California		179,000 (NA)/81,368
California sea lion	*Zalophus californianus*	U.S. Stock			Southern California		257,606 (NA)/233,515
Guadalupe fur seal	*Arctocephalus townsendi*	Mexico to California	Strategic, Depleted	Threatened	Southern California		34,187 (NA)/31,019
Northern fur seal	*Callorhinus ursinus*	California			Southern California		14,050 (NA)/7,524

[1] Endangered Species Act (ESA) status: Endangered, Threatened. MMPA status: Strategic, Depleted. A dash (-) indicates that the species/stock is not listed under the ESA or designated as depleted/strategic 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.

[3] The two humpback whale Distinct Population Segments (DPSs) making up the California/Oregon/Washington (CA/OR/WA) stock present in Southern California are the Mexico DPS, listed under the ESA as Threatened, and the Central America DPS, which is listed under the ESA as Endangered.

[4] NSD—No stock designation. Rough-toothed dolphin has a range known to include the waters off Southern California, but there is no recognized stock or data available for the U.S West Coast.

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. From 1991 to the present, there have been 17 formally recognized UMEs affecting marine mammals in California and Hawaii and involving species under NMFS' jurisdiction. Three UMEs with ongoing or recently closed investigations in the HSTT 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 (3 as of 3/6/2020). The total number of Guadalupe fur seals stranding in California from January 1, 2015, through March 6, 2020, in the UME is 400. While outside the HSTT Study Area, 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 94 seals, including 91 in 2019 and 3 in 2020 as of March 6, 2020. Strandings are seasonal and generally peak in April through June 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. The California portion of this UME was occurring in the same area as the 2013–2016 California sea lion UME. This investigation is ongoing. Please refer to: *https://www.fisheries.noaa.gov/national/marine-life-distress/2015-2019-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 March 13, 2020, there have been a total of 264 strandings along the coasts of the United States, Canada, and Mexico, with 129 of those strandings occurring along the U.S. coast. Of the strandings on the U.S. coast, 48 have occurred in Alaska, 35 in Washington, 6 in Oregon, and 40 in California. Partial necropsy examinations conducted on a subset of stranded whales have shown evidence of poor to thin body condition. As part of the UME investigation process, NOAA is assembling 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, and determine the next steps for the investigation. Please refer to: *https://www.fisheries.noaa.gov/national/marine-life-distress/2019-gray-whale-unusual-mortality-event-along-west-coast* for more information on this UME.

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

We provided a full discussion of the potential effects of the specified activities on marine mammals and their habitat in our 2018 HSTT proposed and final rules. In the *Potential Effects of Specified Activities on Marine Mammals and Their Habitat* section of the 2018 HSTT proposed and final rules, NMFS provided a description of the ways marine mammals may be affected by the same activities that the Navy will be conducting during the seven-year period analyzed in this rule in the form of serious injury or mortality, physical trauma, sensory impairment (permanent and temporary threshold shifts and acoustic masking), physiological responses (particularly stress responses), behavioral disturbance, or habitat effects. Therefore, we do not repeat the information here, all of which remains current and applicable, but refer the reader to those rules and the 2018 HSTT FEIS/OEIS (Chapter 3, Section 3.7 *Marine Mammals*), which NMFS participated in the development of via our cooperating agency status and adopted to meet our National Environmental Policy Act (NEPA) requirements.

NMFS has reviewed new relevant information from the scientific literature since publication of the 2018 HSTT final rule. Summaries of new scientific literature since publication of the 2018 HSTT final rule are presented below.

Nachtigall *et al.* (2018) and Finneran (2018) describe the measurements of hearing sensitivity of multiple odontocete species (bottlenose dolphin, harbor porpoise, beluga, and false killer whale) when a relatively loud sound was preceded by a warning sound. These captive animals were shown to reduce hearing sensitivity when warned of an impending intense sound. Based on these experimental observations of captive animals, the authors suggest that wild animals may dampen their hearing

during prolonged exposures or if conditioned to anticipate intense sounds. Finneran (2018) recommends further investigation of the mechanisms of hearing sensitivity reduction in order to understand the implications for interpretation of existing TTS data obtained from captive animals, notably for considering TTS due to short duration, unpredictable exposures. No modification of the 2018 HSTT EIS/OEIS analysis of auditory impacts is necessary based on this research, as these findings suggest additional research is required to understand implications on TTS data, and the current auditory impact thresholds are based on best available data for both impulsive and non-impulsive exposures to marine mammals.

Several publications described models developed to examine the long-term effects of environmental or anthropogenic disturbance of foraging on various life stages of selected species (sperm whale, Farmer *et al.* (2018); California sea lion, McHuron *et al.* (2018); and blue whale, Pirotta, *et al.* (2018a)). These models, taken into consideration with similar models described in the 2018 HSTT EIS/OEIS, continue to add to refinement to the approaches to the population consequences of disturbance (PCOD) framework. Such models also help identify what data inputs require further investigation. Pirotta *et al.* (2018b) provides a review of the PCOD framework with details on each step of the process and approaches to applying real data or simulations to achieve each step. As described in the 2018 HSTT EIS/OEIS, many of the inputs required by such models are not yet known for acoustic and explosive impacts. NMFS will continue to assess the applicability of population consequences models in our analyses.

Southall *et al.* (2019a) evaluated Southall *et al.* (2007) and used updated scientific information to propose revised noise exposure criteria to predict onset of auditory effects in marine mammals (*i.e.,* PTS and TTS onset). Southall *et al.* (2019a) note that the quantitative processes described and the resulting exposure criteria (*i.e.,* thresholds and auditory weighting functions) are largely identical to those in Finneran (2016) and NOAA (2016 and 2018). However, they differ in that the Southall *et al.* (2019a) exposure criteria are more broadly applicable as they include all marine mammal species (rather than those only under NMFS jurisdiction) for all noise exposures (both in air and underwater for amphibious species), and that while the hearing group compositions are identical they renamed the hearing groups.

In continued investigations of pinniped hearing, Kastelein *et al.* (2019a) exposed two female captive harbor seals to 6.5 kHz continuous, sinusoidal tones for 60 minutes (cumulative sound exposure levels (SELs) of 159–195 dB re: 1 μPa^2s), then measured TTS using behavioral (psychoacoustic) methods at the center frequency of the fatiguing sound (6.5 kHz) and 0.5 and 1 octave above that frequency (9.2 and 13 kHz). Susceptibility to TTS was similar in both individuals tested. At cumulative SELs below 179 dB re: 1 μPa^2s, maximum TTS was induced at the center frequency (6.5 kHz), and at cumulative SELs above 179 dB re: 1 μPa^2s, maximum TTS was induced at 0.5 octave above the center frequency (9.2 kHz). The highest TTSs were produced in the one-half octave band above the exposure frequency. Both seals recovered within 1–2 hours for up to 6 dB of TTS. One seal showed 19 dB of TTS after a dB re: 1 μPa^2s exposure and recovered within 24 hours. Overall, this study combined with previous work showed that for harbor seals, recovery times are consistent for similar-magnitude TTS, regardless of the type of fatiguing sound exposure (impulsive, continuous noise band, or sinusoidal wave), and that susceptibility to TTS in the fatiguing frequency range tested (2.5–6.5 kHz) varies little with hearing frequency. The two harbor seals in this study (and Kastelein *et al.,* 2012) had similar susceptibility to TTS as the seal in Kastak *et al.* (2005). The authors note that more fatiguing sound frequencies need to be tested in harbor seals to produce equal TTS curves, for generating weighting functions that can be used to develop exposure criteria for broadband sounds in the marine environment (Houser *et al.,* 2017).

To determine the distances at which Helicopter Long Range Active Sonar (HELRAS) signals (~1.3–1.4 kHz) can be detected, Kastelein *et al.* (2019b) measured hearing thresholds using behavioral (psychoacoustic) techniques to simulated HELRAS signals in two captive harbor seals. Both seals showed similar thresholds (51 dB re: 1 µPa rms, approximately 4 dB lower than the detection thresholds for the same individuals in Kastelein *et al.,* 2009) to previously obtained data for stimuli having the same center frequencies, which suggests that the harmonics present within HELRAS sources do not impact hearing threshold and that a tonal audiogram can be used to estimate the audibility of more complex narrow-band tonal signals in harbor seals.

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 dolphins are less sensitive to sound projected from above (likely 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.

Recent studies on the behavioral responses of cetaceans to sonar examine and continue to demonstrate the importance of not only sound source parameters, but exposure context (*e.g.,* behavioral state, presence of other animals and social relationships, prey abundance, distance to source, presence of vessels, environmental parameters) in determining or predicting a behavioral response.

- Kastelein *et al.* (2018) examined the role of sound pressure level (SPL) and duty cycle on the behavior of two captive harbor porpoises when exposed to simulated Navy mid-frequency sonar (53C, 3.5 to 4.1 kHz). Neither harbor porpoise responded to the low duty cycle (2.7 percent) at any of the five SPLs presented, even at the maximum received SPL (143 dB re: 1 µPa). At the higher duty cycle (96 percent), one porpoise responded by increasing his respiration rate at a received SPL of greater than or equal to 119 dB re: 1 µPa, and moved away from the transducer at a received SPL of 143 dB re: 1 µPa. Kastelein *et al.* (2018) observed that at the same received SPL and duty cycle, harbor porpoises respond less to 53C sonar sounds than 1–2 kHz, 6–7 kHz, and 25 kHz sonar signals observed in previous studies, but noted that when examining behavioral responses it is important to take into account the spectrum and temporal structure of the

signal, the duty cycle, and the psychological interpretation by the animal.

• To investigate the effect of signal to noise ratio (SNR) on behavioral responses, Kastelein *et al.* (2019c) observed respiration rates (an indicator of behavioral response) of two captive harbor porpoises when exposed to simulated 30-minute playbacks of Navy mid-frequency sonar (53C, 3.5 to 4.1 kHz, 96 percent duty cycle), in noise simulating sea state 6 conditions. No behavioral responses were observed when the porpoises were exposed to sonar signals at an SPL of 117 dB re: 1 µPa (SNR equal to 49 dB re: 1 Hz). Both porpoises responded when exposed to sonar signals at an SPL of 122 dB re: 1 µPa (SNR equal to 54 dB re: 1 Hz), however in quiet conditions one porpoise responded at similar levels (Kastelein *et al.* 2018), suggesting the behavioral responses of harbor porpoises to sonar signals are not affected in sea state 6 ambient noise conditions.

• To determine if sonar sounds with different harmonic contents and amplitude envelopes had different impacts on harbor porpoise behavior, Kastelein *et al.* (2019d) examined the behavioral responses of one male harbor porpoise to four different low-frequency HELRAS (1.33 to 1.43 kHz) sonar signals (1.25 s in duration, 107 dB re: 1 µPa SPL). The sonar sounds with sensation levels of approximately 21 dB (and 8 percent duty cycle) caused a very small displacement (mean increased distance of 0.11 m), slight increase in respiration rate, and a small increase in swimming speed, and these effects did not continue after the sound exposure ceased. The authors concluded that if porpoises at sea were exposed to sonar signals of similar SPLs, the effects would be expected to be minimal. The authors noted that harbor porpoises are relatively insensitive to low-frequency signals below 4 kHz, however high SPL harmonics of low-frequency sonar sound sounds can impact the behavior of harbor porpoises. They suggest new sonar systems be designed to reduce the level of harmonics.

• In an effort to examine potential mitigation measures to reduce impacts of seismic airguns on harbor porpoises, Kastelein *et al.* (2019e) examined the effect of a bubble screen on behavioral responses of two captive harbor porpoises exposed to airgun sounds. The bubble screen reduced the transmission of high-frequency airgun sounds by 20–30 dB above 250 Hz, however the broadband SELs-s was only ~3 dB lower when the bubble screen was present. The harbor porpoises responded differently to the airgun sounds, with one being more responsive than the other. When the bubble screen was deployed neither individual responded to the airgun sounds, supporting the hypothesis that the frequency content of impulsive sounds is an important factor in behavioral responses of harbor porpoises. The authors suggest that small bubble screens, such as those tested in this study, could be an important tool in improving living conditions for captive harbor porpoises by reducing background noise levels.

• Kastelein *et al.* (2019f) examined fish catching efficiency in two captive harbor porpoises exposed to pile-driving playback sound (single strike exposure levels between 125 and 143 dB re: 1 μPa^2s) and ambient (quiet) sound. They observed substantial individual variation in responses between the two harbor porpoises, with no change in fish catch success in one porpoise and decline in fish-catch success and trial termination in the second porpoise. These results suggest that high-amplitude pile driving sounds may negatively affect foraging behavior in some harbor porpoises. However, additional information is needed to determine the role of individual differences in responses to sound, termination rates, and fish-catching success to accurately estimate and quantify potential impacts.

• Wensveen *et al.* (2019) examined the role of sound source (simulated sonar pulses) distance and received level in northern bottlenose whales in an environment without frequent sonar activity using multi-scaled controlled exposure experiments. They observed behavioral avoidance of the sound source over a wide range of distances (0.8–28 km) and estimated avoidance thresholds ranging from modeled received SPLs of 117–126 dB re: 1 µPa as described by von Benda-Beckmann *et al.* (2019). The behavioral response characteristics and avoidance thresholds were comparable to those previously observed in beaked whale studies; however, they did not observe an effect of distance on behavioral response and found that onset and intensity of behavioral response were better predicted by received SPL.

• Joyce *et al.* (2019) presented movement and dive behavior data from seven Blainville's beaked whales that were satellite tagged prior to naval sonar exercises using mid-frequency active sonar (MFAS, 3–8 kHz) at the Atlantic Undersea Test and Evaluation Center (AUTEC) in the Bahamas. Five of the seven tagged were displaced 28–68 km after the onset of sonar exposure and returned to the AUTEC range 2–4 days after exercises ended. Three of the individuals for which modeled received SPLs were available during this movement showed declining received SPLs from initial maxima of 145–172 dB re: 1 µPa to maxima of 70–150 dB re: 1 µPa after displacements. Tagged individuals exhibited a continuation of deep diving activity consistent with foraging during MFAS exposure periods, but data also suggested that time spent on deep dives during initial exposure periods was reduced. These findings provide additional data for ongoing Population Consequences of Acoustic Disturbance assessments of disturbance as authors note that previous studies have suggested foraging dives may be lost in response to MFAS exposure, which could cause a decrease in energy intake and have potential effects on vital parameters. The data presented by Joyce *et al.* (2019) support the initial potential loss of foraging time, however they also suggest that Blainville's beaked whales may have the ability to partially compensate for this loss (assuming they have ample recovery times between dives) by increasing time spent at foraging depths following displacement.

• When conducting controlled exposure experiments on blue whales, 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. 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). Blue whale response did not follow a simple exposure-response model based on received sound exposure level.

• 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 μPa2s) and less than 2 km of 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 behavioral response functions 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 a review of the previously published data (considered in the 2018 HSTT final rule and 2018 HSTT EIS/OEIS analysis) on the potential impacts of sonar on beaked whales, Bernaldo de Quirós *et al.* (2019) suggested that the effect of mid-frequency active sonar on beaked whales varies among individuals or populations, and that predisposing conditions such as previous exposure to sonar and individual health risk factors may contribute to individual outcomes (such as decompression sickness).
- In an effort to improve estimates of behavioral responses to anthropogenic sound, Tyack and Thomas (2019) compared the approach of using a single threshold to newly developed dose-response functions. They demonstrated that the common approach of selecting the threshold at which half of the animals respond (RLp50) underestimates the number of individuals impacted. They suggest using a dose–response function to derive more accurate estimates of animals impacted and to set a threshold (the Effective Response Level) that corrects issues with the RLp50 estimate. The authors note that the Navy has calculated estimates of marine mammal takes using methods similar to the ones they recommend. Those methods were used to estimate take for this rule (see the Technical Report ''Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)'').
- 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. 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.

Having considered this information, and information provided in public comments on the 2019 HSTT 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 2018 HSTT proposed and final rules, 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 are based on the amount of take that NMFS anticipates could occur or is likely to occur, depending on the type of take and the methods used to estimate it, as described below. NMFS coordinated closely with the Navy in the development of their incidental take applications, and agrees that the methods the Navy has put forth described herein and in the 2018 HSTT proposed and final rules 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. The number and type of incidental takes that could occur or are likely to occur annually remain identical to those authorized in the 2018 HSTT regulations.

Takes are predominantly in the form of harassment, but a small number of serious injuries or mortalities are also authorized. For military readiness activities, 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, air guns, pile driving, explosives) is more likely to result in behavioral disruption (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 and/or tissue damage (the latter from explosives only) to result from exposure to the sound sources utilized in training and testing activities. No more than 13 serious injuries or mortalities (eight short-beaked common dolphins and five California sea lions over the seven-year period) are estimated as a result of exposure to explosive training and testing activities. Lastly, no more than three serious injuries or mortalities total (over the seven-year period) of mysticetes (except for sei whales, minke whales, Bryde's whales, Central North Pacific stock of blue whales, Hawaii stock of fin whales, and Western North Pacific stock of gray whales) and the Hawaii stock of sperm whales could occur through vessel collisions. Although we analyze the impacts of these potential serious injuries or mortalities that are authorized, the required mitigation and monitoring measures are expected to minimize the likelihood that ship strike or these high-level explosive exposures (and the associated serious injury or mortality) actually occur.

Generally speaking, for acoustic impacts we estimate 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 Level B harassment (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) and the number of days of activities or events.

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 permanent threshold shift (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 new behavioral Level B harassment thresholds have been refined here to better consider the best available science (*e.g.,* incorporating both received level and distance), they also still, accordingly, 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 behavioral Level B harassment thresholds are the most appropriate method for predicting behavioral Level B harassment given the best available science and the associated uncertainty.

We described these acoustic thresholds and the methods used to determine thresholds, none of which have changed, in detail in the *Acoustic Thresholds* section of the 2018 HSTT final rule; please see the 2018 HSTT final rule for detailed information.

Navy's Acoustic Effects Model

The Navy proposed no changes to the Acoustic Effects Model as described in the 2018 HSTT final rule and there is no new information that would affect the applicability or validity of the model. Please see the 2018 HSTT final rule and Appendix E of the 2018 HSTT FEIS/OEIS for detailed information.

Range to Effects

The Navy proposed no changes from the 2018 HSTT final rule to the type and nature of the specified activities to be conducted during the seven-year period analyzed in this final rule, including equipment and sources used and exercises conducted. There is also no new information that would affect the applicability or validity of the ranges to effects previously analyzed for these activities. Therefore, the ranges to effects in this final rule are identical to those described and analyzed in the 2018 HSTT final rule, including received sound levels that may cause onset of significant behavioral response and TTS and PTS in hearing for each source type or explosives that may cause non-auditory injury. Please see the *Range to Effects* section and Tables 24 through 40 of the 2018 HSTT final rule for detailed information.

Marine Mammal Density

The Navy proposed no changes to the methods used to estimate marine mammal density described in the 2018 HSTT final rule and there is no new information that would affect the applicability or validity of these methods. Please see the 2018 HSTT final rule for detailed information.

Take Requests

As in the 2018 HSTT final rule, in its 2019 application, 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 NMFS agrees that the following stressors have the potential to result in takes of marine mammals from the Navy's planned activities:

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

NMFS reviewed and agrees with the Navy's conclusion that acoustic and explosive sources have the potential to result in incidental takes of marine mammals by harassment, serious injury, or mortality. NMFS carefully reviewed the Navy's analysis and conducted its own analysis of vessel strikes, determining that the likelihood of any particular species of large whale being struck is quite low. Nonetheless, NMFS agrees that vessel strikes have the potential to result in incidental take from serious injury or mortality for certain species of large whales and the Navy specifically requested coverage for these species. Therefore, the likelihood of vessel strikes, and later the effects of the incidental take that is being authorized, has been fully analyzed and is described below.

Regarding the quantification of expected takes from acoustic and explosive sources (by Level A and Level B harassment, as well as mortality resulting from exposure to explosives), the number of takes are based directly on the level of activities (days, hours, counts, *etc.,* of different activities and events) in a given year. In the 2018 HSTT final rule, take estimates across the five-years were based on the Navy conducting three years of a representative level of activity and two years of maximum level of activity. Consistent with the pattern set forth in the 2017 Navy application, the 2018 HSTT FEIS/OEIS, and the 2018 HSTT final rule, the Navy included one additional representative year and one additional maximum year to determine the predicted take numbers in this rule. Specifically, as in the 2018 HSTT final rule, the Navy uses the maximum annual level to calculate annual takes (which would remain identical to what was determined in the 2018 HSTT final rule), and the sum of all years (four representative and three maximum) to calculate the seven-year totals for this rule.

The quantitative analysis process used for the 2018 HSTT FEIS/OEIS and the 2017 and 2019 Navy applications to estimate potential exposures to marine mammals resulting from acoustic and explosive stressors is 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 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. Where the analysis indicates mitigation would effectively reduce risk, the model-estimated PTS 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 2017 Navy application and the *Take Requests* section of the 2018 HSTT final rule. The extent to which the mitigation areas reduce impacts on the affected species and stocks is addressed separately in the *Analysis and Negligible Impact Determination* sections of this rule and the 2018 HSTT final rule.

No changes have been made to the quantitative analysis process to estimate potential exposures to marine mammals resulting from acoustic and explosive stressors and calculate take estimates. In addition, there is no new information that would call into question the validity of the Navy's quantitative analysis process. Please see the documents described in the paragraph above, the 2018 HSTT proposed rule, and the 2018 HSTT final rule for detailed descriptions of these analyses. In summary, we believe the Navy's methods, including the method for incorporating mitigation and avoidance, are the most appropriate methods for predicting PTS, tissue damage, TTS, and behavioral disruption. 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 PTS, tissue damage, TTS, or behavioral disruption.

Summary of Authorized Take 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 estimates 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 2019 Navy application. Annual takes (based on the maximum number of activities that could occur per 12-month period) from the use of acoustic and explosive sources are identical to those presented in Tables 41 and 42 and in the *Explosives* subsection of the *Take Requests* section of the 2018 HSTT final rule. The 2019 Navy application also includes the Navy's take estimate and request for vessel strikes due to vessel movement in the HSTT Study Area. The No Stock Designation stock of rough-toothed was modeled by the Navy and estimated to have 0 takes of any type from any activity source. 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 as well as the incidental takes by serious injury or mortality from explosives requested for authorization are the maximum number reasonably expected to occur. NMFS also agrees that the takes by serious injury or mortality as a result of vessel strikes could occur. The total amount of estimated incidental take from acoustic and explosive sources over the total seven-year period covered by the 2019 Navy application is less than the annual total multiplied by seven, because although the annual estimates are based on the maximum number of activities per year and therefore the maximum possible estimated takes, the seven-year total take estimates are based on the sum of three maximum years and four representative years. Not all activities occur every year. Some activities would occur multiple times within a year, and some activities would occur only a few times over the course of the seven-year period. Using seven years of the maximum number of activities each year would vastly overestimate the amount of incidental take that would occur over the seven-year period where the Navy knows that it will not conduct the maximum number of activities each and every year for the seven years.

Authorized Harassment Take from Training Activities

For training activities, Table 11 summarizes the Navy's take estimate and request and the maximum amount and type of Level A harassment and Level B harassment for the seven-year period covered by the 2019 Navy application that NMFS concurs is reasonably expected to occur by species or stock, and is therefore authorized. For the authorized amount and type of Level A harassment and Level B harassment annually, see Table 41 in the 2018 HSTT final rule. Note that take by Level B harassment includes both behavioral disruption and TTS. Navy Figures 6–12 through 6–50 in Section 6 of the 2017 Navy application illustrate the comparative amounts of TTS and behavioral disruption for each species annually, noting that if a modeled marine mammal was ''taken'' through exposure to both TTS and behavioral disruption in the model, it was recorded as a TTS.

TABLE 11—SEVEN-YEAR TOTAL SPECIES- AND STOCK-SPECIFIC TAKE AUTHORIZED FROM ACOUSTIC AND EXPLOSIVE SOUND SOURCE EFFECTS FOR ALL TRAINING ACTIVITIES

Species	Stock	7-year total	
		Level B	Level A
Blue whale *	Central North Pacific	205	0
	Eastern North Pacific	7,116	6
Bryde's whale †	Eastern Tropical Pacific	167	0
	Hawaiian †	631	0
Fin whale *	CA/OR/WA	7,731	0
	Hawaiian	197	0
Humpback whale †	CA/OR/WA †	7,962	7

TABLE 11—SEVEN-YEAR TOTAL SPECIES- AND STOCK-SPECIFIC TAKE AUTHORIZED FROM ACOUSTIC AND EXPLOSIVE SOUND SOURCE EFFECTS FOR ALL TRAINING ACTIVITIES—Continued

Species	Stock	7-year total	
		Level B	Level A
	Central North Pacific	34,437	12
Minke whale	CA/OR/WA	4,119	7
	Hawaiian	20,237	6
Sei whale *	Eastern North Pacific	333	0
	Hawaiian	677	0
Gray whale †	Eastern North Pacific	16,703	27
	Western North Pacific †	19	0
Sperm whale *	CA/OR/WA	8,834	0
	Hawaiian	10,341	0
Dwarf sperm whale	Hawaiian	84,232	215
Pygmy sperm whale	Hawaiian	33,431	94
Kogia whales	CA/OR/WA	38,609	149
Baird's beaked whale	CA/OR/WA	8,524	0
Blainville's beaked whale	Hawaiian	23,491	0
Cuvier's beaked whale	CA/OR/WA	47,178	0
	Hawaiian	7,898	0
Longman's beaked whale	Hawaiian	82,293	0
Mesoplodon species (beaked whale guild)	CA/OR/WA	25,404	0
Bottlenose dolphin	California Coastal	1,295	0
	CA/OR & WAOffshore	201,619	13
	Hawaiian Pelagic	13,080	0
	Kauai & Niihau	500	0
	Oahu	57,288	10
	4-Island	1,052	0
	Hawaii	291	0
False killer whale †	Hawaii Pelagic	4,353	0
	Main Hawaiian Islands Insular †	2,710	0
	Northwestern Hawaiian Islands	1,585	0
Fraser's dolphin	Hawaiian	177,198	4
Killer whale	Eastern North Pacific Offshore	460	0
	Eastern North Pacific Transient/West Coast Transient	855	0
	Hawaiian	513	0
Long-beaked common dolphin	California	784,965	99
Melon-headed whale	Hawaiian Islands	14,137	0
	Kohala Resident	1,278	0
Northern right whale dolphin	CA/OR/WA	357,001	57
Pacific white-sided dolphin	CA/OR/WA	274,892	19
Pantropical spotted dolphin	Hawaii Island	17,739	0
	Hawaii Pelagic	42,318	0
	Oahu	28,860	0
	4-Island	1,816	0
Pygmy killer whale	Hawaiian	35,531	0
	Tropical	2,977	0
Risso's dolphin	CA/OR/WA	477,389	45
	Hawaiian	40,800	0
Rough-toothed dolphin	Hawaiian	26,769	0
	NSD [1]	0	0
Short-beaked common dolphin	CA/OR/WA	5,875,431	307
Short-finned pilot whale	CA/OR/WA	6,341	6
	Hawaiian	53,627	0
Spinner dolphin	Hawaii Island	609	0
	Hawaii Pelagic	18,870	0
	Kauai & Niihau	1,961	0
	Oahu & 4-Island	10,424	8
Striped dolphin	CA/OR/WA	777,001	5
	Hawaiian	32,806	0
Dall's porpoise	CA/OR/WA	171,250	894
California sea lion	U.S.	460,145	629
Guadalupe fur seal*	Mexico	3,342	0
Northern fur seal	California	62,138	0
Harbor seal	California	19,214	48
Hawaiian monk seal*	Hawaiian	938	5
Northern elephant seal	California	241,277	490

* ESA-listed species (all stocks) within the HSTT Study Area.
† Only designated stocks are ESA-listed.
[1] NSD: No stock designation.

Authorized Harassment Take From Testing Activities

For testing activities, Table 12 summarizes the Navy's take estimate and request and the maximum amount and type of Level A harassment and Level B harassment for the seven-year period covered by the 2019 Navy application that NMFS concurs is reasonably expected to occur by species or stock, and is therefore authorized. For the estimated amount and type of Level A harassment and Level B harassment annually, see Table 42 in the 2018 HSTT final rule. Note that take by Level B harassment includes both behavioral disruption and TTS. Navy Figures 6–12 through 6–50 in Section 6 of the 2017 Navy application illustrate the comparative amounts of TTS and behavioral disruption for each species annually, noting that if a modeled marine mammal was ''taken'' through exposure to both TTS and behavioral disruption in the model, it was recorded as a TTS.

TABLE 12—SEVEN-YEAR TOTAL SPECIES AND STOCK-SPECIFIC TAKE AUTHORIZED FROM ACOUSTIC AND EXPLOSIVE SOUND SOURCE EFFECTS FOR ALL TESTING ACTIVITIES

Species	Stock	7-year total	
		Level B	Level A
Blue whale *	Central North Pacific	93	0
	Eastern North Pacific	5,679	0
Bryde's whale †	Eastern Tropical Pacific	97	0
	Hawaiian †	278	0
Fin whale *	CA/OR/WA	6,662	7
	Hawaiian	108	0
Humpback whale †	CA/OR/WA†	4,961	0
	Central North Pacific	23,750	19
Minke whale	CA/OR/WA	1,855	0
	Hawaiian	9,822	7
Sei whale *	Eastern North Pacific	178	0
	Hawaiian	329	0
Gray whale †	Eastern North Pacific	13,077	9
	Western North Pacific †	15	0
Sperm whale *	CA/OR/WA	7,409	0
	Hawaiian	5,269	0
Dwarf sperm whale	Hawaiian	43,374	197
Pygmy sperm whale	Hawaiian	17,396	83
Kogia whales	CA/OR/WA	20,766	94
Baird's beaked whale	CA/OR/WA	4,841	0
Blainville's beaked whale	Hawaiian	11,455	0
Cuvier's beaked whale	CA/OR/WA	30,180	28
	Hawaiian	3,784	0
Longman's beaked whale	Hawaiian	41,965	0
Mesoplodon species (beaked whale guild)	CA/OR/WA	16,383	15
Bottlenose dolphin	California Coastal	11,158	0
	CA/OR & WA Offshore	158,700	8
	Hawaiian Pelagic	8,469	0
	Kauai & Niihau	3,091	0
	Oahu	3,230	0
	4-Island	1,129	0
	Hawaii	260	0
False killer whale †	Hawaii Pelagic	2,287	0
	Main Hawaiian Islands Insular †	1,256	0
	Northwestern Hawaiian Islands	837	0
Fraser's dolphin	Hawaiian	85,193	9
Killer whale	Eastern North Pacific Offshore	236	0
	Eastern North Pacific Transient/West Coast Transient	438	0
	Hawaiian	279	0
Long-beaked common dolphin	California	805,063	34
Melon-headed whale	Hawaiian Islands	7,678	0
	Kohala Resident	1,119	0
Northern right whale dolphin	CA/OR/WA	280,066	22
Pacific white-sided dolphin	CA/OR/WA	213,380	14
Pantropical spotted dolphin	Hawaii Island	9,568	0
	Hawaii Pelagic	24,805	0
	Oahu	1,349	0
	4-Island	2,513	0
Pygmy killer whale	Hawaiian	18,347	0
	Tropical	1,928	0
Risso's dolphin	CA/OR/WA	339,334	24
	Hawaiian	19,027	0
Rough-toothed dolphin	Hawaiian	14,851	0
	NSD [1]	0	0
Short-beaked common dolphin	CA/OR/WA	3,795,732	304
Short-finned pilot whale	CA/OR/WA	6,253	0
	Hawaiian	29,269	0
Spinner dolphin	Hawaii Island	1,394	0

TABLE 12—SEVEN-YEAR TOTAL SPECIES AND STOCK-SPECIFIC TAKE AUTHORIZED FROM ACOUSTIC AND EXPLOSIVE SOUND SOURCE EFFECTS FOR ALL TESTING ACTIVITIES—Continued

Species	Stock	7-year total	
		Level B	Level A
	Hawaii Pelagic	9,534	0
	Kauai & Niihau	9,277	0
	Oahu & 4-Island	1,987	0
Striped dolphin	CA/OR/WA	371,328	20
	Hawaiian	16,270	0
Dall's porpoise	CA/OR/WA	115,353	478
California sea lion	U.S.	334,332	36
Guadalupe fur seal *	Mexico	6,167	0
Northern fur seal	California	36,921	7
Harbor seal	California	15,898	12
Hawaiian monk seal *	Hawaiian	372	0
Northern elephant seal	California	151,754	187

* ESA-listed species (all stocks) within the HSTT Study Area.
† Only designated stocks are ESA-listed.
[1] NSD: No stock designation.

Authorized Take From Vessel Strikes and Explosives by Serious Injury or Mortality

Vessel Strike

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; Lemon *et al.,* 2006; Lusseau, 2003; Lusseau, 2006; Magalhaes *et al.,* 2002; Nowacek *et al.,* 2001; Richter *et al.,* 2003; Scheidat *et al.,* 2004; Simmonds, 2005; 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), 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 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 Lookouts, beyond those already stationed on the bridge and on navigation teams, are positioned

as Lookouts during some training events.

- 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 HSTT Study Area or while in transit.

There have been two recorded Navy vessel strikes of large whales in the HSTT Study Area from 2009 through 2018, the period in which the Navy began implementing effective mitigation measures to reduce the likelihood of vessel strikes. Both strikes occurred in 2009 and both were to fin whales. In order to account for the accidental nature of vessel strikes to large whales in general, and the potential risk from any vessel movement within the HSTT 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 HSTT Study Area (the time period from when current mitigations were instituted until the Navy conducted the analysis for the 2019 Navy application), as well as historical at-sea days in the HSTT Study Area from 2009–2018 and estimated potential at-sea days for the period from 2018 to 2025 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 2018 to 2025. The analysis for the period of 2018 to 2023 is described in detail in Chapter 6 of the 2017 Navy application and has been updated for this seven-year rulemaking.

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 the two fin whale strikes in their calculations to determine the number of strikes likely to result from their activities (although worldwide strike information, from all Navy activities and other sources, was used to inform the species that may be struck) and evaluated data beginning in 2009, as that was the start of the Navy's Marine Species Awareness Training and adoption of additional mitigation measures to address ship strike, which will remain in place along with additional mitigation measures during the seven years of this rule. The probability analysis concluded that there was a 22 percent chance that no whales would be struck by Navy vessels over the seven-year period, and a 33, 25, 13, and 5 percent chance that one, two, three, or four whales, respectively, would be struck over the seven-year period. All other alternatives (*i.e.* one, two, three, or more whales) represent a 78 percent chance 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 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 HSTT Study Area over the course of the seven years.

The probability of the Navy striking up to three large whales over the seven-year period (which is a 13 percent chance) as analyzed for this final rule using updated Navy vessel strike data and at-sea days is very close to the probability of the Navy striking up to three large whales over five years (which was a 10 percent chance). As the probability of striking three large whales does not differ significantly from the 2018 HSTT final rule, and the probability of striking four large whales over seven years remains very low to the point of being unlikely (less than 5 percent), the Navy has requested, and we are authorizing no change in the number of takes by serious injury or mortality due to vessel strikes.

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 crew, *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 being struck by a vessel as a result of Navy activities and, further, these species' 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. Based on this information, NMFS concurs with the Navy's assessment and recognizes 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 as discussed further below.

As noted in the 2018 HSTT proposed and final rules, in the 2017 Navy application the Navy initially considered a weight of evidence approach that considered relative abundance, historical strike data over many years, and the overlap of Navy activities with the stock distribution in their request. NMFS and the Navy further discussed the available information and considered two 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 and (2) whether the Navy has ever definitively struck an individual from a particular stock and, if so, how many times. For this seven-year rule, we have reconsidered these two factors and updated the analysis with the Navy's seven-year ship strike probability analysis and any new/updated ship strike data from the SARs.

To address number (1) above, NMFS compiled information from NMFS' SARs on detected annual rates of large whale serious injury or mortality from vessel collisions (Table 13). 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 SOCAL and Hawaii as recorded systematically over the last five years (the period used for the SARs). 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 strikes for each species by the probability of striking a whale (*i.e.,* 78 percent, as described by the Navy's probability analysis above). We also estimated the percent likelihood of striking a particular species of large whale twice by squaring the value estimated for the probability of striking a particular species of whale once (*i.e.,* generally, to calculate the probability of an event occurring twice, multiply the probability of the first event by the second). 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 (and we include the annual averages from 2017 and 2018 SARs in Table 13 to illustrate), however, over the years and through changing SARs, stocks tend to consistently maintain a relatively higher or relatively lower likelihood of being struck.

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 HSTT Study Area since 1991 (since they started tracking consistently), as well as the information originally considered by the Navy in their 2017 application, which includes relative abundance, total recorded strikes, and the overlay of all of this information with the Navy's Study Area. We note that for all of the take of species specifically denoted in Table 13 below, 19 percent of the individuals struck overall by any vessel type remained unidentified and 36 percent of those struck by the Navy (5 of 14 in the Pacific) remain unidentified. However, given the information on known species or stocks struck, the analysis below remains appropriate. 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 13 includes the percent likelihood of hitting an individual whale once based on SAR data, total strikes from Navy vessels and from all other vessels, relative abundance, and modeled vessel strikes from Rockwood *et al.* (2017). The last column indicates the annual mortality that has the reasonable potential to occur and is authorized: Those stocks with one serious injury or mortality (M/SI) take authorized over the seven-year period of the rule are shaded lightly, while those with two M/SI takes that have the potential to occur and are authorized over the seven-year period of the rule are shaded more darkly.

Table 13 -- Summary of factors considered in determining the number of individuals in each stock potentially struck by a vessel.

ESA status	Species	Stock	Percent likelihood of hitting individual from stock once		Total Known *Navy* Strikes in HSTT Study Area	Summarized from compilation in Navy application[3]		Rockwood *et al.*, 2017 modeled vessel strikes[4]	MMPA Proposed Authorized Takes (from the 3 total)	Annual Authorized Take
			2017 SAR[1]	Draft 2019 SAR/2018 SAR		Review of all NMFS' strike data - # of total strikes[3]	Relative Abundance			
Listed	Blue whale	Central North Pacific	0	0	No	0	0.016	-	-	-
		Eastern North Pacific	6.5	4.6	1 in SOCAL	14	0.103	18	1	0.14
	Fin whale	CA/OR/WA	18.1	18.4	2 in SOCAL	21	0.46	43	2	0.29
		Hawaii	0	0	No	0	0.027	-	-	-
	Humpback whale[2]	CA/OR/WA stock, Mexico DPS	11.1[2]	25.2[2]	No	15[2]	0.041	22	1	0.14
	Sei whale	Eastern North Pacific	0	2.3	No	1	0.007	-	-	-
		Hawaii	0	0	No	0	0.041	-	-	-
	Gray whale	Western North Pacific	0	0	No	0	0	-	-	-
	Sperm whale	CA/OR/WA	2	0	No	1	0.107	-	-	-
		Hawaii	0	0	1 in HRC	2	0.487	-	1	0.14
Not listed	Gray whale	Eastern North Pacific	20.1	9.2	3 in SOCAL	35	0.25	-	2	0.29
	Bryde's whale	Eastern Tropical Pacific	2[5]	2.3	No	0	0	-	-	-
		Hawaii	0	0	No	0	0.048	-	-	-
	Minke whale	CA/OR/WA	0	0	No	0	0.032	-	-	-
		Hawaii	0	0	No	0	0.027	-	-	-
	Humpback whale	Central North Pacific[6]	18.1	16.1	2 in HRC	58	0.245	-	2	0.29

[1]Percent likelihood of Central North Pacific stock of humpback whales for the 2017 SAR was unintentionally presented incorrectly in Table 43 of the 2018 HSTT final rule. As the percent likelihood for all stocks are calculated together, correcting the Central North Pacific stock of humpback whale also corrects the values for other stocks for which ship strikes were reported in the SARs. Correct values are provided here. These transcription errors do not affect the analysis or conclusions in the 2018 HSTT final rule.

[2] Humpback information applies to CA/OR/WA stock, Mexico DPS only. Text explains why takes in SOCAL come from Mexico DPS.

[3] The Navy presented compiled information related to vessel strike in Section 5.2 of the 2017 Navy application, this column sums information presented on pg 5-11.

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

[5] The percent likelihood of hitting an individual Bryde's whale from the Eastern North Pacific Stock in 2017 was unintentionally presented incorrectly as 0.2 in the 2018 HSTT final rule and is corrected here. This transcription error does not affect the analysis or conclusions reached in the 2018 HSTT final rule.

[6] The 2019 draft SAR reports ship strike data for the Central North Pacific stock of humpback whales in Alaska and Hawaii. Only ship strike data from Hawaii was incorporated into our analysis as Alaska is outside of the HSTT Study Area.

Accordingly, stocks that have no record of ever 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 percent likelihood based on the SAR calculation and a low relative abundance are also considered unlikely to be struck by the Navy during the seven years covered by this rule. We note that while vessel strike records have not differentiated between Eastern North Pacific and Western North Pacific gray whales, given their small population size and the comparative rarity with which individuals from the Western North Pacific stock are detected off the U.S. West Coast, it is highly unlikely that they would be

encountered, much less struck. This rules out all but six stocks.

Three of the six stocks (CA/OR/WA stock of fin whale, Eastern North Pacific stock of gray whale, and Central North Pacific stock of humpback whale) are the only stocks to have been hit more than one time each by the Navy in the HSTT Study Area, have the three highest total strike records (21, 35, and 58 respectively), have three of the four highest percent likelihoods based on the SAR records, have three of the four significantly higher relative abundances, and have up to a 3.4 percent likelihood of being struck twice based on NMFS' SAR calculation (not shown in Table 13, but proportional to percent likelihood of being struck once). Based on all of these factors, it is considered reasonably likely that these stocks could be struck twice during the seven-year rule.

Based on the information summarized in Table 13, and the fact that there is the potential for up to three large whales to be struck, it is considered reasonably likely that one individual from the remaining three stocks could be one of the three whales struck. Sperm whales have only been struck a total of two times by any vessel type in the whole HSTT Study Area, however, the Navy struck a sperm whale once in Hawaii prior to 2009 and the relative abundance of sperm whales in Hawaii is the highest of any of the stocks present. Therefore, we consider it reasonably likely that the Hawaii stock of sperm whales could be struck once during the seven-year rule. The total strikes of Eastern North Pacific blue whales, the percent likelihood of striking one based on the SAR calculation, and their relative abundance can all be considered moderate compared to other stocks, and the Navy has struck one in the past prior to 2009 (with the likelihood of striking two based on the SAR calculation being below one percent). Therefore, we consider it reasonably likely that the Navy could strike one individual over the course of the seven-year rule. The Navy has not hit a humpback whale in the HSTT Study Area and the relative abundance of the CA/OR/WA stock is very low. However, a U.S. Coast Guard vessel escorting a Navy vessel struck a humpback whale in the Northwest (outside of the HSTT Study Area) and as a species, humpback whales have a moderate to high number of total strikes and percent likelihood of being struck. Although the likelihood of CA/OR/WA humpback whales being struck overall is moderate to high relative to other stocks, the distribution of the Mexico DPS versus the Central America DPS, as well as the distribution of overall vessel strikes inside versus outside of the SOCAL area (the majority are outside), supports the reasonable likelihood that the Navy could strike one individual humpback whale from the CA/OR/WA stock (not two), and that that individual would be highly likely to be from the Mexico DPS, as described below.

Specifically, regarding the likelihood of striking a humpback whale from a particular DPS, as suggested in Wade *et al.* (2016), the probability of encountering (which is thereby applied to striking) humpback whales from each DPS in the CA/OR area is 89.6 percent and 19.7 percent for the Mexico and Central America DPSs, respectively (note that these percentages reflect the upper limit of the 95 percent confidence interval to reduce the likelihood of underestimating take, and thereby do not total to 100). This suggests that the chance of striking a humpback whale from the Central America DPS is one tenth to one fifth of the overall chance of hitting a CA/OR/WA humpback whale in general in the SOCAL part of the HSTT Study Area, which in combination with the fact that no humpback whale has been struck in SOCAL makes it highly unlikely, and thereby no strikes of whales from the Central America DPS are anticipated or authorized. If a humpback whale were struck in SOCAL, it is likely it would be of the Mexico DPS. However, regarding the overall likelihood of striking a humpback whale at all and the likely number of times, we note that the majority of strikes of the CA/OR/WA humpback whale stock (*i.e.,* the numbers reflected in Table 13) take place outside of SOCAL. Whereas the comparative DPS numbers cited above apply in the California and Oregon feeding area and in the Washington and Southern British Columbia feeding area, Wade *et al.* (2016) suggest that 52.9, 41.9, and 14.7 percent of humpback whales encountered will come from the Hawaii, Mexico, and Central America DPSs, respectively. This means that the numbers in Table 13 indicating the overall strikes of CA/OR/WA humpback whales and SAR calculations based on average annual mortality over the last five years are actually lower than indicated for the Mexico DPS, which would only be a subset of those mortalities. Lastly, the Rockwood *et al.* paper supports a relative likelihood of 1:1:2 for striking blue whales, humpback whales, and fin whales off the U.S. West Coast, which supports the authorized take included in this rule, which is 1, 1, and 2, respectively over the seven-year period. For these reasons, one M/SI take of CA/OR/WA humpback whales, which would be expected to be of the Mexico DPS, could reasonably likely occur and is authorized.

Accordingly, the Navy has requested, and NMFS authorizes, take by M/SI from vessel strike of up to two of any of the following species/stocks in the seven-year period: Gray whale (Eastern North Pacific stock), fin whale (CA/OR/WA stock), humpback whale (Central North Pacific stock); and one of any of the following species/stocks in the seven-year period: Blue whale (Eastern North Pacific stock), humpback whale (CA/OR/WA stock, Mexico DPS), or sperm whale (Hawaii stock).

As described above, the Navy analysis suggests, and NMFS analysis concurs, that vessel strikes to the stocks below are very unlikely to occur due to the stocks' relatively low occurrence in the HSTT Study Area, particularly in core HSTT training and testing subareas, and the fact that the stocks have not been struck by the Navy and are rarely, if ever, recorded struck by other vessels. Therefore, the Navy is not requesting lethal take authorization, and NMFS is not authorizing lethal take, for the following stocks: Bryde's whale (Eastern Tropical Pacific stock), Bryde's whale (Hawaii stock), humpback whale (CA/OR/WA stock, Central America DPS), minke whale (CA/OR/WA stock), minke whale (Hawaii stock), sei whale (Hawaii stock), sei whale (Eastern North Pacific stock), and sperm whale (CA/OR/WA stock).

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 M/SI over the seven-year period of the rule, and that those three whales may include no more than two of any of the following stocks: Gray whale (Eastern North Pacific stock), fin whale (CA/OR/WA stock), and humpback whale (Central North Pacific stock); and no more than one of any of the following stocks: Blue whale (Eastern North Pacific stock), humpback whale (CA/OR/WA, Mexico DPS), and sperm whale (Hawaii stock). Accordingly, NMFS has evaluated under the negligible impact standard the M/SI of 0.14 or 0.29 whales annually from each of these species or 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.

Explosives

The Navy's model and quantitative analysis process used for the 2018 HSTT FEIS/OEIS and in the Navy's 2017 and 2019 applications to estimate potential exposures of marine mammals to

explosive stressors is 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). Specifically, over the course of a modelled maximum year of training and testing, the Navy's model and quantitative analysis process estimates M/SI of two short-beaked common dolphins and one California sea lion as a result of exposure to explosive training and testing activities (please see Section 6 of the 2017 Navy application where it is explained how maximum annual estimates are calculated). Over the five-year period of the 2018 HSTT regulations, mortality of 6 short-beaked common dolphins and 4 California sea lions was estimated and authorized (10 marine mammals in total) as a result of exposure to explosive training and testing activities. In extending the same training and testing activities for an additional two years, over the seven-year period of the regulations M/SI of 8 short-beaked common dolphins and 5 California sea lions (13 marine mammals in total) is estimated as a result of exposure to explosive training and testing activities, and is therefore authorized. As explained in the aforementioned Analytical Approach technical report, expected impacts were calculated considering spatial and seasonal differences in model inputs, as well as the expected variation in the number of training and testing events from year to year, described as representative and maximum levels of activity. The summed impacts over any multi-year period, therefore, are the expected value for impacts over that time period rather than a multiple of a single maximum year's impacts. Therefore, calculating the seven-year total is not a matter of simply multiplying the annual estimate by seven, as the total amount of estimated mortalities over the seven years covered by the 2019 Navy application is less than the sum total of each year. As explained earlier, although the annual estimates are based on the maximum number of activities per year and therefore the maximum estimated takes, the seven-year total take estimates are based on the sum of three maximum years and four representative years. NMFS coordinated with the Navy in the development of their take estimates and concurs with the Navy's approach for estimating the number of animals from each species or stock that could be taken by M/SI from explosives.

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 stock(s) and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock(s) 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'' shall include consideration of personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity. For the full discussion of how NMFS interprets least practicable adverse impact, including how it relates to the negligible-impact standard, see the *Mitigation Measures* section in the 2018 HSTT final rule.

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.[4] 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.

[4] 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).

Implementation of Least Practicable Adverse Impact Standard

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). 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 activities, and, in the case of a military readiness activity, under section 101(a)(5)(A)(ii) specifically considers personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

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 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 firmly established 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), 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. 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 will be carefully considered to determine the types of mitigation that are appropriate under the least practicable adverse impact standard. For more detail on how we apply these factors, see the discussion in the *Mitigation Measures* section of the 2018 HSTT final rule.

NMFS fully reviewed the Navy's specified activities and the mitigation measures for the 2018 HSTT rulemaking and determined that the mitigation measures would result in the least practicable adverse impact on marine mammals. There is no change in either the activities or the mitigation measures for this rule. See the 2019 Navy application and the 2018 HSTT final rule for detailed information on the Navy's mitigation measures. NMFS worked with the Navy in the development of the Navy's initially proposed measures, which were 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 Chapter 5 (Mitigation) of the 2018 HSTT FEIS/OEIS. The process described in Chapter 5 (Mitigation) of the 2018 HSTT FEIS/OEIS robustly supported NMFS' independent evaluation of whether the mitigation measures would meet the least practicable adverse impact standard. The Navy has implemented the mitigation measures under the 2018 HSTT regulations and will be required to continue implementation of the mitigation measures identified in this rule for the full seven years it covers to avoid or reduce potential impacts from acoustic, explosive, and physical disturbance and ship strike stressors.

In its 2019 application, the Navy proposed no changes to the mitigation measures in the 2018 HSTT final rule and there is no new information that affects NMFS' assessment of the applicability or effectiveness of those measures over the new seven-year period. See the 2018 HSTT proposed rule and the 2018 HSTT final rule for our full assessment of these measures. In summary, 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 or explosives, ship strike, and impacts to marine mammal habitat. Specifically, the Navy will use a combination of delayed starts, powerdowns, and shutdowns to minimize or avoid M/SI, minimize the likelihood or severity of PTS or other injury, and reduce instances of TTS or more severe behavioral disruption caused by acoustic sources or explosives. The Navy will also implement multiple time/area restrictions (several of which were added in the 2018 HSTT final rule since the previous HSTT MMPA incidental take rule) that will reduce take of marine mammals in areas or at times where they are known to engage in important behaviors, such as feeding or calving, 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. Summaries of the Navy's procedural mitigation measures and mitigation areas for the HSTT Study Area are provided in Tables 14 and 15.

TABLE 14—SUMMARY OF PROCEDURAL MITIGATION

Stressor or activity	Mitigation zone sizes and other requirements
Environmental Awareness and Education	• Afloat Environmental Compliance Training program for applicable personnel.
Active Sonar	Depending on sonar source: • 1,000 yd power down, 500 yd power down, and 200 yd shut down. • 200 yd shut down.
Air Guns	• 150 yd.
Pile Driving	• 100 yd.
Weapons Firing Noise	• 30 degrees on either side of the firing line out to 70 yd.
Explosive Sonobuoys	• 600 yd.
Explosive Torpedoes	• 2,100 yd.
Explosive Medium-Caliber and Large-Caliber Projectiles	• 1,000 yd (large-caliber projectiles). • 600 yd (medium-caliber projectiles during surface-to-surface activities). • 200 yd (medium-caliber projectiles during air-to-surface activities).
Explosive Missiles and Rockets	• 2,000 yd (21–500 lb net explosive weight).

TABLE 14—SUMMARY OF PROCEDURAL MITIGATION—Continued

Stressor or activity	Mitigation zone sizes and other requirements
Explosive Bombs	• 900 yd (0.6–20 lb net explosive weight). • 2,500 yd.
Sinking Exercises	• 2.5 nmi.
Explosive Mine Countermeasure and Neutralization Activities	• 2,100 yd (6–650 lb net explosive weight). • 600 yd (0.1–5 lb net explosive weight).
Explosive Mine Neutralization Activities Involving Navy Divers	• 1,000 yd (21–60 lb net explosive weight for positive control charges and charges using time-delay fuses). • 500 yd (0.1–20 lb net explosive weight for positive control charges).
Underwater Demolition Multiple Charge—Mat Weave and Obstacle Loading.	• 700 yd.
Maritime Security Operations—Anti-Swimmer Grenades	• 200 yd.
Vessel Movement	• 500 yd (whales). • 200 yd (other marine mammals).
Towed In-Water Devices	• 250 yd (marine mammals).
Small-, Medium-, and Large-Caliber Non-Explosive Practice Munitions.	• 200 yd.
Non-Explosive Missiles and Rockets	• 900 yd.
Non-Explosive Bombs and Mine Shapes	• 1,000 yd.

Notes: lb: pounds; nmi: nautical miles; yd: yards.

TABLE 15—SUMMARY OF MITIGATION AREAS FOR MARINE MAMMALS

Summary of mitigation area requirements [1]
Hawaii Island Mitigation Area (year-round)
• Navy personnel must not conduct more than 300 hours of MF1 surface ship hull-mounted mid-frequency active sonar or 20 hours of MF4 dipping sonar, or use explosives that could potentially result in takes of marine mammals during training and testing.[1]
4-Islands Region Mitigation Area (November 15–April 15 for active sonar; year-round for explosives)
• Navy personnel must not use MF1 surface ship hull-mounted mid-frequency active sonar or explosives that could potentially result in takes of marine mammals during training and testing.[2]
Humpback Whale Special Reporting Areas (December 15–April 15)
• Navy personnel must report the total hours of surface ship hull-mounted mid-frequency active sonar used in the special reporting areas in its annual training and testing activity reports submitted to NMFS.
San Diego Arc, San Nicolas Island, and Santa Monica/Long Beach Mitigation Areas (June 1—October 31)
• Navy personnel must not conduct more than a total of 200 hours of MF1 surface ship hull-mounted mid-frequency active sonar in the combined areas, excluding normal maintenance and systems checks, during training and testing.[1]
• Within the San Diego Arc Mitigation Area, Navy personnel must not use explosives that could potentially result in the take of marine mammals during large-caliber gunnery, torpedo, bombing, and missile (including 2.75 inch rockets) activities during training and testing.[1]
• Within the San Nicolas Island Mitigation Area, Navy personnel must not use explosives that could potentially result in the take of marine mammals during mine warfare, large-caliber gunnery, torpedo, bombing, and missile (including 2.75 inch rockets) activities during training.[1]
• Within the Santa Monica/Long Beach Mitigation Area, Navy personnel must not use explosives that could potentially result in the take of marine mammals during mine warfare, large-caliber gunnery, torpedo, bombing, and missile (including 2.75 inch rockets) activities during training and testing.[1]
Santa Barbara Island Mitigation Area (year-round)
• Navy personnel must not use MF1 surface ship hull-mounted mid-frequency active sonar during training and testing, or explosives that could potentially result in the take of marine mammals during medium-caliber or large-caliber gunnery, torpedo, bombing, and missile (including 2.75 inch rockets) activities during training.[1]
Awareness Notification Message Areas (seasonal according to species)
• Navy personnel must issue awareness notification messages to alert ships and aircraft to the possible presence of humpback whales (November–April), blue whales (June–October), gray whales (November–March), or fin whales (November–May).

[1] In the 2018 HSTT Final Rule we inadvertently included ''Mitigation Areas for Shallow-water Coral Reefs and Precious Coral Beds (year-round)'' in this table. As this mitigation area does not relate to marine mammals we have not included it here.

[2] If Naval units need to conduct more than the specified amount of training or testing, they will obtain permission from the appropriate designated Command authority prior to commencement of the activity. The Navy will provide NMFS with advance notification and include the information in its annual activity reports submitted to NMFS.

Mitigation Conclusions

NMFS has carefully evaluated the Navy's proposed mitigation measures—many of which were developed with NMFS' input during the previous phases of Navy training and testing authorizations and none of which have changed since our evaluation during the 2018 HSTT rulemaking—and considered a broad range of other measures (*i.e.,* the measures considered but eliminated in the 2018 HSTT FEIS/OEIS, which reflect many of the 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 and stocks and their habitat. 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 and stocks and their habitat; the proven or likely efficacy of the measures; and the practicability of the measures for applicant implementation,

including consideration of personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity. There is no new information that affects our analysis from the 2018 HSTT rulemaking, all of which remains applicable and valid for our assessment of the appropriateness of the mitigation measures during the seven-year period of this rule.

Based on our evaluation of the Navy's measures (which are being implemented under the 2018 HSTT regulations), as well as other measures considered by the Navy and NMFS, NMFS has determined that the Navy's mitigation measures are 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. Additionally, as described in more detail below, the 2018 HSTT final rule includes an adaptive management provision, which NMFS has extended for the additional two years of this rule, which 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 the final rule satisfy the statutory standard and that any adverse impacts that remain cannot practicably be 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.

In its 2019 application, the Navy proposed no changes to the monitoring described in the 2018 HSTT final rule. They would continue implementation of the robust Integrated Comprehensive Monitoring Program and Strategic Planning Process described in the 2018 HSTT final rule. The Navy's monitoring strategy, currently required by the 2018 HSTT regulations and extended for two years under this final rule, is well-designed to work across Navy ranges to help better understand the impacts of the Navy's activities on marine mammals and their habitat by focusing on learning more about marine mammal occurrence in different areas and exposure to Navy stressors, marine mammal responses to different sound sources, and the consequences of those exposures and responses on marine mammal populations. Similarly, the seven-year regulations include identical adaptive management provisions and reporting requirements as the 2018 HSTT regulations. There is no new information to indicate that the monitoring measures put in place under the 2018 HSTT final rule do not remain applicable and appropriate for the seven-year period of this rule. See the *Monitoring* section of the 2018 HSTT final rule for more details on the monitoring that would be required under this rule. In addition, please see the 2019 Navy application, which references Chapter 13 of the 2017 Navy application for full details on the monitoring and reporting that will be conducted by the Navy.

Adaptive Management

The 2018 HSTT regulations governing the take of marine mammals incidental to Navy training and testing activities in the HSTT 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 2019 Navy application proposed no changes to the adaptive management component included in the 2018 HSTT final rule.

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 would 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 LOA 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 exercises reports, as required by MMPA authorizations; (2) compiled results of Navy funded R&D 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.* The 2019 Navy application proposed no changes to the reporting requirements. Except as discussed below, reporting requirements would remain identical to those described in the 2018 HSTT final rule, and there is no new information to indicate that the reporting requirements put in place under the 2018 HSTT final rule do not remain applicable and appropriate for the seven-year period of this final rule. See the *Reporting* section of the 2018 HSTT final rule for more details on the reporting that is required under this rule.

In addition, the 2018 HSTT proposed and final rules unintentionally failed to include the requirement for the Navy to submit a final activity ''close out'' report at the end of the regulatory period. That oversight is being corrected through this rulemaking. This comprehensive training and testing activity report will provide the annual totals for each sound source bin with a comparison to the annual allowance and the seven-year

total for each sound source bin with a comparison to the seven-year allowance. Additionally, if there are any changes to the sound source allowance, this 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 2018 HSTT FEIS/OEIS and MMPA final rule.

Analysis and Negligible Impact Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.,* population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be ''taken'' through mortality, serious injury, and Level A or Level B harassment (as presented in Tables 11 and 12), NMFS considers other factors, such as the likely nature of any responses (*e.g.,* intensity, duration), the context of any responses (*e.g.,* critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS' 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, other ongoing sources of human-caused mortality, and ambient noise levels).

In the *Estimated Take of Marine Mammals* sections of this final rule and the 2018 HSTT final rule (where the activities, species and stocks, potential effects, and mitigation measures are the same as for this rule), we identified the subset of potential effects that would be expected to rise to the level of takes both annually and over the seven-year period covered by this rule, and then identified the number of each of those mortality takes that we believe could occur or the maximum number of harassment takes that are reasonably expected to occur based on the methods described. The impact that any given take will have 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 final rule we evaluated the likely impacts of the enumerated maximum number of harassment takes that were proposed for authorization and reasonably expected to occur, in the context of the specific circumstances surrounding these predicted takes. We also assessed M/SI takes that have the potential to occur, as well as considering the traits and statuses of the affected species and stocks. Lastly, 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. Because all of the Navy's specified activities would 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 Navy proposed no changes to the nature or level of the specified activities or the boundaries of the HSTT Study Area, and therefore the training and testing activities (*e.g.,* equipment and sources used, exercises conducted) are the same as those analyzed in the 2018 HSTT final rule. In addition, the mitigation, monitoring, and nearly all reporting measures are identical to those described and analyzed in the 2018 HSTT final rule. As described above, there is no new information since the publication of the 2018 HSTT final rule regarding the impacts of the specified activities on marine mammals, the status and distribution of any of the affected marine mammal species or stocks, or the effectiveness of the mitigation and monitoring measures that would change our analyses, except for one species. For that one species—gray whales—we have considered the effects of the new UME on the west coast of North America along with the effects of the Navy's activities in the negligible impact analysis.

Harassment

As described in the *Estimated Takes of Marine Mammals* section, the annual number of takes authorized and reasonably expected to occur by Level A harassment and Level B harassment (based on the maximum number of activities per 12-month period) are identical to those presented in Tables 41 through 42 in the *Take Requests* section of the 2018 HSTT final rule. As such, the negligible impact analyses and determinations of the effects of the estimated Level A harassment and Level B harassment takes on annual rates of recruitment or survival for each species and stock are nearly identical to and substantively unchanged from those presented in the 2018 HSTT final rule. The primary difference is that the annual levels of take and the associated effects on reproduction or survival would occur for the seven-year period of this rule instead of the five-year period of the 2018 HSTT final rule, which will make no difference in effects on annual rates of recruitment or survival. The other differences in the analyses include our consideration of the newly-declared gray whale UME and slightly modified explosive take estimates, neither of which, as described below, affect the results of the analyses or our determinations. For detailed discussion of the impacts that affected individuals may experience given the specific characteristics of the specified activities and required mitigation (*e.g.,* from behavioral disruption, masking, and temporary or permanent threshold shift), along with the effects of the expected Level A harassment and Level B harassment take on reproduction and survival, see the applicable subsections in the *Analysis and Negligible Impact Determination* section of the 2018 HSTT final rule (83 FR 66977–67018; December 27, 2018).

Serious Injury or Mortality

Based on the information and methods discussed in the *Estimated Take of Marine Mammals* section (which are identical to those used in the 2018 HSTT final rule), the number of potential mortalities due to ship strike requested and authorized over the seven-year period of this rule is the same as those authorized in the 2018 HSTT final rule. As the potential mortalities are now spread over seven years rather than five, an annual average of 0.29 gray whales (Eastern North Pacific stock), fin whales (CA/OR/WA stock), and humpback whales (Central North Pacific stock) and an annual average of 0.14 blue whales (Eastern North Pacific stock), humpback whales (CA/OR/WA stock, Mexico DPS), and sperm whales (Hawaii stock) as described in Table 16 (*i.e.,* one, or two, take(s) over seven years divided by seven to get the annual number) are expected to potentially occur and are authorized. As this annual number is less than that analyzed and authorized in the 2018 HSTT final rule, which was

an annual average of 0.4 whales or 0.2 whales respectively for the same species and stocks, and with the exception of the new gray whale UME on the U.S. West Coast and updated abundance information for the Eastern North Pacific stock of blue whales (available in the 2019 draft SARs), no other relevant information about the status, abundance, or effects of M/SI on each species or stock has changed, the analysis of the effects of vessel strike mirrors that presented in the 2018 HSTT final rule.

TABLE 16—SUMMARY INFORMATION RELATED TO MORTALITIES REQUESTED FOR SHIP STRIKE, 2018–2025

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 *	Potential biological removal (PBR) * [3]	Residual PBR (PBR minus annual M/SI) [4]	Stock trend * [5]	Recent UME (Y/N); number and year (since 2007)
Fin whale (CA/OR/WA stock).	9,029	0.29	≥43.5	Y; ≥0.5	Y, 43	81	37.5	↑	N.
Gray whale (Eastern North Pacific stock).	26,960	0.29	139	Y, 9.6	Y, 0.8	801	662	stable since 2003.	Y, 264, 2019.
Humpback whale (CA/OR/WA stock, Mexico DPS).	2,900	0.14	≥42.1	Y; ≥17.3	Y, 22	33.4	−8.7	↑ (historically); stable.	N.
Humpback whale (Central North Pacific stock) [6].	10,103	0.29	25	Y; 18	Y, 1.4	83	58	↑	N.
Sperm whale (Hawaii stock).	[7] 4,559	0.14	0.7	Y, 0.7	N	14	13.3	?	N.
Blue whale (Eastern North Pacific Stock).	1,496	0.14	≥19.4	≥1.44	Y, 18	2.1	−17.3	stable	Y; 3, 2007.

* Presented in the 2018 final SARs and draft 2019 SARs.
[1] This column represents the annual take by serious injury or mortality (M/SI) by vessel collision and was calculated by the number of mortalities for authorization 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 other Navy strikes or NMFS' Southwest Fisheries Science Center (SWFSC) takes in the SARs to ensure not double-counted against PBR. However, for these species, there were no takes from either other Navy activities or SWFSC in the SARs to deduct that would be considered double-counting.
[3] Potential biological removal (PBR) is defined in section 3 of the MMPA. See the *Analysis and Negligible Impact Determination* section of the 2018 HSTT final rule for a description of PBR.
[4] This value represents the calculated PBR less the average annual estimate of ongoing anthropogenic mortalities (*i.e.,* total annual human-caused M/SI, which is presented in the SARs). This value represents the residual PBR for the stock in the stock's entire range.
[5] See relevant SARs for more information regarding stock status and trends.
[6] Some values for the Central North Pacific stock of humpback whales were unintentionally presented incorrectly in Table 69 of the 2018 HSTT final rule. The correct values are provided here. These transcription errors do not affect the analysis or conclusions in the 2018 HSTT final rule, as the correct values were used in the analysis presented in the *Analysis and Negligible Impact Determination* section.
[7] The stock abundance for the Hawaii stock of sperm whales was unintentionally presented incorrectly as 5,559 in the 2018 HSTT final rule and has been corrected here. This transcription error does not affect the analysis or conclusions reached in the 2018 HSTT final rule.

The Navy has also requested a small number of takes by M/SI from explosives. To calculate the annual average of mortalities for explosives in Table 17 we used the same method as described for vessel strikes. The annual average is the total number of takes over seven years divided by seven. Specifically, NMFS is authorizing the following M/SI takes from explosives: 5 California sea lions and 8 short-beaked common dolphins over the seven-year period (therefore 0.71 mortalities annually for California sea lions and 1.14 mortalities annually for short-beaked common dolphins), as described in Table 17. As this annual number is less than that analyzed and authorized in the 2018 HSTT final rule, which was an annual average of 0.8 California sea lions and 1.2 short-beaked common dolphins, and no other relevant information about the status, abundance, or effects of mortality on each species or stock has changed, the analysis of the effects of explosives mirrors that presented in the 2018 HSTT final rule.

TABLE 17—SUMMARY INFORMATION RELATED TO MORTALITIES FROM EXPLOSIVES, 2018–2025

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 *	PBR *	SWFSC authorized take (annual) [3]	Residual PBR-PBR minus annual M/SI and SWFSC [4]	Stock trend * [5]	UME (Y/N); number and year
California sea lion (U.S. stock).	257,606	0.71	319.4	Y;197	14,011	6.6	13,685	↑	Y; 8,112; 2013.
Short-beaked common dolphin (CA/OR/WA stock).	969,861	1.14	≥40	Y; ≥40	8,393	2.8	8,350.2	?	N.

* Presented in the 2018 final SARs. No changes for these stocks were included in the 2019 draft SARs.
[1] This column represents the annual take by serious injury or mortality (M/SI) during explosive detonations and was calculated by the number of mortalities planned for authorization 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 other Navy activities or NMFS' SWFSC takes in the SARs to ensure they are not double-counted against PBR. In this case, for California sea lion 0.8 annual M/SI from the U.S. West Coast during scientific trawl and longline operations conducted by NMFS and 1.8 annual M/SI from marine mammal research related mortalities authorized by NMFS was deducted from total annual M/SI (322).
[3] This column represents annual take authorized through NMFS' SWFSC rulemaking/LOAs (80 FR 58982).
[4] This value represents the calculated PBR less the average annual estimate of ongoing anthropogenic mortalities (*i.e.,* total annual human-caused M/SI column and the annual authorized take from the SWFSC column). In the case of California sea lion the M/SI column (319.4) and the annual authorized take from the SWFSC (6.6) were subtracted from the calculated PBR of 14,011. In the case of Short-beaked common dolphin the M/SI column (40) and the annual authorized take from the SWFSC (2.8) were subtracted from the calculated PBR of 8,393.
[5] See relevant SARs for more information regarding stock status and trends.

See the *Serious Injury or Mortality* subsection in the *Analysis and Negligible Impact Determination* section of the 2018 HSTT final rule (83 FR 66985–66993; December 27, 2018) for detailed discussions of the impacts of M/SI, including a description of how the agency uses the PBR metric and other factors to inform our analysis, and an analysis of the impacts on each species and stock for which M/SI was proposed for authorization, including

the relationship of potential mortality for each species to the insignificance threshold and residual PBR.

Stocks With M/SI Below the Insignificance Threshold

As noted in the *Serious Injury or Mortality* subsection of the *Negligible Impact Analysis and Determination* section in the 2018 HSTT final rule, 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 Tables 16 and 17, the following species or stocks have potential or estimated M/SI from ship strike and explosive takes, respectively, authorized below their insignificance threshold: fin whale (CA/OR/WA stock), gray whale (Eastern North Pacific stock), humpback whale (Central North Pacific stock), sperm whale (Hawaii stock), California sea lion (U.S stock), and short-beaked common dolphin (CA/OR/WA stock). While the authorized M/SI of California sea lions (U.S. stock) and gray whales (Eastern North Pacific stock) are below the insignificance threshold, because of the recent UMEs, we further address how the authorized M/SI and the UME inform the negligible impact determination immediately below. For the other four 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 two stocks with anticipated potential M/SI above the insignificance threshold, how that M/SI compares to residual PBR, as well as additional factors, as appropriate, are discussed below as well.

California Sea Lion (U.S. Stock)

The estimated (and authorized) lethal take of California sea lions is well below the insignificance threshold (0.71 as compared to a residual PBR of 13,686) and NMFS classifies the stock as ''increasing'' in the 2018 final SAR, the most recent SAR available for this stock. Nonetheless, we consider here how the 2013–2016 (UME closed on May 6, 2020) California Sea Lion UME informs our negligible impact determination. This UME was confined to pup and yearling sea lions and many were emaciated, dehydrated, and underweight. NMFS staff confirmed that the mortality of pups and yearlings returned to normal in 2017 and 2018. The UME Working Group recommended closure of UME in April, 2020 and the UME was closed on May 6, 2020. NMFS' findings indicate that a change in the availability of sea lion prey, especially anchovy and sardines, a high value food source for nursing mothers, was a likely contributor to the large number of strandings. Sardine spawning grounds shifted further offshore in 2012 and 2013, and while other prey were available (market squid and rockfish), these may not have provided adequate nutrition in the milk of sea lion mothers supporting pups, or for newly-weaned pups foraging on their own. Although the pups showed signs of some viruses and infections, findings indicate that this event was not caused by disease, but rather by the lack of high quality, close-by food sources for nursing mothers. Average mortalities from 2013–2017 were 1,000–3,000 more annually than they were in the previous 10 years. However, even if these unusual mortalities were still occurring (with current data suggesting they are not), 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. Further, the loss of pups and yearlings is not expected to have as much of an effect on annual population rates as the death of adult females. In conclusion, because of the abundance, population trend, and residual PBR of this stock, as well as the fact that the increased mortality stopped two years ago, this UME is not expected to have any impacts on individuals during the period of this final rule, nor is it thought to have had impacts on the population rate when it was occurring that would influence our evaluation of the effects of the mortality authorized on the stock.

Gray Whales (Eastern North Pacific Stock)

Since January 2019, gray whale strandings along the west coast of North America have been significantly higher than the previous 18-year averages. Preliminary findings from necropsies have shown evidence of emaciation. 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. Current total monthly strandings are slightly higher than 1999 and lower than 2000. If strandings continue to follow a similar pattern, we would anticipate 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 (662) of this stock, this UME is not expected to have impacts on the population rate that, in combination with the effects of mortality authorized, would affect annual rates of recruitment or survival.

Stocks with M/SI above the Insignificance Threshold

Humpback Whale (CA/OR/WA Stock, Mexico DPS)

For this stock, PBR is currently set at 16.7 for U.S. waters and 33.4 for the stock's entire range. In the 2018 HSTT final rule and 2019 HSTT proposed rule we inadvertently considered only the PBR for U.S. waters (as presented in the SAR summary tables). As the HSTT Study Area extends beyond U.S. waters and activities have the potential to impact the entire stock, we have corrected this here and present the analysis using the PBR for the stock's entire range. The total annual M/SI is estimated at greater than or equal to 42.1, yielding a residual PBR of –8.7. With the corrected PBR, this potential impact on the stock is less than what was presented in both the 2018 HSTT final rule and 2019 HSTT proposed rule. NMFS authorizes one M/SI over the seven-year duration of the rule (which is 0.14 annually for the purposes of comparing to PBR and considering other effects on annual rates of recruitment and survival), which means that residual PBR is exceeded by 8.84. In the 2018 HSTT final rule the PBR was correctly reported as 33.4 (PBR for the stock's entire range), however the total annual M/SI was incorrectly reported as greater than or equal to 40.76 (yielding a residual PBR of –7.36). These transcription errors do not affect the fundamental analysis or conclusion reached in the 2018 HSTT final rule, however, and we have corrected these values here using data from the 2019 draft SARs.

In the commercial fisheries setting for ESA-listed marine mammals (which is similar to 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 (0.14 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 proposed for authorization is 0.14 (*i.e.,* less than 1.45), which means that the mortality authorized in this rule for HSTT activities would not delay the time to recovery by more than 1 percent.

As described in the 2018 HSTT final rule, 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 November 2019, NMFS published 2019 draft 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 final and 2019 draft 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 strike suddenly increased to 22. In fact, the model is not specific to a year, but rather offers a generalized prediction of ship strike 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 is not listed. The mortality authorized by this rule is for an individual from the Mexico DPS only. 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. The California swordfish and thresher shark drift gillnet fishery is one of the primary causes of M/SI take from fisheries interactions for humpback whales on the West Coast. NMFS established the Pacific Offshore Cetacean Take Reduction Team in 1996 and prepared an associated Plan (PCTRP) to reduce the risk of M/SI via fisheries interactions. In 1997, NMFS published final regulations formalizing the requirements of the PCTRP, including the use of pingers following several specific provisions and the employment of Skipper education workshops.

Commercial fisheries such as crab pot, gillnet, and prawn fisheries are also 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 for specific Fisheries issues (*e.g.,* California Dungeness Crab Fishing BMPs and the 2018–2019 Best Fishing Practices Guide);
- 2018–2019 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. The March 2019 Working Group Report reported on the status of the fishery closure, progress and continued development of the RAMP (though there is a separate RAMP report), discussed the role of the Working Group (development of a new Charter), and indicated next steps.

Importantly, 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), and they have agreed to prepare a Conservation Plan by May 2020. 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.

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. 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. They advocate similar best practices for their fishermen as California, and they are taking regulatory steps related to gear marking and pot limits.

In this case, 0.14 M/SI annually means the potential for one mortality in one of the seven years and zero mortalities in six of those seven years. Therefore, the Navy would not be contributing to the total human-caused mortality at all in six of the seven, or 85.7 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 six of the seven years there could be no effect on annual rates of recruitment or survival from Navy-caused M/SI. Additionally, as discussed in the *Analysis and Negligible Impact Determination* section of the 2018 HSTT final rule, the loss of a male would have far less, if any, of an effect on population rates 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 single strike authorized by this rule would be a male, 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 M/SI in six of the years and due to the fact that a single strike could be of a male.

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. This is especially important given the minor difference between zero and one across the seven-year period covered by this rule, which is the smallest distinction possible when considering mortality. 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 (0.4 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-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 of seven years and could be comprised of a male (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 mortality of 0.14 would not delay the time to recovery by more than 1 percent, we do not expect the potential lethal take from Navy activities, alone, 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 would 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 later in the *Group and Species-Specific Analyses* section.

Blue Whale (Eastern North Pacific Stock)

For blue whales (Eastern North Pacific stock), PBR is currently set at 1.23 for U.S. waters and 2.1 for the stock's entire range. In the 2018 HSTT final rule and 2019 HSTT proposed rule we inadvertently presented only the PBR for U.S. waters (as presented in the SAR summary tables). As the HSTT Study Area extends beyond U.S. waters and activities have the potential to impact the entire stock, we have corrected this here and present the analysis using the PBR for the stock's entire range. The

total annual M/SI is estimated at greater than or equal to 19.4, yielding a residual PBR of −17.3. NMFS authorizes one M/SI for the Navy over the seven-year duration of the rule (indicated as 0.14 annually for the purposes of comparing to PBR and evaluating overall effects on annual rates of recruitment and survival), which means that residual PBR is exceeded by 17.44. However, as described previously, in the commercial fisheries setting for ESA-listed marine mammals (which is similar to the incidental take setting, in that the negligible impact determination 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 in consideration). When those considerations are applied in the section 101(a)(5)(A) context, the authorized lethal take (0.14 annually) of blue whales from the Eastern North Pacific stock is less than 10 percent of PBR (which is 2.1) and there are management measures in place to address M/SI from activities other than those the Navy is conducting (as discussed below). Perhaps more importantly, the population is considered ''stable'' and, specifically, the available data suggests that the current number of ship strikes is not likely to have an adverse impact on the population, despite the fact that it exceeds PBR, with the Navy's minimal additional mortality of one whale in the seven years not creating the likelihood of adverse impact. Immediately below, we explain the information that supports our finding that the Navy's authorized M/SI is not expected to result in more than a negligible impact on this stock. As described previously, 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 mortality to adversely affect the species or stock via impacts on annual rates of recruitment or survival, which occurs further below in the stock-specific discussion sections.

As discussed in the 2018 HSTT final rule, the 2018 final SAR and 2019 draft SAR 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 18 annual mortalities of blue whales from vessel strikes, which, with the additional M/SI of 1.44 from fisheries interactions, results in the current estimate of residual PBR equal to −17.3. Although NMFS' Permits and Conservation Division in the Office of Protected Resources has independently reviewed the new ship strike model and its results and agrees that it is appropriate for estimating blue whale mortality by ship strike on the U.S. West Coast, for analytical purposes we also note that if the historical method were used to predict vessel strike (*i.e.,* using observed mortality by vessel strike, or 0.4, instead of 18), then total human-caused mortality including the Navy's potential take would not exceed PBR. We further note that the authors (Rockwood *et al.,* 2017) do not suggest that ship strike suddenly increased to 18 recently. In fact, the model is not specific to a year, but rather offers a generalized prediction of ship strike 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 Eastern North Pacific stock of blue whales remains stable nevertheless.

NMFS' 2018 final SAR and 2019 draft SAR state that the stock is ''stable'' and there is no indication of a population size increase in this blue whale population since the early 1990s. The lack of a species' or stock's population increase can have several causes, some of which are positive. The SAR further cites to Monnahan *et al.* (2015), which used a population dynamics model to estimate that the Eastern North Pacific blue whale population was at 97 percent of carrying capacity in 2013, suggesting that the observed lack of a population increase since the early 1990s was explained by density dependence, not impacts from ship strike. This would mean that this stock of blue whales shows signs of stability and is not increasing in population size because the population size is at or nearing carrying capacity for its available habitat. In fact, we note that this population has maintained this status throughout the years that the Navy has consistently tested and trained at similar levels (with similar vessel traffic) in areas that overlap with blue whale occurrence, which would be another indicator of population stability.

Monnahan *et al.* (2015) modeled vessel numbers, ship strikes, and the population of the Eastern North Pacific blue whale population from 1905 out to 2050 using a Bayesian framework to incorporate informative biological information and assign probability distributions to parameters and derived quantities of interest. The authors tested multiple scenarios with differing assumptions, incorporated uncertainty, and further tested the sensitivity of multiple variables. Their results indicated that there is no immediate threat (*i.e.,* through 2050) to the population from any of the scenarios tested, which included models with 10 and 35 strike mortalities per year. Broadly, the authors concluded that, unlike other blue whale stocks, the Eastern North Pacific blue whales have recovered from 70 years of whaling and are in no immediate threat from ship strikes. They further noted that their conclusion conflicts with the depleted and strategic designation under the MMPA, as well as PBR specifically.

As discussed, we also take into consideration management measures in place to address M/SI caused by other activities. The Channel Islands NMS staff coordinates, collects, and monitors whale sightings in and around the Whale Advisory Zone and the Channel Islands NMS region. Redfern *et al.* (2013) note that the areas of highest risk for blue whales is the Santa Barbara Channel, where shipping lanes intersect with common feeding areas. 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 U.S. Navy chartered aircraft. Information on seasonal presence, movement, and general distribution patterns of large whales is shared with mariners, NMFS Office of Protected Resources, U.S. Coast Guard, California Department of Fish and Game, the Santa Barbara Museum of Natural History, the Marine Exchange of Southern California, and whale

scientists. Real time and historical whale observation data collected from multiple sources can be viewed on the Point Blue Whale Database.

In this case, 0.14 M/SI annually means one mortality in one of the seven years and zero mortalities in six of those seven years. Therefore, the Navy would not be contributing to the total human-caused mortality at all in six of the seven, or 85.7 percent, of the years covered by this rule. That means that even if a blue whale were to be struck, in six of the seven years there could be no effect on annual rates of recruitment or survival from Navy-caused M/SI. Additionally, as with humpback whales discussed previously, the loss of a male would have far less, if any, effect on population rates 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 single strike authorized by this rule would be a male, 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 M/SI in six of the seven years and the fact that the single strike could be a male. Lastly, as with the CA/OR/WA stock of humpback whales above, 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. This is especially important given the minor difference between zero and one across the seven-year period covered by this rule, which is the smallest distinction possible when considering mortality. As noted above, 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 indicates that this blue whale stock is stable, approaching carrying capacity, and has leveled off because of density-dependence, not human-caused mortality, in spite of what might be otherwise indicated from the calculated PBR. Further, potential (and authorized) M/SI is below 10 percent of PBR and management actions are in place to minimize ship strike from other vessel activity in one of the highest-risk areas for strikes. Based on all of the considerations described above, we do not expect lethal take from Navy activities, alone, to adversely affect Eastern North Pacific blue 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 Eastern North Pacific stock of blue whales from the Navy's activities to ensure that the total authorized takes have a negligible impact on the species or 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 addition to broader analyses of the impacts of the Navy's activities on mysticetes, odontocetes, and pinnipeds, the 2018 HSTT final rule contained detailed analyses of the effects of the Navy's activities in the HSTT Study Area on each affected species and stock. All of that information and analyses remain applicable and valid for our analyses of the effects of the same Navy activities on the same species and stocks for the seven-year period of this rule. See the *Group and Species-Specific Analyses* subsection in the *Analysis and Negligible Impact Determination* section of the 2018 HSTT final rule (83 FR 66993–67018; December 27, 2018). In addition, no new information has been received since the publication of the 2018 HSTT final rule that significantly changes the analyses on the effects of the Navy's activities on each species and stock presented in the 2018 HSTT final rule (the potential impact of the new gray whale UME and the corrected numbers from the humpback whale SARs were discussed earlier in the rule).

In the discussions below, the estimated Level B harassment takes 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 many cases some individuals are expected to be taken more than one time, while in other cases a portion of individuals will not be taken at all. Below, we compare the total take numbers (including PTS, TTS, and behavioral disruption) for species or stocks to their associated abundance estimates to evaluate the magnitude of impacts across the species or stock and to individuals. Specifically, when an abundance percentage comparison is below 100, it means that that percentage or less of the individuals in the stock will be affected (*i.e.,* some individuals will not be taken at all), that the average for those taken is one day per year, and that we would not expect any individuals to be taken more than a few times in a year. 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 times 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. For some stocks these numbers have been adjusted slightly (with these adjustments being in the single digits) so as to more consistently apply this approach, but these minor changes did not change the analysis or findings.

To assist in understanding what this analysis means, we clarify a few issues related to estimated takes and the analysis here. In the annual estimated take tables below, takes within the U.S. EEZ include only those takes within the U.S. EEZ, where most Navy activities occur and where we often have the best information on species and stock presence and abundance. Takes inside and outside the EEZ include all takes in the HSTT Study Area.

An individual that incurs a PTS or TTS take may sometimes also be subject to behavioral disturbance at the same time. As described in the *Harassment* subsection of the *Analysis and Negligible Impact Determination* section of the 2018 HSTT final rule, 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 subject to behavioral disturbance would result in impacts to reproduction or survival. Nonetheless, 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 (as discussed below in the stock-specific summaries). Accordingly, in analyzing the number of takes and the likelihood of repeated and sequential takes (which could result in reproductive impacts), we consider the total takes, not just the Level B harassment takes by behavioral disruption, so that individuals potentially exposed to both threshold shift and behavioral disruption are appropriately considered. We note that the same reasoning applies with the potential addition of behavioral disruption to tissue damage from explosives, the difference being that we do already consider the likelihood of reproductive impacts whenever tissue damage occurs. Further, the number of Level A harassment takes by either PTS or tissue damage are so low compared to abundance numbers that it is considered highly unlikely that any individual would be taken at those levels more than once.

As noted previously, we presented a detailed discussion of important marine mammal habitat (*e.g.,* ESA-designated critical habitat, biologically important areas (BIAs), and national marine sanctuaries (NMSs)) for all species and stocks in the HSTT Study Area in the 2018 HSTT proposed final rules. All of that information remains valid and applicable to the species- and stock-specific negligible impact analyses below. Please see the 2018 rules for complete information. In addition, since publication of the 2018 HSTT final rule, NMFS published a proposed rule to designate ESA critical habitat for the Central America and Mexico DPSs of humpback whales on October 9, 2019 (84 FR 54354). In the proposed rule only critical habitat Unit 19 overlapped with the HSTT Study Area, and NMFS proposed to exclude this unit from the critical habitat designation based on consideration of national security. A final rule designating critical habitat for these two DPSs of humpback whales has not been published.

All species in the HSTT Study Area will benefit from the procedural mitigation measures summarized in the *Mitigation Measures* section of this rule, and described in detail in the *Mitigation Measures* section of the 2018 HSTT final rule. Additionally, the Navy will limit activities and employ other measures in mitigation areas that will avoid or reduce impacts to several species and stocks. These mitigation areas and the associated limitations on activities are summarized in Table 15 above and described in detail in the *Mitigation Measures* section of the 2018 HSTT final rule. The manner and extent to which the limitations in these mitigation areas will prevent or minimize potential impacts on specific species and stocks in the HSTT Study Area is discussed in the *Mitigation Measures* section of the 2018 HSTT final rule under *Final Mitigation Areas,* all of which remains valid and applicable for this final rule.

Having considered all of the information and analyses previously presented in the 2018 HSTT final rule, including the *Group and Species-Specific Analyses* discussions organized by the different groups and species, below we present tables showing instances of total take as a percentage of stock abundance for each group, updated with the new explosion and vessel strike calculations. We then summarize the information for each species or stock, considering the analysis from the 2018 HSTT final rule and any new analysis. 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 and pinnipeds in water), 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 or stock. In addition, animals belonging to each stock within a species typically have the same hearing capabilities and behaviorally respond in the same manner as animals in other stocks within the species.

Mysticetes

In Tables 18 and 19 below for mysticetes, we indicate the total annual mortality, Level A harassment, Level B harassment, and a number indicating the instances of total take as a percentage of abundance. Tables 18 and 19 have been updated from Tables 71 and 72 in the 2018 HSTT final rule as appropriate with the 2018 final SARs and 2019 draft SARs and updated information on mortality, as discussed above. For additional information and analysis supporting the negligible-impact analysis, see the *Mysticetes* discussion in the *Group and Species-Specific Analyses* section of the 2018 HSTT final rule, all of which remains applicable to this final rule unless specifically noted.

TABLE 18—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR MYSTICETES IN THE HRC PORTION OF THE HSTT 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		Instance of total take as percent of abundance	
		Level B harassment		Level A harassment		Mortality	Total takes (entire study area)	Takes (within Navy EEZ)	Total Navy abundance inside and outside of EEZ (HRC)	Within EEZ Navy abundance (HRC)	Total take as percentage of total Navy abundance (HRC)	EEZ take as percentage of Navy EEZ abundance (HRC)
		Behavioral disturbance	TTS (may also include disturbance)	PTS	Tissue damage							
Blue whale	Central North Pacific.	15	33	0	0	0	48	40	43	33	112	121
Bryde's whale.	Hawaii	40	106	0	0	0	146	123	108	89	135	138
Fin whale	Hawaii	21	27	0	0	0	48	41	52	40	92	103
Humpback whale.	Central North Pacific.	2,837	6,289	3	0	0.29	9,129	7,389	5,078	4,595	180	161
Minke whale.	Hawaii	1,233	3,697	2	0	0	4,932	4,030	3,652	2,835	135	142
Sei whale	Hawaii	46	121	0	0	0	167	135	138	107	121	126

Note: For the HI take estimates, we compare predicted takes to abundance estimates generated from the same underlying density estimates (as described in the *Estimated Take of Marine Mammals* section of the 2018 HSTT final rule), both in and outside of the U.S. EEZ. Because the portion of the Navy's study area inside the U.S. EEZ is generally concomitant with the area used to generate the abundance estimates in the SARs, and the abundance predicted by the same underlying density estimates is the preferred abundance to use, there is no need to separately compare the take to the SARs abundance estimate.

Total takes inside and outside U.S. EEZ represent the sum of annual Level A and Level B harassment from training and testing activities.

The annual mortality of 0.29 is the result of no more than two mortalities over the course of seven years from vessel strikes as described above in the *Estimated Take of Marine Mammals* section.

TABLE 19—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR MYSTICETES IN THE SOCAL PORTION OF THE HSTT 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		Instance of total take as percent of abundance	
		Level B harassment		Level A harassment		Mortality	Total takes (entire Study Area)	Navy abundance in Action Area (SOCAL)	NMFS SARS abundance	Total take as percentage of total Navy abundance in Action Area	Total take as percentage of total SAR abundance
		Behavioral disturbance	TTS (may also include disturbance)	PTS	Tissue damage						
Blue whale	Eastern North Pacific.	792	1,196	1	0	0.14	1,989	785	1,496	253	133
Bryde's whale	Eastern Tropical Pacific.	14	27	0	0	0	41	1	unknown	3,154	unknown
Fin whale	CA/OR/WA	835	1,390	1	0	0.29	2,226	363	9,029	613	25
Humpback whale	CA/OR/WA	480	1,514	1	0	0.14	1,995	247	2,900	808	69
Minke whale	CA/OR/WA	259	666	1	0	0	926	163	636	568	146
Sei whale	Eastern North Pacific.	27	52	0	0	0	79	3	519	2,633	15
Gray whale	Eastern North Pacific.	1,316	3,355	7	0	0.29	4,678	193	26,960	2,424	17
Gray whale	Western North Pacific.	2	4	0	0	0	6	0	290	0	2

Note: For the SOCAL take estimates, because of the manner in which the Navy study area overlaps the ranges of many MMPA stocks (*i.e.,* a stock may range far north to Washington state and beyond and abundance may only be predicted within the U.S. EEZ, while the Navy study area is limited to Southern California and northern Mexico, but extends beyond the U.S. EEZ), we compare predicted takes to both the abundance estimates for the study area, as well as the SARs (as described in the *Estimated Take of Marine Mammals* section of the 2018 HSTT final rule).

Total takes inside and outside U.S. EEZ represent the sum of annual Level A and Level B harassment from training and testing activities.

The annual mortality of 0.14 is the result of no more than one mortality over the course of seven years from vessel strikes as described above in the *Estimated Take of Marine Mammals* section. The annual mortality of 0.29 is the result of no more than two mortalities over the course of seven years from vessel strikes.

Below we compile and summarize the information that supports our determination that the Navy's activities will not adversely affect any species or stocks through effects on annual rates of recruitment or survival for any of the affected mysticete stocks.

Blue Whale (Eastern North Pacific Stock)

The SAR identifies this stock as ''stable'' even though the larger species is listed as endangered under the ESA. We further note that this species was originally listed under the ESA as a result of the impacts from commercial whaling, which is no longer affecting the species. No Level A harassment by tissue damage is anticipated or authorized. NMFS will authorize one mortality over the seven years covered by this rule, or 0.14 mortality annually. With the addition of this 0.14 annual mortality, residual PBR is exceeded, resulting in the total human-caused mortality exceeding PBR by 17.44. However, as described in more detail in the *Serious Injury or Mortality* section above, when total human-caused mortality exceeds PBR, we consider whether the incremental addition of a small amount of authorized 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. In this case, the authorized mortality is well below 10 percent of PBR, management measures are in place to reduce mortality from other sources, and the incremental addition of a single mortality over the course of the seven-year Navy rule is not expected to, alone, lead to adverse impacts on the stock through effects on annual rates of recruitment or survival. In addition, even with the additional two years of activities under this rule, no additional M/SI is estimated for this stock, leading to a slight decrease (from 0.2 to 0.14 annually) in annual mortality from the 2018 HSTT final rule.

Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated total instances of take compared to the abundance (measured against both the Navy-estimated abundance and the SAR) is 253 and 133 percent, respectively. Given the range of blue whales, this information suggests that only some smaller portion of individuals in the stock are likely impacted, but that there will likely be some repeat exposure (maybe 5 or 6 days within a year) of some subset of individuals that spend extended time within the SOCAL Range. Some of these takes could occur on a few sequential days for some small number of individuals, for example, if they resulted from a multi-day exercise on a range while individuals were in the area for multiple days feeding. However, these amounts are still not expected to adversely impact reproduction or survival of any individuals. Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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 portion up to 178 dB (*i.e.,* of a moderate or lower level, less likely to evoke a severe response). Additionally, the Navy implements time/area mitigation in SOCAL in the majority of the BIAs, which will reduce the severity of impacts to blue whales by reducing interference in feeding that could result in lost feeding opportunities or necessitate additional energy expenditure to find other good opportunities. Regarding the severity of TTS takes, we have explained in the 2018 HSTT final rule 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 the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival. For similar reasons (as described in the 2018 HSTT final rule) the single estimated Level A harassment take by PTS for this stock is unlikely to have any effect on the reproduction or survival of that one individual, even if it were to be experienced by an animal that also experiences one or more Level B harassment takes by behavioral disruption.

Altogether, this population is stable, only a smaller portion of the stock is anticipated to be impacted, and any individual blue whale is likely to be disturbed at a low-moderate level, with likely many animals exposed only once or twice and a subset potentially disturbed across five or six days, but minimized in biologically important areas. This low magnitude and 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. One individual is expected to 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 one Level A harassment take by PTS would be unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of that individual, let alone have effects on annual rates of recruitment or survival. Nor are these harassment takes combined with the one authorized mortality (which our earlier analysis indicated will not have more than a negligible impact on this stock of blue whales), 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 blue whales.

Bryde's Whale (Eastern Tropical Pacific Stock)

Little is known about this stock, or its status, and it is not listed under the ESA. No mortality or Level A harassment is anticipated or authorized. Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated total instances of take compared to the abundance is 3,154 percent, however, the abundance upon which this percentage is based (1.3 whales from the Navy estimate, which is extrapolated from density estimates based on very few sightings) is clearly erroneous and the SAR does not include an abundance estimate because all of the survey data is outdated (Table 19). However, the abundance in the early 1980s was estimated as 22,000 to 24,000, a portion of the stock was estimated at 13,000 in 1993, and the minimum number in the Gulf of California alone was estimated at 160 in 1990. Given this information and there being no indication of dramatic decline since these population estimates, along with the fact that 41 total takes of Bryde's whales were estimated, this information suggests that only a small portion of the individuals in the stock are likely to be impacted, and few, if any, are likely to be taken over more than one day. Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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 portion up to 178 dB (*i.e.,* of a moderate or lower level, 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 Bryde's whale communication or other important low-frequency cues. Any associated lost opportunities and capabilities are not at a level that will impact reproduction or survival.

Altogether, in spite of the unknown status and calculated number of instances of take compared to abundance, only a small portion of the stock is anticipated to be impacted based on the more likely minimum population level and any individual Bryde's whale is likely to be disturbed at a low-moderate level, with few, if any, individuals exposed over more than one day in the year. No mortality and no Level A harassment is anticipated or proposed for authorization. This low magnitude and severity of harassment effects is not expected to result in impacts on individual reproduction or survival, much less 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 Tropical Pacific stock of Bryde's whales.

Fin Whale (CA/OR/WA Stock)

The SAR identifies this stock as ''increasing,'' even though the larger species is listed as endangered under the ESA. No Level A harassment by tissue damage is anticipated or authorized. NMFS authorizes two mortalities over the seven years covered by this rule, or 0.29 mortality annually. The addition of this 0.29 annual mortality still leaves the total human-caused mortality well under the insignificance threshold of residual PBR. In addition, even with the additional two years of activities under this rule, no additional M/SI is estimated for this stock, leading to a slight decrease (from 0.4 to 0.29 annually) in annual mortality from the 2018 HSTT final rule.

Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated total instances of take compared to the abundance (measured against both the Navy-estimated abundance and the SAR) is 613 and 25 percent, respectively. This information suggests that only some portion (less than 25 percent) of individuals in the stock are likely impacted, but that there is likely some repeat exposure (perhaps up to 12 days within a year) of some subset of individuals that spend extended time within the SOCAL complex. Some of these takes could occur on a few sequential days for some small number of individuals, for example, if they resulted from a multi-day exercise on a range while individuals were in the area for multiple days feeding. However, these amounts are still not expected to adversely impact reproduction or survival of any individuals. Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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 portion up to 178 dB (*i.e.,* of a moderate or lower level, less likely to evoke a severe response). Additionally, while there are no BIAs for fin whales in the SOCAL range, the Navy implements time/area mitigation in SOCAL in blue whale BIAs, and fin whales are known to sometimes feed in some of the same areas, which means they could potentially accrue some benefits from the mitigation. 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. For similar reasons (as described in the 2018 HSTT final rule) the single estimated Level A harassment take by PTS for this stock is unlikely to have any effects on the reproduction or survival of that one individual, even if it were to be experienced by an animal that also experiences one or more Level B harassment takes by behavioral disruption.

Altogether, this population is increasing, only a small portion of the stock is anticipated to be impacted, and any individual fin whale is likely to be disturbed at a low-moderate level, with the taken individuals likely exposed between one and twelve days, with a few individuals potentially taken on a few sequential days. This low magnitude and severity of harassment effects is not expected to result in impacts on the reproduction or survival for any individuals, let alone have impacts on annual rates of recruitment or survival. One individual is expected to 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 one Level A harassment take by PTS would be unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of that individual, let alone have effects on annual rates of recruitment or survival. Nor are these harassment takes combined with the two authorized mortalities 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 fin whales.

Humpback Whale (CA/OR/WA Stock)

The SAR identifies this stock as stable (having shown a long-term increase from 1990 and then leveling off between 2008 and 2014) and the individuals in this stock are associated with three DPSs, one of which is not listed under the ESA (Hawaii), one of which is listed as threatened (Mexico), and one of which is listed as endangered (Central America). Individuals encountered in the SOCAL portion of the HSTT Study Area are likely to come from the latter two DPSs. No Level A harassment by tissue damage is anticipated or authorized. NMFS authorizes one mortality over the seven years covered by this rule, or 0.14 mortality annually (Mexico DPS only). With the addition of this 0.14 annual mortality, the total human-caused mortality exceeds PBR by 8.84. However, as described in more detail in the *Serious Injury or Mortality* section, when total human-caused mortality exceeds PBR, we consider whether the incremental addition of a small amount of authorized 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 33.4. 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 0.14 will not delay the time to recovery by more than 1 percent. Given these considerations along with those discussed earlier, the incremental addition of a single mortality over the course of the seven-year Navy rule is not expected to, alone, lead to adverse impacts on the stock through effects on annual rates of recruitment or survival. In addition, even with the additional two years of activities under this rule, no additional M/SI is estimated for this stock, leading to a slight decrease (from 0.2 to 0.14 annually) in annual mortality from the 2018 HSTT final rule.

Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated total instances of take compared to the abundance (measured against both the Navy-estimated abundance and the SAR) is 808 and 69 percent, respectively. Given the range of humpback whales, this information suggests that only some portion of individuals in the stock are likely impacted, but that there is likely some repeat exposure (perhaps up to 16 days within a year) of some subset of individuals that spend extended time within the SOCAL complex. Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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 portion up to 178 dB (*i.e.,* of a moderate or lower level, less likely to evoke a severe response). Some of these takes could occur on several sequential days for some small number of individuals, for example, if they resulted from a multi-day exercise on a range while individuals were in the area for multiple days feeding. However, these amounts are still not expected to adversely impact reproduction or survival of any individuals.

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 the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival. For similar reasons (as described in the 2018 HSTT final rule) the single estimated Level A harassment take by PTS for this stock is unlikely to have any effects on the reproduction or survival of that one individual, even if it were to be experienced by an animal that also experiences one or more Level B harassment takes by behavioral disruption.

Altogether, this population is stable, 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, with likely many animals exposed only once or twice and a subset potentially disturbed up to 16 days, but with no reason to think that more than several of those days would be sequential. This low magnitude and 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. One individual is expected to 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 one Level A harassment take by PTS would be unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of that individual, let alone have effects on annual rates of recruitment or survival. Nor are these harassment takes combined with the one authorized mortality (which our earlier analysis indicated will not have more than a negligible impact on this stock of humpback whales) 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 (CA/OR/WA Stock)

The status of this stock is unknown and it is not listed under the ESA. No mortality from vessel strike or Level A harassment by tissue damage from explosive exposure is anticipated or authorized for this species. Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated total instances of take compared to the abundance (measured against both the Navy-estimated abundance and the SAR) is 568 and 146 percent, respectively. Based on the behaviors of minke whales, which often occur along continental shelves and sometimes establish home ranges along the West Coast, this information suggests that only a portion of individuals in the stock are likely impacted, but that there is likely some repeat exposure (perhaps up to 11 days within a year) of some subset of individuals that spend extended time within the SOCAL complex. Some of these takes could occur on a few sequential days for some small number of individuals, for example, if they resulted from a multi-day exercise on a range while individuals were in the area for multiple days feeding. However, these amounts are still not expected to adversely impact reproduction or survival of any individuals. Regarding the severity of

those individual Level B harassment takes by behavioral disruption, 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 portion up to 178 dB (*i.e.,* of a moderate or lower level, 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 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. For similar reasons (as described in the 2018 HSTT final rule) the single estimated Level A harassment take by PTS for this stock is unlikely to have any effects on the reproduction or survival of that individual, even if it were to be experienced by an animal that also experiences one or more Level B harassment takes by behavioral disruption.

Altogether, while the status of this population is unknown, only a portion of the stock is anticipated to be impacted and any individual minke whale is likely to be disturbed at a low-moderate level, with the taken individuals likely exposed between one and eleven days, with a few individuals potentially taken on a few sequential days. No mortality is anticipated or proposed for authorization. This low magnitude and severity of harassment effects is not expected to result in impacts on individual reproduction or survival, let alone have impacts on annual rates of recruitment or survival. One individual is expected to 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 one Level A harassment take by PTS would be unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of that individual, let alone have 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 CA/OR/WA stock of minke whales.

Sei Whale (Eastern North Pacific Stock)

The status of this stock is unknown and it is listed as endangered under the ESA. No mortality or Level A harassment is anticipated or authorized. Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated total instances of take compared to the abundance (measured against both the Navy-estimated abundance and the SAR) is 2,633 and 15 percent, respectively, however, the abundance upon which the Navy percentage is based (3 from the Navy estimate, which is extrapolated from density estimates based on very few sightings) is likely an underestimate of the number of individuals in the HSTT Study Area, resulting in an overestimated percentage. Given this information and the large range of sei whales, and the fact that only 79 total Level B harassment takes of sei whales were estimated, it is likely that some very small number of sei whales would be taken repeatedly, potentially up to 15 days in a year (typically 2,633 percent would lead to the estimate of 52 days/year, however, given that there are only 79 sei whale total takes, we used the conservative assumption that five individuals might be taken up to 15 times, with the few remaining takes distributed among other individuals). Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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 portion up to 178 dB (*i.e.,* of a moderate or lower level, less likely to evoke a severe response). Some of these takes could occur on a few sequential days for some small number of individuals, for example, if they resulted from a multi-day exercise on a range while individuals were in the area for multiple days feeding, however, these amounts are still not expected to adversely impact reproduction or survival of any individuals. 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—and the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival.

Altogether, while the status of this population is unknown, 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, with only a few individuals exposed over one to 15 days in a year, with no more than a few sequential days. No mortality or Level A harassment is anticipated or authorized. This low magnitude and severity of harassment effects is not expected to result in impacts on individual reproduction or survival, much less annual rates of recruitment or survival 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 stock of sei whales.

Gray Whale (Eastern North Pacific Stock)

The SAR identifies this stock as ''increasing'' and the species is not listed under the ESA. No Level A harassment by tissue damage is anticipated or authorized. NMFS is authorizing two mortalities over the seven years covered by this rule, or 0.29 mortality annually. The addition of this 0.29 annual mortality still leaves the total human-caused mortality well under the insignificance threshold of residual PBR (663). On May 31, 2019, NMFS declared the unusual spike in strandings of gray whales along the west coast of North America since January 1, 2019 an UME. As of March 13, 2020, 264 gray whales have stranded along the west coast of North America (in the U.S., Canada, and Mexico). Including these mortalities in the calculated residual PBR still leaves the addition of 0.29 annual mortality well under the insignificance threshold of residual PBR (399 including known deaths due to the UME). In addition, even with the additional two years of activities under this rule, no additional M/SI is estimated for this stock, leading to a slight decrease (from 0.4 to 0.29 annually) in annual mortality from the 2018 HSTT final rule.

Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated total instances of take compared to the abundance (measured against both the Navy-estimated abundance and the SAR) is 2,424 and 17 percent, respectively. This information suggests that only some small portion of individuals in the stock are likely impacted (less than 17 percent), but that there is likely some level of repeat exposure of some subset of individuals that spend extended time within the SOCAL complex. Typically, 2,424 percent would lead to the estimate of 48 days/year, however, given that a large number of gray whales are known to migrate through the SOCAL complex and the fact that there are 4,678 total takes, we believe that it is more likely that a larger number of individuals would be taken one to a few times,

while a small number staying in an area to feed for several days may be taken on 5–10 days. Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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 portion up to 178 dB (*i.e.,* of a moderate or lower level, less likely to evoke a severe response). Some of these takes could occur on a few sequential days for some small number of individuals, however, these amounts are still not expected to adversely impact reproduction or survival of any individuals.

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 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, at the expected scale the 7 estimated Level A harassment takes by PTS for gray whales will be unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of any individuals, even if it were to be experienced by an animal that also experiences one or more Level B harassment takes by behavioral disruption.

Altogether, while we have considered the impacts of the gray whale UME, gray whales are not endangered or threatened under the ESA and the Eastern North Pacific stock is increasing. Only a small portion of the stock is anticipated to be impacted and any individual gray whale is likely to be disturbed at a low-moderate level, with likely many animals exposed only once or twice and a subset potentially disturbed across five to ten days. This low magnitude and severity of harassment effects is not expected to result in impacts to reproduction or survival for any individuals, let alone have impacts on annual rates of recruitment or survival. Seven individuals are expected to be taken by PTS annually of likely low severity, with this unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of those individuals, let alone have effects on annual rates of recruitment or survival. Nor are these harassment takes combined with the two authorized mortalities 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.

Gray Whale (Western North Pacific Stock)

The Western North Pacific stock of gray whales is reported as increasing in the 2018 final SAR, but is listed as endangered under the ESA. No mortality or Level A harassment is anticipated or authorization. This stock is expected to incur the very small number of 6 Level B harassment takes (2 behavioral disruption and 4 TTS) to a stock with a SAR-estimated abundance of 290. These takes will likely accrue to different individuals, the behavioral disturbances will be of a low-moderate level, and the TTS instances will be at a low level and of short duration (with the same expected effects as described for the Eastern North Pacific stock of gray whales described above). This low magnitude and severity of harassment effects is not expected to result in impacts on individual reproduction or survival, much less 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 Western North Pacific stock of gray whales.

Humpback Whale (Central North Pacific Stock)

The 2018 final SAR identifies this stock as ''increasing'' and the DPS is not listed under the ESA. No Level A harassment by tissue damage is anticipated or authorized. NMFS authorizes two mortalities over the seven years covered by this rule, or 0.29 mortalities annually. The addition of this 0.29 annual mortality still leaves the total human-caused mortality well under the insignificance threshold for residual PBR. In addition, even with the additional two years of activities under this rule, no additional M/SI is estimated for this stock, leading to a slight decrease (from 0.4 to 0.29 annually) in annual mortality from the 2018 HSTT final rule.

Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated instances of take compared to the abundance, both throughout the HSTT Study Area and within the U.S. EEZ, respectively, is 180 and 161 percent. This information and the complicated far-ranging nature of the stock structure suggests that some portion of the stock (but not all) are likely impacted, over one to several days per year, with little likelihood of take across sequential days. Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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 portion up to 178 dB (*i.e.,* of a moderate or lower level, less likely to evoke a severe response). Additionally, as noted above, there are two mitigation areas implemented by the Navy that span a large area of the important humpback reproductive area (BIA) and minimize impacts by limiting the use of MF1 active sonar and explosives, thereby reducing both the number and severity of takes of humpback whales. 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 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, at the expected scale the three estimated Level A harassment takes by PTS for humpback whales will be unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of any individuals, even if it were to be experienced by an animal that also experiences one or more Level B harassment takes by behavioral disruption.

Altogether, this stock is increasing and the DPS is not 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, with the taken individuals likely exposed between one to several days per year, with little likelihood of take across sequential days. This low magnitude and severity of harassment effects is not

expected to result in impacts on individual reproduction or survival, let alone have impacts on annual rates of recruitment or survival. Three individuals are estimated to be taken by PTS annually of likely low severity, with this unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of those individuals, let alone have effects on annual rates of recruitment or survival. Nor are these harassment takes combined with the two authorized mortalities 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 Central North Pacific stock of humpback whales.

Blue Whale (Central North Pacific Stock) and the Hawaii Stocks of Bryde's Whale, Fin Whale, Minke Whale, and Sei Whale

The status of these stocks is not identified in the SARs. Blue whales, fin whales, and sei whales are listed as endangered under the ESA; minke whales and Bryde's whales (other than the Gulf of Mexico DPS) are not listed under the ESA. No mortality or Level A harassment by tissue damage is anticipated or authorized for any of these stocks.

Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated instances of take compared to the abundance, both throughout the HSTT Study Area and within the U.S. EEZ, respectively, is 92–135 and 103–142 percent. This information suggests that some portion of the stocks (but not all) are likely impacted, over one to several days per year, with little likelihood of take across sequential days. Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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 portion up to 178 dB (*i.e.,* of a moderate or lower level, 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 mysticete 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. For similar reasons (as described in the 2018 HSTT final rule) the two estimated Level A harassment takes by PTS for the Hawaii stock of minke whales are unlikely to have any effects on the reproduction or survival of those two individuals, even if it were to be experienced by an animal that also experiences one or more Level B harassment takes by behavioral disruption.

Altogether, while the status of these populations is unknown, only a portion of these stocks are anticipated to be impacted and any individuals of these stocks are likely to be disturbed at a low-moderate level, with the taken individuals likely exposed between one and several days, with little chance that any are taken across sequential days. No mortality is anticipated or authorized for any of these stocks. This low magnitude and severity of harassment effects is not expected to result in impacts on individual reproduction or survival, let alone have impacts on annual rates of recruitment or survival. Two individual minke whales from the Hawaii stock are estimated to 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 take by PTS would be unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of those individuals, let alone have 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 these stocks.

Odontocetes

Sperm Whales, Dwarf Sperm Whales, and Pygmy Sperm Whales

In Tables 20 and 21 below for sperm whales, dwarf sperm whales, and pygmy sperm whales, we indicate the total annual mortality, Level A and Level B harassment, and a number indicating the instances of total take as a percentage of abundance. Tables 20 and 21 are unchanged from Tables 73 and 74 in the 2018 HSTT final rule, except for updated information on mortality for the Hawaii stock of sperm whales, as discussed above. For additional information and analysis supporting the negligible-impact analysis, see the *Odontocetes* discussion as well as the *Sperm Whales, Dwarf Sperm Whales, and Pygmy Sperm Whales* discussion in the *Group and Species-Specific Analyses* section of the 2018 HSTT final rule, all of which remains applicable to this final rule unless specifically noted.

TABLE 20—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR SPERM WHALES, DWARF SPERM WHALES, AND PYGMY SPERM WHALES IN THE HRC PORTION OF THE HSTT 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		Instances of total take as percent of abundance	
		Level B harassment		Level A harassment		Mortality	Total takes (entire study area)	Takes (within NAVY EEZ)	Total Navy abundance inside and outside EEZ (HRC)	Within EEZ Navy abundance (HRC)	Total take as percentage of total Navy abundance (HRC)	EEZ take as percentage of EEZ abundance (HRC)
		Behavioral disturbance	TTS (may also include disturbance)	PTS	Tissue damage							
Dwarf sperm whale.	Hawaii	5,870	14,550	64	0	0	20,484	15,310	8,218	6,379	249	240
Pygmy sperm whale.	Hawaii	2,329	5,822	29	0	0	8,180	6,098	3,349	2,600	244	235
Sperm whale.	Hawaii	2,466	30	0	0	0.14	2,496	1,317	1,656	1,317	151	147

Note: For the HI take estimates, we compare predicted takes to abundance estimates generated from the same underlying density estimates (as described in the *Estimated Take of Marine Mammals* section of the 2018 HSTT final rule), both in and outside of the U.S. EEZ. Because the portion of the Navy's study area inside the U.S. EEZ is generally concomitant with the area used to generate the abundance estimates in the SARs, and the abundance predicted by the same underlying density estimates is the preferred abundance to use, there is no need to separately compare the take to the SARs abundance estimate.

Total takes inside and outside U.S. EEZ represent the sum of annual Level A and Level B harassment from training and testing activities.

The annual mortality of 0.14 is the result of no more than one mortality over the course of seven years from vessel strikes as described above in the *Estimated Take of Marine Mammals* section.

TABLE 21—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR SPERM WHALES, DWARF SPERM WHALES, AND PYGMY SPERM WHALES IN THE SOCAL PORTION OF THE HSTT 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		Instances of total take as percent of abundance	
		Level B harassment		Level A harassment		Mortality	Total takes (entire study area)	Navy abundance in action area	NMFS SARS abundance	Total take as percentage of total Navy abundance in action area	Total take as percentage of total SAR abundance
		Behavioral disturbance	TTS (may also include disturbance)	PTS	Tissue damage						
Kogia whales	CA/OR/WA	2,779	6,353	38	0	0	9,170	757	4,111	1,211	223
Sperm whale	CA/OR/WA	2,437	56	0	0	0	2,493	273	1,997	913	125

Note: For the SOCAL take estimates, because of the manner in which the Navy study area overlaps the ranges of many MMPA stocks (*i.e.,* a stock may range far north to Washington state and beyond and abundance may only be predicted within the U.S. EEZ, while the Navy study area is limited to Southern California and northern Mexico, but extends beyond the U.S. EEZ), we compare predicted takes to both the abundance estimates for the study area, as well as the SARs (as described in the *Estimated Take of Marine Mammals* section of the 2018 HSTT final rule). Total takes inside and outside U.S. EEZ represent the sum of annual Level A and Level B harassment from training and testing activities.

Below we compile and summarize the information that supports our determination that the Navy's activities will not adversely affect any species or stocks through effects on annual rates of recruitment or survival for any of the affected stocks addressed in this section.

Sperm Whale, Dwarf Sperm Whale, and Pygmy Sperm Whale (CA/OR/WA Stocks)

The SAR identifies the CA/OR/WA stock of sperm whales as ''stable'' and the species is listed as endangered under the ESA. The status of the CA/OR/WA stocks of pygmy and dwarf sperm whales is unknown and neither are listed under the ESA. Neither mortality nor Level A harassment by tissue damage from exposure to explosives is expected or authorized for any of these three stocks.

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 harassment 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 Level B harassment takes (TTS and behavioral disruption), the number of estimated total instances of take compared to the abundance (measured against both the Navy-estimated abundance and the SAR) is, respectively, 913 and 125 percent for sperm whales and 1,211 and 223 percent for *Kogia* whales, with a large proportion of the *Kogia* whales anticipated to be pygmy sperm whales due to the low abundance and density of dwarf sperm whales in the HSTT Study Area. 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 suggests that some portion of the individuals in these stocks will not be impacted, but that there is likely some repeat exposure (perhaps up to 24 days within a year for *Kogia* species and 18 days a year for sperm whales) of some small subset of individuals that spend extended time within the SOCAL Range. Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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). 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. However, some of these takes could occur on a fair number of sequential days for some number of individuals.

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 any of these three species' 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 Level A harassment takes by PTS for the dwarf and pygmy sperm whale stocks will be unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of any individuals (and no Level A harassment takes are anticipated or authorized for sperm whales), even if it were to be experienced by an animal that also experiences one or more Level B harassment takes by behavioral disruption. Thus the 38 Level A harassment takes by PTS for the two *Kogia* stocks are unlikely to affect rates of recruitment and survival for the stocks.

Altogether, while this population of sperm whales is stable and the status of the *Kogia* species stocks are unknown, most members of the stocks will likely be taken by Level B harassment at a low to occasionally moderate level over several days a year, and some smaller portion of the stocks are expected to be taken on a relatively moderate to high number of days (up to 18 or 24) across the year, some of which could be sequential days. No mortality is anticipated or authorized for any of

these stocks. Thirty-eight individuals from the two *Kogia* stocks are expected to be taken by PTS annually of likely low severity, with this unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of those individuals. Though the majority of impacts are expected to be of a lower to sometimes moderate severity, the larger number of takes for a subset of individuals makes it more likely that a 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. As discussed in the 2018 HSTT final rule, however, foregone reproduction (especially for one year, which is the maximum predicted because the small number anticipated in any one year makes the probability that any individual would be impacted in this way twice in seven years very low) has far less of an impact on population rates than mortality and a small number of instances of foregone reproduction is not expected to adversely affect these stocks through effects on annual rates of recruitment or survival. We also note that residual PBR is 19.2 for pygmy sperm whales and 1.6 for sperm whales. Both the abundance and PBR are unknown for dwarf sperm whales, however, we know that take of this stock is likely significantly lower in magnitude and severity (*i.e.,* lower number of total takes and repeated takes of any individual) than pygmy sperm whales. 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 the CA/OR/WA stocks of sperm whales and pygmy and dwarf sperm whales.

Sperm Whale (Hawaii Stock)

The SAR does not identify a trend for this stock and the species is listed as endangered under the ESA. No Level A harassment by PTS or tissue damage is expected or authorized. NMFS authorizes one mortality over the seven years covered by this rule, which is 0.14 mortalities annually. The addition of this 0.14 annual mortality still leaves the total human-caused mortality well under the insignificance threshold for residual PBR. In addition, even with the additional two years of activities under this rule, no additional M/SI is estimated for this stock, leading to a slight decrease (from 0.2 to 0.14 annually) in annual mortality from the 2018 HSTT final rule.

Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated instances of take compared to the abundance, both throughout the HSTT Study Area and within the U.S. EEZ, respectively, is 151 and 147 percent. This information and the sperm whale stock range suggest that likely only a smaller portion of the stock will be impacted, over one to a few days per year, with little likelihood of take across sequential days. Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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, and the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival.

Altogether, while the status of this population is unknown, a relatively small portion of this stock is anticipated to be impacted and any individuals are likely to be disturbed at a low-moderate level, with the taken individuals likely exposed between one and a few days, with little chance that any are taken across sequential days. No Level A harassment by PTS or tissue damage is expected or authorized. This low magnitude and severity of harassment effects is not expected to result in impacts on individual reproduction or survival, nor are these harassment takes combined with the one authorized mortality expected to adversely affect the 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 Hawaii stock of sperm whales.

Pygmy and Dwarf Sperm Whales (Hawaii Stocks)

The SAR does not identify a trend for these stocks and the species are not listed under the ESA. No mortality or Level A harassment by tissue damage is anticipated or authorized. Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated instances of take compared to the abundance, both throughout the HSTT Study Area and within the U.S. EEZ, respectively, is 244–249 and 235–240 percent. This information and the pygmy and dwarf sperm whale stock ranges (at least throughout the U.S. EEZ around the entire Hawaiian Islands) suggest that likely a fair portion of each stock is not impacted, but that a subset of individuals may be taken over one to perhaps five days per year, with little likelihood of take across sequential days. Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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). Additionally, as discussed earlier, within the Hawaii Island Mitigation Area, explosives are not used and the use of MF1 and MF4 active sonar is limited, greatly reducing the severity of impacts within the small resident population BIA for dwarf sperm whales, which is entirely contained within this mitigation area.

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 pygmy or dwarf sperm 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. 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, at the expected scale, estimated Level A harassment takes by PTS for these stocks of dwarf and pygmy sperm whales will be unlikely to impact behaviors, opportunities, or detection capabilities to a degree that will interfere with reproductive success or survival of any individuals, even if it were to be experienced by an animal that also experiences one or more instances of Level B harassment by behavioral disruption. Thus the 64 and 29 total Level A harassment takes by PTS for dwarf and pygmy sperm whales,

respectively, will be unlikely to affect rates of recruitment and survival for these stocks.

Altogether, while the status of these populations is unknown, only a portion of these stocks are likely to be impacted and any individuals are likely to be disturbed at a low-moderate level, with the taken individuals likely exposed between one and five days, with little chance that any are taken across sequential days. No mortality is anticipated or authorized. This low magnitude and severity of Level B harassment effects is not expected to result in impacts on individual reproduction or survival, let alone have impacts on annual rates of recruitment or survival for these stocks. Sixty-four dwarf sperm whales and 29 pygmy sperm whales are estimated to be taken by PTS annually of likely low severity, with this unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of those individuals, let alone have 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 expected and authorized take will have a negligible impact on the Hawaii stocks of pygmy and dwarf sperm whales.

Beaked Whales

In Tables 22 and 23 below for beaked whales, we indicate the total annual mortality, Level A and Level B harassment, and a number indicating the instances of total take as a percentage of abundance. Tables 22 and 23 are unchanged from Tables 75 and 76 in the 2018 HSTT final rule. For additional information and analysis supporting the negligible-impact analysis, see the *Odontocetes* discussion as well as the *Beaked Whales* discussion in the *Group and Species-Specific Analyses* section of the 2018 HSTT final rule, all of which remains applicable to this final rule unless specifically noted.

TABLE 22—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR BEAKED WHALES IN THE HRC PORTION OF THE HSTT 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		Instances of total take as percent of abundance	
		Level B harassment		Level A harassment		Mortality	Total takes (entire study area)	Takes (within NAVY EEZ)	Total Navy abundance inside and outside EEZ (HRC)	Within EEZ Navy abundance (HRC)	Total take as percentage of total Navy abundance (HRC)	EEZ take as percentage of EEZ abundance (HRC)
		Behavioral disturbance	TTS (may also include disturbance)	PTS	Tissue damage							
Blainville's beaked whale.	Hawaii	5,369	16	0	0	0	5,385	4,140	989	768	545	539
Cuvier's beaked whale.	Hawaii	1,792	4	0	0	0	1,796	1,377	345	268	521	514
Longman's beaked whale.	Hawaii	19,152	81	0	0	0	19,233	14,585	3,568	2,770	539	527

Note: For the HI take estimates, we compare predicted takes to abundance estimates generated from the same underlying density estimates (as described in the *Estimated Take of Marine Mammals* section of the 2018 HSTT final rule), both in and outside of the U.S. EEZ. Because the portion of the Navy's study area inside the U.S. EEZ is generally concomitant with the area used to generate the abundance estimates in the SARs, and the abundance predicted by the same underlying density estimates is the preferred abundance to use, there is no need to separately compare the take to the SARs abundance estimate.

Total takes inside and outside U.S. EEZ represent the sum of annual Level A and Level B harassment from training and testing activities.

TABLE 23—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR BEAKED WHALES IN THE SOCAL PORTION OF THE HSTT 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		Instances of total take as percent of abundance	
		Level B harassment		Level A harassment		Mortality	Total takes (entire study area)	Navy abundance in action area	NMFS SARS abundance	Total take as percentage of total Navy abundance in action area	Total take as percentage of total SAR abundance
		Behavioral disturbance	TTS (may also include disturbance)	PTS	Tissue damage						
Baird's beaked whale.	CA/OR/WA	2,030	14	0	0	0	2,044	74	2,697	2,762	76
Cuvier's beaked whale.	CA/OR/WA	11,373	127	1	0	0	11,501	520	3,274	2,212	351
Mesoplodon species.	CA/OR/WA	6,125	68	1	0	0	6,194	89	3,044	6,960	203

Note: For the SOCAL take estimates, because of the manner in which the Navy study area overlaps the ranges of many MMPA stocks (*i.e.,* a stock may range far north to Washington state and beyond and abundance may only be predicted within the U.S. EEZ, while the Navy study area is limited to Southern California and northern Mexico, but extends beyond the U.S. EEZ), we compare predicted takes to both the abundance estimates for the study area, as well as the SARs (as described in the *Estimated Take of Marine Mammals* section of the 2018 HSTT final rule).

Total takes inside and outside U.S. EEZ represent the sum of annual Level A and Level B harassment from training and testing activities.

Below we compile and summarize the information that supports our determination that the Navy's activities will not adversely affect any species or stocks through effects on annual rates of recruitment or survival for any of the affected stocks addressed in this section.

Blainville's, Cuvier's, and Longman's Beaked Whales (Hawaii Stocks)

The SAR does not identify a trend for these stocks and the species are not listed under the ESA. No mortality or Level A harassment are expected or authorized for any of these three stocks. Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated instances of take compared to the abundance, both throughout the HSTT Study Area and within the U.S. EEZ, respectively, is 521–545 and 514–539 percent. This information and the stock ranges (at least of the small, resident Island associated stocks around Hawaii) suggest that likely a fair portion of the stocks (but not all) will be impacted,

over one to perhaps eleven days per year, with little likelihood of much take across sequential days. Regarding the severity of those individual Level B harassment takes by behavioral disruption, the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 160 dB, though with beaked whales, which are considered somewhat more sensitive, this could mean that some individuals will leave preferred habitat for a day or two (*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. Additionally, as noted earlier, within the Hawaii Island mitigation area (which entirely contains the BIAs for Cuvier's and Blainville's beaked whales), explosives are not used and the use of MF1 and MF4 active sonar is limited, greatly reducing the severity of impacts to these two small resident populations.

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 the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival.

Altogether, the population trend for the three stocks is unknown, a fair portion of these stocks are anticipated to be impacted, and any individuals are likely to be disturbed at a moderate level, with the taken individuals likely exposed between one and eleven days, with little chance that individuals are taken across sequential days. No mortality or Level A harassment are expected or authorized for any of these three stocks. This low, to occasionally moderate, magnitude and severity of harassment effects is not expected to result in impacts on individual reproduction or survival, much less have impacts on annual rates of recruitment or survival for these 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 the Hawaii stocks of beaked whales.

Baird's and Cuvier's Beaked Whales and *Mesoplodon* Species (all CA/OR/WA Stocks)

These species are not listed under the ESA and their populations have been identified as ''stable,'' ''decreasing,'' and ''increasing,'' respectively. No mortality is expected or authorized for any of these stocks and only two takes by Level A harassment (PTS) are expected and authorized (one each for Cuvier's beaked whale and the *Mesoplodon* species). No Level A harassment by tissue damage is anticipated or authorized.

No methods are available to distinguish between the six *Mesoplodon* beaked whale 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.,* 2018). Bycatch and stranding records from the region indicate that the Hubbs' beaked whale is 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 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 and take estimates are also identified as *Mesoplodon* species.

Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated total instances of take compared to the abundance for these stocks is 2,762, 2,212, and 6,960 percent (measured against Navy-estimated abundance) and 76, 351, and 203 percent (measured against the SAR) for Baird's beaked whales, Cuvier's beaked whales, and *Mesoplodon* species, respectively. Given the ranges of these stocks, this information suggests that some smaller portion of the individuals of these stocks will be taken, and that some subset of individuals within the stock will be taken repeatedly within the year (perhaps up to 20–25 days, and potentially more for Cuvier's)—potentially over a fair number of sequential days, especially where individuals spend extensive time in the SOCAL Range. Note that we predict fewer days of repeated exposure for these stocks than their percentages might have suggested because of the number of overall takes—*i.e.,* using the higher percentage would suggest that an unlikely portion of the takes are taken up by a small portion of the stock incurring a very large number of repeat takes, with little room for take resulting from few or moderate numbers of repeats, which is unlikely.

Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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 160 dB, though with beaked whales, which are considered somewhat more sensitive, this could mean that some individuals will leave preferred habitat for a day or two (*i.e.,* of a moderate level). 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. However, as noted, some of these takes could occur on a fair number of sequential days for these stocks.

The severity of TTS takes are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere significantly with conspecific communication, echolocation, or other important low-frequency cues. Therefore, the associated lost opportunities and capabilities are not expected to impact reproduction or survival. For similar reasons (as described in the 2018 HSTT final rule) the single Level A harassment take each by PTS for the Cuvier's beaked whale stock and the *Mesoplodon* species is unlikely to have any effects on the reproduction or survival of those individuals, even if it were to be experienced by an animal that also experiences one or more Level B harassment takes by behavioral disruption.

Altogether, a portion of these stocks will likely be taken (at a moderate or sometimes low level) over several days a year, and some smaller portion of the stock is expected to be taken on a relatively moderate to high number of days across the year, some of which could be sequential days. No mortality is expected or authorized for any of these stocks. Two individuals (one each for Cuvier's beaked whale and the *Mesoplodon* species) are expected to 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 one Level A harassment take by PTS would be unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of that individual. Though the majority of impacts are expected to be of a moderate severity,

the repeated takes over a potentially fair number of sequential days for some individuals makes it more likely that a 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. As noted previously, however, foregone reproduction (especially for one year, which is the maximum predicted because the small number anticipated in any one year makes the probability that any individual would be impacted in this way twice in seven years very low) has far less of an impact on population rates than mortality and a small number of instances of foregone reproduction is not expected to adversely affect these stocks through effects on annual rates of recruitment or survival, especially given the residual PBR of these three beaked whale stocks (16, 21, and 20, respectively).

Further, Navy activities have been conducted in SOCAL for many years at similar levels and the SAR considers *Mesoplodon* species as increasing and Baird's beaked whales as stable. While NMFS' SAR indicates that Cuvier's beaked whales on the U.S. West Coast are declining based on a Bayesian trend analysis of NMFS' survey data collected from 1991 through 2014, results from passive acoustic monitoring and other research have estimated regional Cuvier's beaked whale densities that were higher than indicated by NMFS' broad-scale visual surveys for the U.S. West Coast (Debich *et al.,* 2015a; Debich *et al.,* 2015b; Falcone and Schorr, 2012, 2014; Hildebrand *et al.,* 2009; Moretti, 2016; Širović *et al.,* 2016; Smultea and Jefferson, 2014). Research also indicates higher than expected residency in the Navy's instrumented Southern California Anti-Submarine Warfare Range in particular (Falcone and Schorr, 2012) and photo identification studies in the SOCAL have identified approximately 100 individual 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). The documented residency by many Cuvier's beaked whales over multiple years suggests that a stable population may exist in that small portion of the stock's overall range (*e.g.,* Falcone *et al.,* 2009; Falcone and Schorr, 2014; Schorr *et al.,* 2017).

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 the CA/OR/WA stocks of Baird's and Cuvier's beaked whales, as well as all six species included within the *Mesoplodon* CA/OR/WA stocks.

Small Whales and Dolphins

In Tables 24 and 25 below for dolphins and small whales, we indicate the total annual mortality, Level A and Level B harassment, and a number indicating the instances of total take as a percentage of abundance. Tables 24 and 25 are updated from Tables 77 and 78 in the 2018 HSTT final rule as appropriate with the 2018 final SARs and with updated information on mortality, as discussed above. For additional information and analysis supporting the negligible-impact analysis, see the *Odontocetes* discussion as well as the *Small Whales and Dolphins* discussion in the *Group and Species-Specific Analyses* section of the 2018 HSTT final rule, all of which remains applicable to this final rule unless specifically noted.

TABLE 24—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR DOLPHINS AND SMALL WHALES IN THE HRC PORTION OF THE HSTT 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	Takes (within Navy EEZ)	Abundance		Instance of total take as percent of abundance	
		Level B harassment		Level A harassment		Mortality	Total takes (entire study area)		Total Navy abundance inside and outside of EEZ (HRC)	Within EEZ Navy abundance (HRC)	Total take as percentage of total Navy abundance (HRC)	EEZ take as percentage of Navy EEZ abundance (HRC)
		Behavioral disturbance	TTS (may also include disturbance)	PTS	Tissue damage							
Bottlenose dolphin.	Hawaii Pelagic.	3,196	132	0	0	0	3,328	2,481	1,528	1,442	218	172
Bottlenose dolphin.	Kauai & Niihau.	534	31	0	0	0	565	264	184	184	307	143
Bottlenose dolphin.	Oahu	8,600	61	1	0	0	8,662	8,376	743	743	1,169	1,130
Bottlenose dolphin.	4-Island ...	349	10	0	0	0	359	316	189	189	190	167
Bottlenose dolphin.	Hawaii	74	6	0	0	0	80	42	131	131	61	32
False killer whale.	Hawaii Pelagic.	999	42	0	0	0	1,041	766	645	507	161	151
False killer whale.	Main Hawaiian Islands Insular.	572	17	0	0	0	589	476	147	147	400	324
False killer whale.	Northwestern Hawaiian Islands.	365	16	0	0	0	381	280	215	169	177	166
Fraser's dolphin.	Hawaii	39,784	1,289	2	0	0	41,075	31,120	5,408	18,763	760	166
Killer whale.	Hawaii	118	6	0	0	0	124	93	69	54	180	172
Melon-headed whale.	Hawaii Islands.	3,261	231	0	0	0	3,492	2,557	1,782	1,782	196	143
Melon-headed whale.	Kohala Resident.	341	9	0	0	0	350	182	447	447	78	41
Pantropical spotted dolphin.	Hawaii Island.	3,767	227	0	0	0	3,994	2,576	2,405	2,405	166	107

TABLE 24—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR DOLPHINS AND SMALL WHALES IN THE HRC PORTION OF THE HSTT 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	Takes (within Navy EEZ)	Abundance		Instance of total take as percent of abundance	
		Level B harassment		Level A harassment		Mortality	Total takes (entire study area)		Total Navy abundance inside and outside of EEZ (HRC)	Within EEZ Navy abundance (HRC)	Total take as percentage of total Navy abundance (HRC)	EEZ take as percentage of Navy EEZ abundance (HRC)
		Behavioral disturbance	TTS (may also include disturbance)	PTS	Tissue damage							
Pantropical spotted dolphin.	Hawaii Pelagic.	9,973	476	0	0	0	10,449	7,600	5,462	4,637	191	164
Pantropical spotted dolphin.	Oahu	4,284	45	0	0	0	4,329	4,194	372	372	1,164	1,127
Pantropical spotted dolphin.	4-Island ...	701	17	0	0	0	718	634	657	657	109	96
Pygmy killer whale.	Hawaii	8,122	402	0	0	0	8,524	6,538	4,928	3,931	173	166
Pygmy killer whale.	Tropical ...	710	50	0	0	0	760	490	159	23	478	2,130
Risso's dolphin.	Hawaii	8,950	448	0	0	0	9,398	7,318	1,210	4,199	777	174
Rough-toothed dolphin.	Hawaii	6,112	373	0	0	0	6,485	4,859	3,054	2,808	212	173
Short-finned pilot whale.	Hawaii	12,499	433	0	0	0	12,932	9,946	6,433	5,784	201	172
Spinner dolphin.	Hawaii Island.	279	12	0	0	0	291	89	629	629	46	14
Spinner dolphin.	Hawaii Pelagic.	4,332	202	0	0	0	4,534	3,491	2,885	2,229	157	157
Spinner dolphin.	Kauai & Niihau.	1,683	63	0	0	0	1,746	812	604	604	289	134
Spinner dolphin.	Oahu & 4-Island.	1,790	34	1	0	0	1,825	1,708	354	354	516	482
Striped dolphin.	Hawaii	7,379	405	0	0	0	7,784	6,034	4,779	3,646	163	165

Note: For the HI take estimates, we compare predicted takes to abundance estimates generated from the same underlying density estimates (as described in the *Estimated Take of Marine Mammals* section of the 2018 HSTT final rule), both in and outside of the U.S. EEZ. Because the portion of the Navy's study area inside the U.S. EEZ is generally concomitant with the area used to generate the abundance estimates in the SARs, and the abundance predicted by the same underlying density estimates is the preferred abundance to use, there is no need to separately compare the take to the SARs abundance estimate.

Total takes inside and outside U.S. EEZ represent the sum of annual Level A and Level B harassment from training and testing activities.

TABLE 25—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR DOLPHINS AND SMALL WHALES IN THE SOCAL PORTION OF THE HSTT 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		Instance of total take as percent of abundance	
		Level B harassment		Level A harassment		Mortality	Total takes (entire study area)	Navy abundance in action area (SOCAL)	NMFS SARS abundance	Total take as percentage of total Navy abundance in action area	Total take as percentage of total SAR abundance
		Behavioral disturbance	TTS (may also include disturbance)	PTS	Tissue damage						
Bottlenose dolphin	California Coastal	1,771	38	0	0	0	1,809	238	453	760	399
Bottlenose dolphin	CA/OR/WA Offshore.	51,727	3,695	3	0	0	55,425	5,946	1,924	932	2,881
Killer whale	Eastern North Pacific (ENP) Offshore.	96	11	0	0	0	107	4	300	2,675	36
Killer whale	ENP Transient/West Coast Transient.	179	20	0	0	0	199	30	243	663	82
Long-beaked common dolphin.	California	233,485	13,787	18	2	0	247,292	10,258	101,305	2,411	244
Northern right whale dolphin.	CA/OR/WA	90,052	8,047	10	1	0	98,110	7,705	26,556	1,273	369
Pacific white-sided dolphin.	CA/OR/WA	69,245	6,093	5	0	0	75,343	6,626	26,814	1,137	281
Risso's dolphin	CA/OR/WA	116,143	10,118	9	0	0	126,270	7,784	6,336	1,622	1,993
Short-beaked common dolphin.	CA/OR/WA	1,374,048	118,525	79	10	1.14	1,492,664	261,438	969,861	571	154
Short-finned pilot whale.	CA/OR/WA	1,789	124	1	0	0	1,914	208	836	920	229
Striped dolphin	CA/OR/WA	163,640	11,614	3	0	0	175,257	39,862	29,211	440	600

Note: For the SOCAL take estimates, because of the manner in which the Navy study area overlaps the ranges of many MMPA stocks (*i.e.,* a stock may range far north to Washington state and beyond and abundance may only be predicted within the U.S. EEZ, while the Navy study area is limited to Southern California and northern Mexico, but extends beyond the U.S. EEZ), we compare predicted takes to both the abundance estimates for the study area, as well as the SARs (as described in the *Estimated Take of Marine Mammals* section of the 2018 HSTT final rule).

Total takes inside and outside U.S. EEZ represent the sum of annual Level A and Level B harassment from training and testing activities.

For mortality takes there is an annual average of 1.14 short-beaked common dolphins (*i.e.,* where eight takes could potentially occur divided by seven years to get the annual number of mortalities/serious injuries).

Mortality for the CA/OR/WA stock of short-beaked common dolphins was unintentionally presented incorrectly as 2 in Table 78 of the 2018 HSTT final rule. The correct value (updated for seven years of activity) is provided here. This transcription error does not affect the analysis or conclusions in the 2018 HSTT final rule, as the correct value was used in the analysis presented in the *Analysis and Negligible Impact Determination* section.

Below we compile and summarize the information that supports our determination that the Navy's activities will not adversely affect any species or stocks through effects on annual rates of recruitment or survival for any of the affected stocks addressed in this section.

Long-Beaked Common Dolphin (California Stock), Northern Right Whale Dolphin (CA/OR/WA Stock), and Short-Beaked Common Dolphin (CA/OR/WA Stock)

None of these species is listed under the ESA and their stock statuses are considered ''increasing,'' ''unknown,'' and ''stable,'' respectively. Eight mortalities or serious injuries of short-beaked common dolphins are estimated and authorized over the seven-year rule, or 1.14 M/SI annually. The addition of this 1.14 annual mortality still leaves the total human-caused mortality well under the insignificance threshold for residual PBR. The three stocks are expected to accrue 2, 1, and 10 Level A harassment takes from tissue damage resulting from exposure to explosives, respectively. As described in detail in the 2018 HSTT final rule, the impacts of a Level A harassment take by tissue damage could range in impact from minor to something just less than M/SI that could seriously impact fitness. However, given the Navy's procedural mitigation, exposure at the closer to the source and more severe end of the spectrum is less likely and we cautiously assume some moderate impact for these takes that could lower the affected individual's fitness within the year such that a female (assuming a 50 percent chance of it being a female) might forego reproduction for one year. As noted previously, foregone reproduction has less of an impact on population rates than death (especially for only one year in seven, which is the maximum predicted because the small number anticipated in any one year makes the probability that any individual would be impacted in this way twice in seven years very low), and 1 to 10 instances is not expected to impact annual rates of recruitment or survival for these stocks.

Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated total instances of take compared to the abundance is 2,411, 1,273, and 571 percent (measured against the Navy-estimated abundance) and 244, 369, and 154 percent (measured against the SAR abundance) for long-beaked common dolphins, northern right whale dolphins, and short-beaked common dolphins, respectively. Given the range of these stocks, this information suggests that likely some portion (but not all or even the majority) of the individuals in the northern right whale dolphin and short-beaked common dolphin stocks are likely impacted, while it is entirely possible that most or all of the range-limited long-beaked common dolphin is taken. All three stocks likely will experience some repeat Level B harassment exposure (perhaps up to 48, 25, and 11 days within a year for long-beaked common dolphins, northern right whale dolphins, and short-beaked common dolphins, respectively) of some subset of individuals that spend extended time within the SOCAL range complex. Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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 portion up to 178 dB (*i.e.,* of a moderate or lower level, less likely to evoke a severe response). 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. However, some of these takes could occur on a fair number of sequential days for long-beaked common dolphins or northern right whale dolphins, or even some number of short-beaked common dolphins, given the higher number of total takes (*i.e.,* the probability that some number of individuals get taken on a higher number of sequential days is higher, because the total take number is relatively high, even though the percentage is not that high).

The severity of TTS takes is expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere significantly with conspecific communication, echolocation, or other important low-frequency cues, and the associated lost opportunities and capabilities is not expected to 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, as discussed in the 2018 HSTT final rule, the 18, 10, and 79 Level A harassment takes by PTS for long-beaked common dolphins, northern right whale dolphins, and short-beaked common dolphins, respectively are unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of any individuals, even if it were to be experienced by an animal that also experiences one or more Level B harassment takes by behavioral disruption.

Altogether these stock statuses are considered ''increasing,'' ''unknown,'' and ''stable,'' respectively. Eight mortalities of short-beaked common dolphins are authorized (1.14 takes annually), and all three stocks may experience a very small number of Level A harassment takes (relative to the stock abundance and PBR) by tissue damage or PTS. The 18, 10, and 79 takes by PTS annually of likely low severity are unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of those individuals, let alone have effects on annual rates of recruitment or survival. Nonetheless, a moderate to large portion of all three stocks will likely be taken (at a low to occasionally moderate level) over several days a year, and some smaller portion of these stocks is expected to be taken on a relatively moderate to high number of days across the year, some of which could be sequential days. Though the majority of impacts are expected to be of a lower to sometimes moderate severity, the larger number of takes (in total and for certain individuals) makes it more likely (probabilistically) that a 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. As noted previously, however, foregone reproduction (especially for only one year out of seven, which is the maximum predicted because the small number anticipated in any one year makes the probability that any individual would be impacted in this way twice in seven years very low) has far less of an impact on population rates than mortality and a small number of instances of foregone reproduction (including in combination with that which might result from the small number of Level A harassment takes from tissue damage) along with the estimated eight mortalities or serious injuries for short-beaked common dolphins is not expected to adversely

affect any of the stocks through effects on annual rates of recruitment or survival, especially given the very high residual PBRs of these stocks (621, 175, and 8,353, respectively). For these reasons, in consideration of all of the effects of the Navy's activities combined (mortality, Level A harassment, and Level B harassment), we have determined that the authorized take will have a negligible impact on these three stocks of dolphins.

All Other SOCAL Dolphin Stocks (Except Long-Beaked Common Dolphin, Northern Right Whale Dolphin, and Short-Beaked Common Dolphin)

None of these species is listed under the ESA and their stock statuses are considered ''unknown,'' except for the bottlenose dolphin (California coastal stock) and killer whale (Eastern North Pacific stock), which are considered ''stable.'' No mortality or Level A harassment via tissue damage from exposure to explosives is expected or authorized for these stocks.

Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated total instances of take compared to the abundance (measured against both the Navy-estimated abundance and the SAR) is from 440 to 2,675 percent and 36 to 2,881 percent, respectively. Given the range of these stocks (along the entire U.S. West Coast, or even beyond, with some also extending seaward of the HSTT Study Area boundaries), this information suggests that some portion (but not all or even the majority) of the individuals of any of these stocks will be taken, with the exception that most or all of the individuals of the more range-limited California coastal stock of bottlenose dolphin may be taken. It is also likely that some subset of individuals within most of these stocks will be taken repeatedly within the year (perhaps up to 10–15 days within a year), but for no more than several potentially sequential days, although the CA/OR/WA stocks of bottlenose dolphins, Pacific white-sided dolphins, and Risso's dolphins may include individuals that are taken repeatedly within the year over a higher number of days (up to 57, 22, and 40 days, respectively) and potentially over a fair number of sequential days, especially where individuals spend extensive time in the SOCAL range complex. Note that though percentages are high for the Eastern North Pacific stock of killer whales and short-finned pilot whales, given the low overall number of takes, it is highly unlikely that any individuals would be taken across the number of days their percentages suggest.

Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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, or sometimes moderate level, less likely to evoke a severe response). 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. However, as noted, some of these takes could occur on a fair number of sequential days for the three stocks listed earlier.

The severity of TTS takes is expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere significantly with conspecific communication, echolocation, or other important low-frequency cues. 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, it is unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of any individuals, even if it were to be experienced by an animal that also experiences one or more Level B harassment takes by behavioral disruption.

Altogether, the status of these stocks is either unknown or stable. The small number of annual estimated takes by PTS of likely low severity for several stocks are unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of those individuals, let alone have effects on annual rates of recruitment or survival. A portion of all of these stocks will likely be taken (at a low to occasionally moderate level) over several days a year, and some smaller portion of the CA/OR/WA stocks of bottlenose dolphins, Pacific white-sided dolphins, and Risso's dolphins, specifically, are expected to be taken on a relatively moderate to high number of days across the year, some of which could be sequential days. Though the majority of impacts are expected to be of a lower to sometimes moderate severity, the larger number of takes (in total and for certain individuals) for the CA/OR/WA stocks of bottlenose dolphins, Pacific white-sided dolphins, and Risso's dolphins makes it more likely (probabilistically) that a 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. As noted previously, however, foregone reproduction (especially for only one year in seven, which is the maximum predicted because the small number anticipated in any one year makes the probability that any individual would be impacted in this way twice in seven years very low) has far less of an impact on population rates than mortality and a small number of instances of foregone reproduction is not expected to adversely affect the stocks through effects on annual rates of recruitment or survival, especially given the residual PBRs of the CA/OR/WA stocks of bottlenose dolphins, Pacific white-sided dolphins, and Risso's dolphins (9.4, 183, and 84, respectively). 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 these stocks of dolphins.

All HRC Dolphin Stocks

With the exception of the Main Hawaiian Island DPS of false killer whales (listed as endangered under the ESA, with the MMPA stock identified as ''decreasing''), none of these species are listed under the ESA and their stock statuses are considered ''unknown.'' No mortality or Level A harassment via tissue damage from exposure to explosives is expected or authorized for these stocks.

Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated total instances of take compared to the abundance (measured against both the Navy-estimated abundance and the SAR) is from 46 to 1,169 percent and 41 to 2,130 percent, respectively. Given the ranges of these stocks (many of them are small, resident, island-associated stocks), this information suggests that a fairly large portion of the individuals of many of these stocks will be taken, but that most individuals will only be impacted across a smaller to moderate number of days within the year (1–15), and with no more than several potentially sequential days, although

two stocks (the Oahu stocks of bottlenose dolphin and pantropical spotted dolphin) have a slightly higher percentage, suggesting they could be taken up to 23 days within a year, with perhaps a few more of those days being sequential. We note that although the percentage is higher for the tropical stock of pygmy killer whale within the U.S. EEZ (2,130), given (1) the low overall number of takes (760) and (2) the fact that the small within-U.S. EEZ abundance is not a static set of individuals, but rather individuals moving in and out of the U.S. EEZ making it more appropriate to use the percentage comparison for the total takes versus total abundance—it is highly unlikely that any individuals would be taken across the number of days that the within-U.S. EEZ percentage suggests which is 42.

Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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, or sometimes moderate level, less likely to evoke a severe response). 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. However, as noted, some of these takes could occur on a fair number of sequential days for the Oahu stocks of bottlenose dolphin and pantropical spotted dolphins.

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 significantly with conspecific communication, echolocation, or other important low-frequency cues. 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, they will be unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of the one or two individuals from the three affected stocks, even if accrued to individuals that are also taken by behavioral harassment at the same time.

Altogether, the status these stocks is unknown (with the exception of the Main Hawaiian Islands Insular stock identified as ''decreasing'') and most of these stocks (all but the Oahu stocks of bottlenose dolphin and pantropical spotted dolphins) will likely be taken at a low to occasionally moderate level over several days a year, with some smaller portion of the stock potentially taken on a more moderate number of days across the year (perhaps up to 15 days for Fraser's dolphin, though others notably less), some of which could be across a few sequential days, which is not expected to affect the reproductive success or survival of individuals. For the Oahu stocks of bottlenose dolphin and pantropical spotted dolphins, some subset of individuals could be taken up to 23 days in a year, with some small number being taken across several sequential days, such that a 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. As noted previously, however, foregone reproduction (especially for one year, which is the maximum predicted because the small number anticipated in any one year makes the probability that any individual would be impacted in this way twice in seven years very low) has far less of an impact on population rates than mortality and a small number of instances of foregone reproduction is not expected to adversely affect these two stocks through effects on annual rates of recruitment or survival. No mortality is anticipated or authorized for any of these stocks. One or two individuals from three stocks (see Table 24) are expected to be taken by PTS annually of likely low severity, with this unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of those individuals, let alone have effects on annual rates of recruitment or survival. 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 of the stocks of dolphins found in the vicinity of the HRC.

Dall's Porpoise

In Table 26 below for porpoises, we indicate the total annual mortality, Level A and Level B harassment, and a number indicating the instances of total take as a percentage of abundance. Table 26 is unchanged from Table 79 in the 2018 HSTT final rule. For additional information and analysis supporting the negligible-impact analysis, see the *Odontocetes* discussion as well as the *Dall's Porpoise* discussion in the *Group and Species-Specific Analyses* section of the 2018 HSTT final rule, all of which remains applicable to this final rule unless specifically noted.

TABLE 26—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR PORPOISES IN THE HSTT 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		Instances of total take as percent of abundance	
		Level B harassment		Level A harassment		Mortality	Total takes (entire study area)	Navy abundance in action area	NMFS SARS abundance	Total take as percentage of total Navy abundance in action area	Total take as percentage of total SAR abundance
		Behavioral disturbance	TTS (may also include disturbance)	PTS	Tissue damage						
Dall's porpoise	CA/OR/WA	14,482	29,891	209	0	0	44,582	2,054	25,750	2,170	173

Note: For the SOCAL take estimates, because of the manner in which the Navy study area overlaps the ranges of many MMPA stocks (*i.e.,* a stock may range far north to Washington state and beyond and abundance may only be predicted within the U.S. EEZ, while the Navy study area is limited to Southern California and northern Mexico, but extends beyond the U.S. EEZ), we compare predicted takes to both the abundance estimates for the study area, as well as the SARs (as described in the *Estimated Take of Marine Mammals* section of the 2018 HSTT final rule).
Total takes inside and outside U.S. EEZ represent the sum of annual Level A and Level B harassment from training and testing activities.

Below we compile and summarize the information that supports our determination that the Navy's activities will not adversely affect the CA/OR/WA stock of Dall's porpoises through effects

on annual rates of recruitment or survival.

Dall's porpoise is not listed under the ESA and the stock status is considered ''unknown.'' No mortality or Level A harassment via tissue damage from exposure to explosives is expected or authorized for this stock.

Most Level B harassments to Dall's porpoise from hull-mounted sonar (MF1) in the HSTT Study Area would result from received levels between 154 and 166 dB SPL (85 percent). 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 (as compared to harbor porpoises which have a lower threshold for Level B harassment by behavioral disruption and more distant cutoff) but, rather, are analyzed similarly to other odontocetes. Therefore, the majority of Level B harassment takes are expected to be in the form of milder responses compared to higher level exposures. As discussed more fully in the 2018 HSTT final rule, we anticipate more severe effects from takes when animals are exposed to higher received levels.

Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), the number of estimated total instances of take compared to the abundance (measured against both the Navy-estimated abundance and the SAR) is 2,170 and 173 percent, respectively. Given the range of this stock (up the U.S. West Coast through Washington and sometimes beyond the U.S. EEZ), this information suggests that some smaller portion of the individuals of this stock will be taken, and that some subset of individuals within the stock will be taken repeatedly within the year (perhaps up to 42 days)—potentially over a fair number of sequential days, especially where individuals spend extensive time in the SOCAL range complex. Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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, or sometimes moderate level, less likely to evoke a severe response). 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. However, as noted, some of these takes could occur on a fair number of sequential days for this stock.

The severity of TTS takes is expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere significantly with conspecific communication, echolocation, or other important low-frequency cues. Therefore, the associated lost opportunities and capabilities are not expected to impact reproduction or survival. For these same reasons (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 209 Level A harassment takes by PTS for Dall's porpoise is unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival for most individuals. Because of the more substantial number of PTS takes, however, we acknowledge that a few animals could potentially incur permanent hearing loss of a higher degree that could potentially interfere with their successful reproduction and growth. Given the status of the stock, even if this occurred, it will not adversely impact annual rates of recruitment or survival.

Altogether, the status of this stock is unknown, a portion of this stock will likely be taken (at a low to occasionally moderate level) over several days a year, and some smaller portion of the stock is expected to be taken on a relatively moderate to high number of days across the year, some of which could be sequential days. Though the majority of impacts are expected to be of a lower to sometimes moderate severity, the larger number of takes (in total and for certain individuals) for the Dall's porpoise makes it more likely (probabilistically) that a 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. Similarly, we acknowledge the potential for this to occur to a few individuals out of the 209 total that might incur a higher degree of PTS. As noted previously, however, foregone reproduction (especially for only one year in 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. Further, the small number of instances of foregone reproduction that could potentially result from PTS and/or the few repeated, more severe Level B harassment takes by behavioral disruption is not expected to adversely affect the stock through effects on annual rates of recruitment or survival, especially given the status of the species (not endangered or threatened; minimum population of 25,170 just within the U.S. EEZ) and residual PBR of Dall's porpoise (171.4). 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 the CA/OR/WA stock of Dall's porpoises.

Pinnipeds

In Tables 27 and 28 below for pinnipeds, we indicate the total annual mortality, Level A and Level B harassment, and a number indicating the instances of total take as a percentage of abundance. Tables 27 and 28 have been updated from Tables 80 and 81 in the 2018 HSTT final rule, as appropriate, with the 2018 final SARs and updated information on mortality, as discussed above. For additional information and analysis supporting the negligible-impact analysis, see the *Pinnipeds* discussion in the *Group and Species-Specific Analyses* section of the 2018 HSTT final rule, all of which remains applicable to this final rule unless specifically noted.

TABLE 27—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR PINNIPEDS IN THE HRC PORTION OF THE HSTT STUDY AREA AND NUMBER INDICATING THE INSTANCES OF TOTAL TAKE AS A PERCENTAGE OF STOCK ABUNDANCE

Species	Instances of indicated types of incidental take (not all takes represent separate individuals, especially for disturbance)					Total takes		Abundance		Instances of total take as percent of abundance	
	Level B harassment		Level A harassment		Mortality	Total takes (entire study area)	Takes (within NAVY EEZ)	Total Navy abundance inside and outside EEZ (HRC)	Within EEZ Navy abundance (HRC)	Total take as percentage of total Navy abundance (HRC)	EEZ take as percentage of Navy EEZ abundance (HRC)
	Behavioral disturbance	TTS (may also include disturbance)	PTS	Tissue damage							
Hawaiian monk seal.	143	62	1	0	0	206	195	169	169	122	115

Note: For the HI take estimates, we compare predicted takes to abundance estimates generated from the same underlying density estimates (as described in the *Estimated Take of Marine Mammals* section of the 2018 HSTT final rule), both in and outside of the U.S. EEZ. Because the portion of the Navy's study area inside the U.S. EEZ is generally concomitant with the area used to generate the abundance estimates in the SARs, and the abundance predicted by the same underlying density estimates is the preferred abundance to use, there is no need to separately compare the take to the SARs abundance estimate.

Total takes inside and outside U.S. EEZ represent the sum of annual Level A and Level B harassment from training and testing activities.

TABLE 28—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR PINNIPEDS IN THE SOCAL PORTION OF THE HSTT 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		Instances of total take as percent of abundance	
		Level B harassment		Level A harassment		Mortality	Total takes (entire study area)	Navy abundance in action area (SOCAL)	NMFS SARS abundance	Total take as percentage of total Navy abundance in action area	Total take as percentage of total SAR abundance
		Behavioral disturbance	TTS (may also include disturbance)	PTS	Tissue damage						
California sea lion	U.S.	113,419	4,789	87	9	0.71	118,305	4,085	257,606	2,896	46
Guadalupe fur seal.	Mexico	1,442	15	0	0	0	1,457	1,171	20,000	124	7
Northern fur seal	California	15,167	124	1	0	0	15,292	886	14,050	1,726	109
Harbor seal	California	2,450	2,994	8	0	0	5,452	321	30,968	1,698	18
Northern elephant seal.	California	42,916	17,955	97	2	0	60,970	4,108	179,000	1,484	34

Note: For the SOCAL take estimates, because of the manner in which the Navy action area overlaps the ranges of many MMPA stocks (*i.e.,* a stock may range far north to Washington state and beyond and abundance may only be predicted within the U.S. EEZ, while the Navy action area is limited to Southern California and northern Mexico, but extends beyond the U.S. EEZ), we compare predicted takes to both the abundance estimates for the action area, as well as the SARs.

For mortality takes there is an annual average of 0.71 California sea lions (*i.e.,* where five takes could potentially occur divided by seven years to get the annual number of mortalities/serious injuries).

Below we compile and summarize the information that supports our determination that the Navy's activities will not adversely affect any pinnipeds through effects on annual rates of recruitment or survival for any of the affected stocks addressed in this section.

Five M/SI takes of California sea lions over the seven years of the rule, or 0.71 mortality annually, are authorized, which falls well below the insignificance threshold for residual PBR (13,685). No mortality is anticipated or authorized for any other pinniped stocks. A small number of Level A harassment takes by tissue damage are also authorized for two stocks (9 and 2 for California sea lions and northern elephant seals, respectively), which, as discussed in the 2018 HSTT final rule, could range in impact from minor to something just less than M/SI that could seriously impact fitness. However, given the Navy's mitigation, exposure at the closer to the source and more severe end of the spectrum is less likely. Nevertheless, we cautiously assume some moderate impact on the individuals that experience these small numbers of take that could lower the individual's fitness within the year such that a female (assuming a 50 percent chance of it being a female) might forego reproduction for one year. As noted previously, foregone reproduction has less of an impact on population rates than death (especially for only one within seven years, which is the maximum predicted because the small number anticipated in any one year makes the probability that any individual would be impacted in this way twice in seven years very low) and these low numbers of instances (especially assuming the likelihood that only 50 percent of the takes would affect females) are not expected to impact annual rates of recruitment or survival, especially given the population sizes of these species.

Regarding the magnitude of Level B harassment takes (TTS and behavioral disruption), for Hawaiian monk seals and Guadalupe fur seals, the two species listed under the ESA, the estimated instances of takes as compared to the stock abundance does not exceed 124 percent, which suggests that some portion of these two stocks would be taken on one to a few days per year. For the remaining stocks, the number of estimated total instances of take compared to the abundance (measured against both the Navy-estimated abundance and the SAR) for these stocks is 1,484 to 2,896 percent and 18 to 40 percent, respectively. Given the ranges of these stocks (*i.e.,* very large ranges, but with individuals often staying in the vicinity of haul outs), this information suggests that some very small portion of the individuals of these stocks will be taken, but that some subset of individuals within the stock will be taken repeatedly within the year (perhaps up to 58 days)—potentially over a fair number of sequential days. Regarding the severity of those individual Level B harassment takes by behavioral disruption, 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, which is considered a relatively low to occasionally moderate level for pinnipeds. However, as noted, some of these takes could occur on a fair number of sequential days for these stocks.

As described in the 2018 HSTT final rule, the Hawaii and 4-Islands mitigation areas protect (by not using explosives and limiting MFAS within them) a significant portion of the

designated critical habitat for Hawaiian monk seals in the Main Hawaiian Islands, including all of it around the islands of Hawaii and Lanai, most around Maui, and good portions around Molokai and Kaho'olawe. As discussed, this protection reduces the overall number of takes, and further reduces the severity of effects by minimizing impacts near pupping beaches and in important foraging habitat.

The severity of TTS takes are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere significantly with conspecific communication, echolocation, or other important low-frequency cues that would affect the individual's 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 one to eight estimated Level A harassment takes by PTS for monk seals, northern fur seals, and harbor seals are unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival of any individuals, even if it were to be experienced by an animal that also experiences one or more Level B harassment takes by behavioral disruption. Because of the high number of PTS takes for California sea lions and northern elephant seals (87 and 97, respectively); however, we acknowledge that a few animals could potentially incur permanent hearing loss of a higher degree that could potentially interfere with their successful reproduction and growth. Given the status of the stocks (along with residual PBRs of 13,686 and 4,873, respectively), even if this occurred, it will not adversely impact annual rates of recruitment or survival.

Altogether, any individual Hawaiian monk seal and Guadalupe fur seal would be taken no more than a few days in any year, with none of the expected take anticipated to affect individual reproduction or survival, let alone annual rates of recruitment and survival. With all other stocks, only a very small portion of the stock will be taken in any manner. Of those taken, some individuals will be taken by Level B harassment (at a moderate or sometimes low level) over several days a year, and some smaller portion of those taken will be on a relatively moderate to high number of days across the year (up to 58), a fair number of which will likely be sequential days. Though the majority of impacts are expected to be of a lower to sometimes moderate severity, the repeated takes over a potentially fair number of sequential days for some individuals makes it more likely that some 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). 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 a relatively small number of instances of foregone reproduction (as compared to the stock abundance and residual PBR) is not expected to adversely affect the stock through effects on annual rates of recruitment or survival, especially given the status of these stocks. Accordingly, we do not anticipate the relatively small number of individual Northern fur seals or 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 stocks through effects on rates of recruitment or survival, given the status of the stocks, which are respectively increasing and stable with abundances of 14,050 and 30,968 and residual PBRs of 449 and 1,598.

For California sea lions, given the very high abundance and residual PBR (257,606 and 13,685, respectively), as well as the increasing status of the stock in the presence of similar levels of Navy activities over past years—the impacts of 0.71 annual mortalities, potential foregone reproduction for up to nine individuals in a year taken by tissue damage, the effects of Level A harassment by PTS, and some relatively small number of individuals taken as a result of repeated behavioral harassment over a fair number of sequential days are not expected to adversely affect the stock through effects on annual rates of recruitment or survival. Similarly, for Northern elephant seals, given the very high abundance and residual PBR (179,000 and 4,873, respectively), as well as the increasing status of the stock in the presence of similar levels of Navy activities over past years, the impacts of potential foregone reproduction for up to two individuals in a year taken by tissue damage, the effects of Level A harassment by PTS, and some relatively small number of individuals taken as a result of repeated behavioral harassment over a fair number of sequential days are not expected to adversely affect the stock through effects on annual rates of recruitment or survival. For these reasons, in consideration of all of the effects of the Navy's activities combined (M/SI, Level A harassment, and Level B harassment), we have determined that the authorized take will have a negligible impact on all pinniped stocks.

Determination

The 2018 HSTT final rule included a detailed discussion of all of the anticipated impacts on the affected species and stocks from serious injury or mortality, Level A harassment, and Level B harassment; impacts on habitat; and how the Navy's mitigation and monitoring measures reduce the number and/or severity of adverse effects. We evaluated how these impacts and mitigation measures are expected to combine, annually, to affect individuals of each species and stock. Those effects were then evaluated in the context of whether they are reasonably likely to impact reproductive success or survivorship of individuals and then, if so, further analyzed to determine whether there would be effects on annual rates of recruitment or survival that would adversely affect the species or stock.

As described above, the basis for the negligible impact determination is the assessment of effects on annual rates of recruitment and survival. Accordingly, the analysis included in the 2018 HSTT final rule used annual activity levels, the best available science, and approved methods to predict the annual impacts to marine mammals, which were then analyzed in the context of whether each species or stock would incur more than a negligible impact based on anticipated adverse impacts to annual rates of recruitment or survival. As we have described above, none of the factors upon which the conclusions in the 2018 HSTT final rule were based have changed. Therefore, even though this final rule includes two additional years, because our findings are based on annual rates of recruitment and survival, and little has changed that would change our 2018 HSTT final rule annual analyses, it is appropriate to rely on those analyses, as well as the new

information and analysis discussed above, for this final rule.

Based on the applicable information and analysis from the 2018 HSTT final rule as updated with the information and analysis contained herein on the potential and likely effects of the specified activities on the affected marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, NMFS finds that the incidental take from the specified activities will have a negligible impact on all affected marine mammal species and stocks.

Subsistence Harvest of Marine Mammals

There are no subsistence uses or harvest of marine mammals in the geographic area affected by the specified activities. Therefore, NMFS has determined that the total taking affecting species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Classification

Endangered Species Act

There are nine marine mammal species under NMFS jurisdiction that are listed as endangered or threatened under the ESA with confirmed or possible occurrence in the HSTT Study Area: Blue whale, fin whale, gray whale, humpback whale (Mexico and Central America DPSs), sei whale, sperm whale, false killer whale (Main Hawaiian Islands Insular DPS), Hawaiian monk seal, and Guadalupe fur seal. There is also ESA-designated critical habitat for Hawaiian monk seals and Main Hawaiian Islands Insular false killer whales. The Navy consulted with NMFS pursuant to section 7 of the ESA for HSTT activities. NMFS also consulted internally on the issuance of the 2018 HSTT regulations and LOAs under section 101(a)(5)(A) of the MMPA. NMFS issued a Biological Opinion on December 10, 2018 concluding that the issuance of the 2018 HSTT final rule and subsequent LOAs are not likely to jeopardize the continued existence of the threatened and endangered species under NMFS' jurisdiction and are not likely to result in the destruction or adverse modification of critical habitat in the HSTT Study Area.

The 2018 Biological Opinion included specified conditions under which NMFS would be required to reinitiate section 7 consultation. The agency reviewed these specified conditions for this rulemaking and determined that reinitiation of consultation was not warranted. The incidental take statement that accompanied the 2018 Biological Opinion has been amended to cover the seven-year period of the rule. The 2018 Biological Opinion for this action 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 national marine sanctuary resources are subject to consultation with the Office of National Marine Sanctuaries (ONMS) under section 304(d) of the National Marine Sanctuaries Act (NMSA). There are two national marine sanctuaries in the HSTT Study Area, the Hawaiian Islands Humpback Whale National Marine Sanctuary and the Channel Islands National Marine Sanctuary. NMFS has fulfilled its responsibilities and completed all requirements under the NMSA.

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 2018 HSTT FEIS/OEIS (published on October 26, 2018, *http://www.hstteis.com*) which evaluated impacts from Navy training and testing activities in the HSTT Study Area for the reasonably foreseeable future (including through 2025). In accordance with 40 CFR 1506.3, NMFS independently reviewed and evaluated the 2018 HSTT FEIS/OEIS and determined that it was adequate and sufficient to meet our responsibilities under NEPA for the issuance of the 2018 HSTT final rule and associated LOAs. NOAA therefore adopted the 2018 HSTT FEIS/OEIS.

In accordance with 40 CFR 1502.9 and the information and analysis contained in this final rule, NMFS has determined that this final rule and the subsequent LOAs will not result in impacts that were not fully considered in the 2018 HSTT FEIS/OEIS. In addition, as indicated in this final rule, the addition of two years of authorized incidental take associated with the same activities conducted in the same geographic area and having the same potential effects on the same species and stocks is not a substantial change to the action, nor are there significant new circumstances or information relevant to environmental concerns or its impacts. Therefore, NMFS has determined that the 2018 HSTT FEIS/OEIS and 2018 NMFS ROD remain valid, and there is no need to supplement either document for this rulemaking.

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), the Chief Counsel for Regulation of the Department of Commerce 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 Under the Administrative Procedure Act

NMFS has determined that there is good cause under the Administrative Procedure Act (5 U.S.C. 553(d)) to waive the 30-day delay in the effective date for this rule. This rule relieves the Navy from the restrictions of the take prohibitions under the MMPA by granting the Navy's request for incidental take authorization under MMPA section 101(a)(5)(A). In addition, there is good cause to waive the 30-day effective date period because the regulations are identical to those that the Navy has been implementing since November 2018 (except for a small number of minor, technical clarifications that do not affect implementation). The only substantive change in the regulations is to extend the mitigation measures and the monitoring and reporting requirements for an additional two years, until December 20, 2025. The Navy is the only entity affected by the regulations, the Navy specifically requested extension of the regulatory requirements for the two years, and the Navy has fully agreed to these requirements for the additional two years through its application for incidental take authorization. The Navy is anticipating finalization of the rule. For all these reasons, there is no need for a period of time following publication of the rule for the Navy to bring its training and testing operations into compliance with the requirements of the rule.

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: June 26, 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 H to read as follows:

Subpart H—Taking and Importing Marine Mammals; U.S. Navy's Hawaii-Southern California Training and Testing (HSTT)

Sec.

218.70 Specified activity and geographical region.
218.71 Effective dates.
218.72 Permissible methods of taking.
218.73 Prohibitions.
218.74 Mitigation requirements.
218.75 Requirements for monitoring and reporting.
218.76 Letters of Authorization.
218.77 Renewals and modifications of Letters of Authorization.
218.78–218.79 [Reserved]

Subpart H—Taking and Importing Marine Mammals; U.S. Navy's Hawaii-Southern California Training and Testing (HSTT)

§ 218.70 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 Hawaii-Southern California Training and Testing (HSTT) Study Area, which includes established operating and warning areas across the north-central Pacific Ocean, from the mean high tide line in Southern California west to Hawaii and the International Date Line. The Study Area includes the at-sea areas of three existing range complexes, the Hawaii Range Complex (HRC), the Southern California Range Complex (SOCAL), and the Silver Strand Training Complex, and overlaps a portion of the Point Mugu Sea Range (PMSR). Also included in the Study Area are Navy pierside locations in Hawaii and Southern California, Pearl Harbor, San Diego Bay, and the transit corridor on the high seas where sonar training and testing may occur.

(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) *Training.* (i) Amphibious warfare;
(ii) Anti-submarine warfare;
(iii) Electronic warfare;
(iv) Expeditionary warfare;
(v) Mine warfare;
(vi) Surface warfare; and
(vii) Pile driving.

(2) *Testing.* (i) Naval Air Systems Command Testing Activities;
(ii) Naval Sea Systems Command Testing Activities;
(iii) Office of Naval Research Testing Activities; and
(iv) Naval Information Warfare Systems Command.

§ 218.71 Effective dates.

Regulations in this subpart are effective from July 10, 2020, through December 20, 2025.

§ 218.72 Permissible methods of taking.

(a) Under LOAs issued pursuant to §§ 216.106 of this chapter and 218.76, the Holder of the LOAs (hereinafter ''Navy'') may incidentally, but not intentionally, take marine mammals within the area described in § 218.70(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 and explosives, provided the activity is in compliance with all terms, conditions, and requirements of these regulations in this subpart and the applicable LOAs.

(b) The incidental take of marine mammals by the activities listed in § 218.70(c) is limited to the following species:

TABLE 1 TO § 218.72

Species	Stock
Blue whale	Central North Pacific.
Blue whale	Eastern North Pacific.
Bryde's whale	Eastern Tropical Pacific.
Bryde's whale	Hawaii.
Fin whale	CA/OR/WA.
Fin whale	Hawaiian.
Humpback whale	CA/OR/WA.
Humpback whale	Central North Pacific.
Minke whale	CA/OR/WA.
Minke whale	Hawaii.
Sei whale	Eastern North Pacific.
Sei whale	Hawaii.
Gray whale	Eastern North Pacific.
Gray whale	Western North Pacific.
Sperm whale	CA/OR/WA.
Sperm whale	Hawaii.
Dwarf sperm whale	Hawaii.
Pygmy sperm whale	Hawaii.
Kogia whales	CA/OR/WA.
Baird's beaked whale	CA/OR/WA.
Blainville's beaked whale	Hawaii.
Cuvier's beaked whale	CA/OR/WA.
Cuvier's beaked whale	Hawaii.
Longman's beaked whale	Hawaii.
Mesoplodon spp.	CA/OR/WA.

TABLE 1 TO § 218.72—Continued

Species	Stock
Bottlenose dolphin	California Coastal.
Bottlenose dolphin	CA/OR/WA Offshore.
Bottlenose dolphin	Hawaii Pelagic.
Bottlenose dolphin	Kauai & Niihau.
Bottlenose dolphin	Oahu.
Bottlenose dolphin	4-Island.
Bottlenose dolphin	Hawaii.
False killer whale	Hawaii Pelagic.
False killer whale	Main Hawaiian Islands Insular.
False killer whale	Northwestern Hawaiian Islands.
Fraser's dolphin	Hawaii.
Killer whale	Eastern North Pacific (ENP) Offshore.
Killer whale	ENP Transient/West Coast Transient.
Killer whale	Hawaii.
Long-beaked common dolphin	California.
Melon-headed whale	Hawaiian Islands.
Melon-headed whale	Kohala Resident.
Northern right whale dolphin	CA/OR/WA.
Pacific white-sided dolphin	CA/OR/WA.
Pantropical spotted dolphin	Hawaii Island.
Pantropical spotted dolphin	Hawaii Pelagic.
Pantropical spotted dolphin	Oahu.
Pantropical spotted dolphin	4-Island.
Pygmy killer whale	Hawaii.
Pygmy killer whale	Tropical.
Risso's dolphin	CA/OR/WA.
Risso's dolphin	Hawaii.
Rough-toothed dolphin	Hawaii.
Short-beaked common dolphin	CA/OR/WA.
Short-finned pilot whale	CA/OR/WA.
Short-finned pilot whale	Hawaii.
Spinner dolphin	Hawaii Island.
Spinner dolphin	Hawaii Pelagic.
Spinner dolphin	Kauai & Niihau.
Spinner dolphin	Oahu & 4-Island.
Striped dolphin	CA/OR/WA.
Striped dolphin	Hawaii.
Dall's porpoise	CA/OR/WA.
California sea lion	U.S.
Guadalupe fur seal	Mexico.
Northern fur seal	California.
Harbor seal	California.
Hawaiian monk seal	Hawaii.
Northern elephant seal	California.

Note to Table 1: CA/OR/WA = California/Oregon/Washington.

§ 218.73 Prohibitions.

Notwithstanding incidental takings contemplated in § 218.72(a) and authorized by LOAs issued under §§ 216.106 of this chapter and 218.76, no person in connection with the activities listed in § 218.70(c) may:

(a) 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 218.76;

(b) Take any marine mammal not specified in § 218.72(b);

(c) Take any marine mammal specified in § 218.72(b) in any manner other than as specified in the LOAs; or

(d) Take a marine mammal specified in § 218.72(b) if NMFS determines such taking results in more than a negligible impact on the species or stocks of such marine mammal.

§ 218.74 Mitigation requirements.

When conducting the activities identified in § 218.70(c), the mitigation measures contained in any LOAs issued under §§ 216.106 of this chapter and 218.76 must be implemented. These mitigation measures include, but are not limited to:

(a) *Procedural mitigation.* Procedural mitigation is mitigation that the Navy must implement whenever and wherever an applicable training or testing activity takes place within the HSTT Study Area for each applicable activity category or stressor category and includes acoustic stressors (*i.e.,* active sonar, air guns, pile driving, weapons firing noise), explosive stressors (*i.e.,* sonobuoys, torpedoes, medium-caliber and large-caliber projectiles, missiles and rockets, bombs, sinking exercises, mines, anti-swimmer grenades, and mat weave and obstacle loading), 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 and rockets; and non-explosive bombs and mine shapes).

(1) *Environmental awareness and education.* Appropriate Navy personnel (including civilian personnel) involved in mitigation, monitoring, 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: Introduction to the U.S. Navy Afloat Environmental Compliance Training

Series, Marine Species Awareness Training; U.S. Navy Protective Measures Assessment Protocol; and U.S. Navy Sonar Positional Reporting System and Marine Mammal Incident Reporting.

(2) *Active sonar.* Active sonar includes low-frequency active sonar, mid-frequency active sonar, and high-frequency active sonar. For vessel-based 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 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).

(i) *Number of Lookouts and observation platform*—(A) *Hull-mounted sources.* 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) *Sources that are not hull-mounted sources.* One Lookout on the ship or aircraft conducting the activity.

(ii) *Mitigation zone and requirements.* (A) During the activity, at 1,000 yards (yd) Navy personnel must power down 6 decibels (dB), at 500 yd Navy personnel must power down an additional 4 dB (for a total of 10 dB), and at 200 yd Navy personnel must shut down for low-frequency active sonar ≥200 dB and hull-mounted mid-frequency active sonar; or at 200 yd Navy personnel must shut down for low-frequency active sonar <200 dB, mid-frequency active sonar sources that are not hull-mounted, and high-frequency active sonar.

(B) Prior to the start of the activity (*e.g.,* when maneuvering on station), Navy personnel must observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel must relocate or delay the start of active sonar transmission until the mitigation zone is clear. Navy personnel must also observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must relocate or delay the start of active sonar transmission.

(C) During the activity for low-frequency active sonar at or above 200 dB and hull-mounted mid-frequency active sonar, Navy personnel must observe the mitigation zone for marine mammals and power down active sonar transmission by 6 dB if marine mammals are observed within 1,000 yd of the sonar source; power down by an additional 4 dB (for a total of 10 dB total) if marine mammals are observed within 500 yd of the sonar source; and cease transmission if marine mammals are observed within 200 yd of the sonar source.

(D) During the activity for low-frequency active sonar below 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 and cease active sonar transmission if marine mammals are observed within 200 yd of the sonar source.

(E) Commencement/recommencement conditions after a marine mammal sighting before or during the 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: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the sonar source; 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; 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 for activities using hull-mounted sonar where a dolphin(s) is observed in the mitigation zone, the Lookout concludes that the dolphin(s) is deliberately closing in on the ship to ride the ship's bow wave, and is therefore out of the main transmission axis of the sonar (and there are no other marine mammal sightings within the mitigation zone).

(3) *Air guns*—(i) *Number of Lookouts and observation platform.* One Lookout positioned on a ship or pierside.

(ii) *Mitigation zone and requirements.* 150 yd around the air gun.

(A) Prior to the initial start of the activity (*e.g.,* when maneuvering on station), Navy personnel must observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel must relocate or delay the start until the mitigation zone is clear. Navy personnel must also observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must relocate or delay the start of air gun use.

(B) During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease air gun use.

(C) Commencement/recommencement conditions after a marine mammal sighting before or during the 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 air gun use) until one of the following conditions has been met: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the air gun; the mitigation zone has been clear from any additional sightings for 30 min; or for mobile activities, the air gun has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting.

(4) *Pile driving.* Pile driving and pile extraction sound during Elevated Causeway System training.

(i) *Number of Lookouts and observation platform.* One Lookout must be positioned on the shore, the elevated causeway, or a small boat.

(ii) *Mitigation zone and requirements.* 100 yd around the pile driver.

(A) Prior to the initial start of the activity (for 30 min), Navy personnel must observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel must delay the start until the mitigation zone is clear. Navy personnel also must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must delay the start of pile driving or vibratory pile extraction.

(B) During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease impact pile driving or vibratory pile extraction.

(C) Commencement/recommencement conditions after a marine mammal sighting before or during the activity. The 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 pile driving or pile extraction) until one of the following conditions has been met: The animal is observed exiting the mitigation zone;

the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the pile driving location; or the mitigation zone has been clear from any additional sightings for 30 min.

(5) *Weapons firing noise.* Weapons firing noise associated with large-caliber gunnery activities.

(i) *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 provided for under ''Explosive medium-caliber and large-caliber projectiles'' or under ''Small-, medium-, and large-caliber non-explosive practice munitions'' in paragraphs (a)(8)(i) and (a)(18)(i) of this section.

(ii) *Mitigation zone and requirements.* Thirty degrees on either side of the firing line out to 70 yd from the muzzle of the weapon being fired.

(A) Prior to the start of the activity, Navy personnel must observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel must relocate or delay the start of weapons firing until the mitigation zone is clear. Navy personnel must also observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must relocate or delay the start of weapons firing.

(B) During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease weapons firing.

(C) Commencement/recommencement conditions after a marine mammal sighting before or during the 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: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the firing ship; the mitigation zone has been clear from any additional sightings for 30 min; or 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.

(6) *Explosive sonobuoys*—(i) *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 while performing their regular duties.

(ii) *Mitigation zone and requirements.* 600 yd around an explosive sonobuoy.

(A) 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 observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel must relocate or delay the start of sonobuoy or source/receiver pair detonations until the mitigation zone is clear. Navy personnel must conduct passive acoustic monitoring for marine mammals and use information from detections to assist visual observations. Navy personnel also must visually observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must relocate or delay the start of sonobuoy or source/receiver pair detonations.

(B) 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.

(C) Commencement/recommencement conditions after a marine mammal sighting before or during the 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: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the sonobuoy; or the mitigation zone has been clear from any additional sightings for 10 min when the activity involves aircraft that have fuel constraints (*e.g.,* helicopter), or 30 min when the activity involves aircraft that are not typically fuel constrained.

(D) After completion of the activity (*e.g.,* prior to maneuvering off station), when practical (*e.g.,* when platforms are not constrained by fuel restrictions or mission-essential follow-on commitments), 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), these Navy assets must assist in the visual observation of the area where detonations occurred.

(7) *Explosive torpedoes*—(i) *Number of Lookouts and observation platform.* One Lookout 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 while performing their regular duties.

(ii) *Mitigation zone and requirements.* 2,100 yd around the intended impact location.

(A) Prior to the initial start of the activity (*e.g.,* during deployment of the target), Navy personnel must observe the mitigation zone for floating vegetation and jellyfish aggregations; if floating vegetation or jellyfish aggregations are observed, Navy personnel must relocate or delay the start of firing until the mitigation zone is clear. Navy personnel must conduct passive acoustic monitoring for marine mammals and use the information from detections to assist visual observations. Navy personnel also must visually observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must relocate or delay the start of firing.

(B) During the activity, Navy personnel must observe for marine mammals and jellyfish aggregations; if marine mammals or jellyfish aggregations are observed, Navy personnel must cease firing.

(C) Commencement/recommencement conditions after a marine mammal sighting before or during the 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: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location; or 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.

(D) 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), these Navy assets must assist in the visual observation of the area where detonations occurred.

(8) *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.

(i) *Number of Lookouts and observation platform.* One Lookout must be on the vessel or aircraft conducting the activity. For activities using explosive large-caliber projectiles, depending on the activity, the Lookout could be the same as the one described in ''Weapons firing noise'' in paragraph (a)(5)(i) 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 while performing their regular duties.

(ii) *Mitigation zone and requirements.* (A) 200 yd around the intended impact location for air-to-surface activities using explosive medium-caliber projectiles.

(B) 600 yd around the intended impact location for surface-to-surface activities using explosive medium-caliber projectiles.

(C) 1,000 yd around the intended impact location for surface-to-surface activities using explosive large-caliber projectiles.

(D) Prior to the start of the activity (*e.g.,* when maneuvering on station), Navy personnel must observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel must relocate or delay the start of firing until the mitigation zone is clear. Navy personnel also must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must relocate or delay the start of firing.

(E) During the activity, Navy personnel must observe for marine mammals; if marine mammals are observed, Navy personnel must cease firing.

(F) Commencement/recommencement conditions after a marine mammal sighting before or during the 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: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location; 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 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.

(G) 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), these Navy assets must assist in the visual observation of the area where detonations occurred.

(9) *Explosive missiles and rockets.* Aircraft-deployed explosive missiles and rockets. Mitigation applies to activities using a surface target.

(i) *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 while performing their regular duties.

(ii) *Mitigation zone and requirements.* (A) 900 yd around the intended impact location for missiles or rockets with 0.6–20 lb net explosive weight.

(B) 2,000 yd around the intended impact location for missiles with 21–500 lb net explosive weight.

(C) 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; if floating vegetation is observed, Navy personnel must relocate or delay the start of firing until the mitigation zone is clear. Navy personnel also must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must relocate or delay the start of firing.

(D) During the activity, Navy personnel must observe for marine mammals; if marine mammals are observed, Navy personnel must cease firing.

(E) Commencement/recommencement conditions after a marine mammal sighting before or during the 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: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location; or 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 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), these Navy assets will assist in the visual observation of the area where detonations occurred.

(10) *Explosive bombs*—(i) *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 while performing their regular duties.

(ii) *Mitigation zone and requirements.* 2,500 yd around the intended target.

(A) Prior to the initial start of the activity (*e.g.,* when arriving on station), Navy personnel must observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel must relocate or delay the start of bomb deployment until the mitigation zone is clear. Navy personnel also must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must relocate or delay the start of bomb deployment.

(B) 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.

(C) Commencement/recommencement conditions after a marine mammal sighting before or during the 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: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended target; the mitigation zone has been clear from any additional sightings for 10 min; or 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.

(D) 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), these Navy assets must assist in the visual observation of the area where detonations occurred.

(11) *Sinking exercises*—(i) *Number of Lookouts and observation platform.* Two Lookouts (one must be positioned in an aircraft and one must be positioned on a vessel). 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 while performing their regular duties.

(ii) *Mitigation zone and requirements.* 2.5 nautical miles (nmi) around the target ship hulk.

(A) Prior to the initial start of the activity (90 min prior to the first firing), Navy personnel must conduct aerial observations of the mitigation zone for floating vegetation and jellyfish aggregations; if floating vegetation or jellyfish aggregations are observed, Navy personnel must delay the start of firing until the mitigation zone is clear. Navy personnel also must conduct aerial observations of the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must delay the start of firing.

(B) During the activity, Navy personnel must conduct passive acoustic monitoring for marine mammals and use the information from detections to assist visual observations. Navy personnel must visually observe the mitigation zone for marine mammals from the vessel; if marine mammals are observed, Navy personnel must cease firing. Immediately after any planned or unplanned breaks in weapons firing of longer than two hours, Navy personnel must observe the mitigation zone for marine mammals from the aircraft and vessel; if marine mammals are observed, Navy personnel must delay recommencement of firing.

(C) Commencement/recommencement conditions after a marine mammal sighting before or during the 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: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the target ship hulk; or the mitigation zone has been clear from any additional sightings for 30 min.

(D) After completion of the activity (for two hours after sinking the vessel or until sunset, whichever comes first), 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), these Navy assets will assist in the visual observation of the area where detonations occurred.

(12) *Explosive mine countermeasure and neutralization activities*—(i) *Number of Lookouts and observation platform.* (A) One Lookout must be positioned on a vessel or in an aircraft when implementing the smaller mitigation zone.

(B) Two Lookouts (one must be positioned in an aircraft and one must be on a small boat) when implementing the larger mitigation zone.

(C) 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 while performing their regular duties.

(ii) *Mitigation zone and requirements.* (A) 600 yd around the detonation site for activities using 0.1–5 lb net explosive weight.

(B) 2,100 yd around the detonation site for activities using 6–650 lb net explosive weight (including high explosive target mines).

(C) 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; if floating vegetation is observed, Navy personnel must relocate or delay the start of detonations until the mitigation zone is clear. Navy personnel also must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must relocate or delay the start of detonations.

(D) During the activity, Navy personnel must observe the mitigation zone for marine mammals, concentrations of seabirds, and individual foraging seabirds; if marine mammals, concentrations of seabirds, or individual foraging seabirds are observed, Navy personnel must cease detonations.

(E) Commencement/recommencement conditions after a marine mammal sighting before or during the activity or a sighting of seabird concentrations or individual foraging seabirds during the 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) or during the activity (by not recommencing detonations) until one of the following conditions has been met: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to detonation site; or 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 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), these Navy assets must assist in the visual observation of the area where detonations occurred.

(13) *Explosive mine neutralization activities involving Navy divers*—(i) *Number of Lookouts and observation platform.* (A) Two Lookouts (two small boats with one Lookout each, or one Lookout must be on a small boat and one must be in a rotary-wing aircraft) when implementing the smaller mitigation zone.

(B) Four Lookouts (two small boats with two Lookouts each), and a pilot or member of an aircrew must serve as an additional Lookout if aircraft are used during the activity, when implementing the larger mitigation zone.

(C) All divers placing the charges on mines will support the Lookouts while performing their regular duties and will report applicable sightings to their supporting small boat or Range Safety Officer.

(D) 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 while performing their regular duties.

(ii) *Mitigation zone and requirements.* (A) 500 yd around the detonation site during activities under positive control using 0.1–20 lb net explosive weight.

(B) 1,000 yd around the detonation site during all activities using time-delay fuses (0.1–29 lb net explosive weight) and during activities under positive control using 21–60 lb net explosive weight charges.

(C) Prior to the initial start of the activity (*e.g.,* when maneuvering on station for activities under positive control; 30 min for activities using time-delay firing devices), Navy personnel must observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel must relocate or delay the start of detonations or fuse initiation until the mitigation zone is clear. Navy personnel also must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must relocate or delay the start of detonations or fuse initiation.

(D) During the activity, Navy personnel must observe the mitigation zone for marine mammals, concentrations of seabirds, and individual foraging seabirds (in the water and not on shore); if marine mammals, concentrations of seabirds, or individual foraging seabirds are observed, Navy personnel must cease detonations or fuse initiation. To the maximum extent practicable depending on mission requirements, safety, and environmental conditions, Navy personnel must position boats near the mid-point 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 (when two boats are used), 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. If used, Navy aircraft must travel in a circular pattern around the detonation location to the maximum extent practicable. Navy personnel must not set time-delay firing devices (0.1–29 lb. net explosive weight) to exceed 10 min.

(E) Commencement/recommencement conditions after a marine mammal sighting before or during the activity or a sighting of seabird concentrations or individual foraging seabirds during the 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) or during the activity (by not recommencing detonations) until one of the following conditions has been met: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the detonation site; or the mitigation zone has been clear from any additional sightings for 10 min during activities under positive control with aircraft that have fuel constraints, or 30 min during activities under positive control with aircraft that are not typically fuel constrained and during activities using time-delay firing devices.

(F) After completion of an activity, the Navy must observe for marine mammals for 30 min. 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), these Navy assets must assist in the visual observation of the area where detonations occurred.

(14) *Maritime security operations—anti-swimmer grenades*—(i) *Number of Lookouts and observation platform.* One Lookout must be positioned on the small boat 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 while performing their regular duties.

(ii) *Mitigation zone and requirements.* 200 yd around the intended detonation location.

(A) Prior to the initial start of the activity (*e.g.,* when maneuvering on station), Navy personnel must observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel must relocate or delay the start of detonations until the mitigation zone is clear. Navy personnel also must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must relocate or delay the start of detonations.

(B) During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease detonations.

(C) Commencement/recommencement conditions after a marine mammal sighting before or during the 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: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended detonation location; the mitigation zone has been clear from any additional sightings for 30 min; or the intended detonation location has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting.

(D) 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), these Navy assets will assist in the visual observation of the area where detonations occurred.

(15) *Underwater demolition multiple charge—mat weave and obstacle loading exercises*—(i) *Number of Lookouts and observation platform.* Two Lookouts (one must be positioned

on a small boat and one must be positioned on shore from an elevated platform). 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 while performing their regular duties.

(ii) *Mitigation zone and requirements.* 700 yd around the intended detonation location.

(A) Prior to the initial start of the activity, or 30 min prior to the first detonation, the Lookout positioned on a small boat must observe the mitigation zone for floating vegetation and marine mammals; if floating vegetation or marine mammals are observed, Navy personnel must delay the start of detonations until the mitigation zone is clear. For 10 min prior to the first detonation, the Lookout positioned on shore must use binoculars to observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must delay the start of detonations.

(B) During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease detonations.

(C) Commencement/recommencement conditions after a marine mammal sighting before or during the 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: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the detonation location; or the mitigation zone has been clear from any additional sightings for 10 min (as determined by the Navy shore observer).

(D) After completion of the activity (for 30 min), the Lookout positioned on a small boat 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), these Navy assets must assist in the visual observation of the area where detonations occurred.

(16) *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); the vessel is operated autonomously; or when impracticable based on mission requirements (*e.g.,* during Amphibious Assault—Battalion Landing exercise).

(i) *Number of Lookouts and observation platform.* One Lookout must be on the vessel that is underway.

(ii) *Mitigation zone and requirements.* (A) 500 yd around whales.

(B) 200 yd around all other marine mammals (except bow-riding dolphins and pinnipeds hauled out on man-made navigational structures, port structures, and vessels).

(iii) *During the 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.

(iv) *Incident reporting procedures.* If a marine mammal vessel strike occurs, Navy personnel must follow the established incident reporting procedures.

(17) *Towed in-water devices.* Mitigation applies to devices that are towed from a manned surface platform or manned aircraft. The mitigation will not be applied if the safety of the towing platform or in-water device is threatened.

(i) *Number of Lookouts and observation platform.* One Lookout must be positioned on a manned towing platform.

(ii) *Mitigation zone and requirements.* 250 yd around marine mammals.

(iii) *During the 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.

(18) *Small-, medium-, and large-caliber non-explosive practice munitions.* Mitigation applies to activities using a surface target.

(i) *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)(5)(i) of this section.

(ii) *Mitigation zone and requirements.* 200 yd around the intended impact location.

(A) Prior to the start of the activity (*e.g.,* when maneuvering on station), Navy personnel must observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel must relocate or delay the start of firing until the mitigation zone is clear. Navy personnel also must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must relocate or delay the start of firing.

(B) During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease firing.

(C) Commencement/recommencement conditions after a marine mammal sighting before or during the 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: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location; 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 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.

(19) *Non-explosive missiles and rockets.* Aircraft-deployed non-explosive missiles and rockets. Mitigation applies to activities using a surface target.

(i) *Number of Lookouts and observation platform.* One Lookout must be positioned in an aircraft.

(ii) *Mitigation zone and requirements.* 900 yd around the intended impact location.

(A) 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; if floating vegetation is observed, Navy personnel must relocate or delay the start of firing until the mitigation zone is clear. Navy personnel also must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must relocate or delay the start of firing.

(B) During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease firing.

(C) Commencement/recommencement conditions after a marine mammal sighting prior to or during the 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: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location; or 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.

(20) *Non-explosive bombs and mine shapes.* Non-explosive bombs and non-explosive mine shapes during mine laying activities.

(i) *Number of Lookouts and observation platform.* One Lookout must be positioned in an aircraft.

(ii) *Mitigation zone and requirements.* 1,000 yd around the intended target.

(A) Prior to the initial start of the activity (*e.g.,* when arriving on station), Navy personnel must observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel must relocate or delay the start of bomb deployment or mine laying until the mitigation zone is clear. Navy personnel also must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must relocate or delay the start of bomb deployment or mine laying.

(B) During the activity (*e.g.,* during approach of the target or intended minefield location), Navy personnel must observe the mitigation zone for marine mammals and, if marine mammals are observed, Navy personnel must cease bomb deployment or mine laying.

(C) Commencement/recommencement conditions after a marine mammal sighting prior to or during the 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: The animal is observed exiting the mitigation zone; the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended target or minefield location; the mitigation zone has been clear from any additional sightings for 10 min; or 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.

(b) *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.

(1) *Mitigation areas for marine mammals in the Hawaii Range Complex for sonar, explosives, and vessel strikes*—(i) *Mitigation area requirements*—(A) *Hawaii Island Mitigation Area (year-round)*—(*1*) Except as provided in paragraph (b)(1)(i)(A)(*2*) of this section, Navy personnel must not conduct more than 300 hours of MF1 surface ship hull-mounted mid-frequency active sonar or 20 hours of MF4 dipping sonar annually, or use explosives that could potentially result in takes of marine mammals during training and testing.

(*2*) Should national security require conduct of more than 300 hours of MF1 surface ship hull-mounted mid-frequency active sonar or 20 hours of MF4 dipping sonar, or use of explosives that could potentially result in the take of marine mammals during training or testing, Naval units 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 the information (*e.g.,* sonar hours or explosives usage) in its annual activity reports submitted to NMFS.

(B) *4-Islands Region Mitigation Area (November 15–April 15 for active sonar; year-round for explosives)*—(*1*) Except as provided in paragraph (b)(1)(i)(B)(*2*) of this section, Navy personnel must not use MF1 surface ship hull-mounted mid-frequency active sonar or explosives that could potentially result in takes of marine mammals during training and testing.

(*2*) Should national security require use of MF1 surface ship hull-mounted mid-frequency active sonar or explosives that could potentially result in the take of marine mammals during training or testing, Naval units 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 the information (*e.g.,* sonar hours or explosives usage) in its annual activity reports submitted to NMFS.

(C) *Humpback Whale Special Reporting Areas (December 15–April 15).* Navy personnel must report the total hours of surface ship hull-mounted mid-frequency active sonar used in the special reporting areas in its annual training and testing activity reports submitted to NMFS.

(D) *Humpback Whale Awareness Notification Message Area (November–April).* (*1*) Navy personnel must issue a seasonal awareness notification message to alert ships and aircraft operating in the area to the possible presence of concentrations of large whales, including humpback whales.

(*2*) To maintain safety of navigation and to avoid interactions with large whales during transits, Navy personnel must instruct vessels to remain vigilant to the presence of large whale species (including humpback whales).

(*3*) Platforms must use the information from the awareness notification message to assist their visual observation of applicable mitigation zones during training and testing activities and to aid in the implementation of procedural mitigation.

(ii) [Reserved]

(2) *Mitigation areas for marine mammals in the Southern California portion of the study area for sonar, explosives, and vessel strikes*—(i) *Mitigation area requirements*—(A) *San Diego Arc, San Nicolas Island, and Santa Monica/Long Beach Mitigation Areas (June 1–October 31).* (*1*) Except as provided in paragraph (b)(2)(i)(A)(*2*) of this section, Navy personnel must not conduct more than a total of 200 hours of MF1 surface ship hull-mounted mid-frequency active sonar in the combined areas, excluding normal maintenance and systems checks, during training and testing.

(*2*) Should national security require conduct of more than 200 hours of MF1 surface ship hull-mounted mid-frequency active sonar in the combined areas during training and testing (excluding normal maintenance and systems checks), Naval units 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 the information (*e.g.,* sonar hours) in its annual activity reports submitted to NMFS.

(*3*) Except as provided in paragraph (b)(2)(i)(A)(*4*) of this section, within the San Diego Arc Mitigation Area, Navy personnel must not use explosives that could potentially result in the take of marine mammals during large-caliber gunnery, torpedo, bombing, and missile (including 2.75-inch rockets) activities during training and testing.

(*4*) Should national security require use of explosives that could potentially result in the take of marine mammals during large-caliber gunnery, torpedo,

bombing, and missile (including 2.75-inch rockets) activities during training or testing within the San Diego Arc Mitigation Area, Naval units 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 the information (*e.g.,* explosives usage) in its annual activity reports submitted to NMFS.

(*5*) Except as provided in paragraph (b)(2)(i)(A)(*6*) of this section, within the San Nicolas Island Mitigation Area, Navy personnel must not use explosives that could potentially result in the take of marine mammals during mine warfare, large-caliber gunnery, torpedo, bombing, and missile (including 2.75-inch rockets) activities during training.

(*6*) Should national security require use of explosives that could potentially result in the take of marine mammals during mine warfare, large-caliber gunnery, torpedo, bombing, and missile (including 2.75-inch rockets) activities during training in the San Nicolas Island Mitigation Area, Naval units 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 the information (*e.g.,* explosives usage) in its annual activity reports submitted to NMFS.

(*7*) Except as provided in paragraph (b)(2)(i)(A)(*8*) of this section, within the Santa Monica/Long Beach Mitigation Area, Navy personnel must not use explosives that could potentially result in the take of marine mammals during mine warfare, large-caliber gunnery, torpedo, bombing, and missile (including 2.75-inch rockets) activities during training and testing.

(*8*) Should national security require use of explosives that could potentially result in the take of marine mammals during mine warfare, large-caliber gunnery, torpedo, bombing, and missile (including 2.75-inch rockets) activities during training or testing in the Santa Monica/Long Beach Mitigation Area, Naval units 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 the information (*e.g.,* explosives usage) in its annual activity reports submitted to NMFS.

(B) *Santa Barbara Island Mitigation Area (year-round).* (*1*) Except as provided in paragraph (b)(2)(i)(B)(*2*) of this section, Navy personnel must not use MF1 surface ship hull-mounted mid-frequency active sonar during training or testing, or explosives that could potentially result in the take of marine mammals during medium-caliber or large-caliber gunnery, torpedo, bombing, and missile (including 2.75-inch rockets) activities during training.

(*2*) Should national security require use of MF1 surface ship hull-mounted mid-frequency active sonar during training or testing, or explosives that could potentially result in the take of marine mammals during medium-caliber or large-caliber gunnery, torpedo, bombing, and missile (including 2.75-inch rockets) activities during training, Naval units 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 the information (*e.g.,* sonar hours or explosives usage) in its annual activity reports submitted to NMFS.

(C) *Blue Whale (June–October), Gray Whale (November–March), and Fin Whale (November–May) Awareness Notification Message Areas.* (*1*) Navy personnel must issue a seasonal awareness notification message to alert ships and aircraft operating in the area to the possible presence of concentrations of large whales, including blue whales, gray whales, and fin whales.

(*2*) To maintain safety of navigation and to avoid interactions with large whales during transits, Navy personnel must instruct vessels to remain vigilant to the presence of large whale species.

(*3*) 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.

(ii) [Reserved]

§ 218.75 Requirements for monitoring and reporting.

(a) *Unauthorized take.* Navy personnel must notify NMFS immediately (or as soon as operational security considerations allow) if the specified activity identified in § 218.70 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 take 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 HSTT Study Area 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 *www.fisheries.noaa.gov/national/marine-mammal-protection/incidentaltake-authorizations-military-readinessactivities.*

(d) *Annual HSTT Study Area marine species monitoring report.* The Navy must submit an annual report of the HSTT Study Area monitoring describing the implementation and results from the previous calendar year. Data collection methods must be standardized across range complexes and 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. This report will describe progress of knowledge made with respect to intermediate scientific objectives within the HSTT 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. As an alternative, the Navy may submit a multi-Range Complex annual Monitoring Plan report to fulfill this requirement. Such a report will describe progress of knowledge made with respect to monitoring study questions across multiple Navy ranges associated with the ICMP. Similar study questions must be treated together so that progress on each topic can be 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 study question. 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 HSTT, Gulf of Alaska, Mariana Islands, and Northwest Study Areas.

(e) *Annual HSTT Study Area training exercise report and testing activity report.* Each year, the Navy must submit two preliminary reports (Quick Look Report) detailing the status of authorized sound sources within 21 days after the anniversary of the date of issuance of each LOA to the Director, Office of Protected Resources, NMFS. Each year, the Navy must submit detailed reports to the Director, Office of Protected Resources, NMFS, within 3 months after the one-year anniversary of the date of issuance of the LOA. The HSTT annual Training Exercise Report and Testing Activity Report can be consolidated with other exercise reports from other range complexes in the Pacific Ocean for a single Pacific Exercise Report, if desired. The annual reports must contain information on major training exercises (MTEs), Sinking Exercise (SINKEX) events, and a summary of all sound sources used, including within specific mitigation reporting areas as described in paragraph (e)(3) of this section. The analysis in the detailed reports must be based on the accumulation of data from the current year's report and data collected from previous reports. The detailed reports must contain information identified in paragraphs (e)(1) through (7) of this section.

(1) *MTEs.* This section of the report must contain the following information for MTEs conducted in the HSTT Study Area.

(i) Exercise Information for each MTE.

(A) Exercise designator.

(B) Date that exercise began and ended.

(C) Location.

(D) Number and types of active sonar sources used in the exercise.

(E) Number and types of passive acoustic sources used in exercise.

(F) Number and types of vessels, aircraft, and other platforms participating in exercise.

(G) Total hours of all active sonar source operation.

(H) Total hours of each active sonar source bin.

(I) Wave height (high, low, and average) during exercise.

(ii) Individual marine mammal sighting information for each sighting in each exercise where mitigation was implemented.

(A) Date/Time/Location of sighting.

(B) Species (if not possible, indication of whale/dolphin/pinniped).

(C) Number of individuals.

(D) Initial Detection Sensor (*e.g.,* sonar, Lookout).

(E) Indication of specific type of platform observation was made from (including, for example, what type of surface vessel or testing platform).

(F) Length of time observers maintained visual contact with marine mammal.

(G) Sea state.

(H) Visibility.

(I) Sound source in use at the time of sighting.

(J) Indication of whether animal was less than 200 yd, 200 to 500 yd, 500 to 1,000 yd, 1,000 to 2,000 yd, or greater than 2,000 yd from sonar source.

(K) Whether operation of sonar sensor was delayed, or sonar was powered or shut down, and how long the delay.

(L) If source in use was hull-mounted, true bearing of animal from the vessel, true direction of vessel's travel, and estimation of animal's motion relative to vessel (opening, closing, parallel).

(M) Lookouts must report, in plain language and without trying to categorize in any way, the observed behavior of the animal(s) (such as animal closing to bow ride, paralleling course/speed, floating on surface and not swimming, *etc.*) and if any calves were present.

(iii) An evaluation (based on data gathered during all of the MTEs) of the effectiveness of mitigation measures designed to minimize the received level to which marine mammals may be exposed. This evaluation must identify the specific observations that support any conclusions the Navy reaches about the effectiveness of the mitigation.

(2) *SINKEXs.* This section of the report must include the following information for each SINKEX completed that year.

(i) Exercise information gathered for each SINKEX.

(A) Location.

(B) Date and time exercise began and ended.

(C) Total hours of observation by Lookouts before, during, and after exercise.

(D) Total number and types of explosive source bins detonated.

(E) Number and types of passive acoustic sources used in exercise.

(F) Total hours of passive acoustic search time.

(G) Number and types of vessels, aircraft, and other platforms, participating in exercise.

(H) Wave height in feet (high, low, and average) during exercise.

(I) Narrative description of sensors and platforms utilized for marine mammal detection and timeline illustrating how marine mammal detection was conducted.

(ii) Individual marine mammal observation (by Navy Lookouts) information for each sighting where mitigation was implemented.

(A) Date/Time/Location of sighting.

(B) Species (if not possible, indicate whale, dolphin, or pinniped).

(C) Number of individuals.

(D) Initial detection sensor (*e.g.,* sonar or Lookout).

(E) Length of time observers maintained visual contact with marine mammal.

(F) Sea state.

(G) Visibility.

(H) Whether sighting was before, during, or after detonations/exercise, and how many minutes before or after.

(I) Distance of marine mammal from actual detonations (or target spot if not yet detonated): Less than 200 yd, 200 to 500 yd, 500 to 1,000 yd, 1,000 to 2,000 yd, or greater than 2,000 yd.

(J) Lookouts must report, in plain language and without trying to categorize in any way, the observed behavior of the animal(s) (such as animal closing to bow ride, paralleling course/speed, floating on surface and not swimming *etc.*), including speed and direction and if any calves were present.

(K) The report must indicate whether explosive detonations were delayed, ceased, modified, or not modified due to marine mammal presence and for how long.

(L) If observation occurred while explosives were detonating in the water, indicate munition type in use at time of marine mammal detection.

(3) *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) Total annual hours or quantity (per the LOA) of each bin of sonar or other acoustic sources *(e.g.,* pile driving and air gun activities); and

(ii) Total annual expended/detonated ordinance (missiles, bombs, sonobuoys, *etc.*) for each explosive bin.

(4) *Humpback Whale Special Reporting Area (December 15–April 15).* The Navy must report the total hours of operation of surface ship hull-mounted mid-frequency active sonar used in the special reporting area.

(5) *HSTT Study Area Mitigation Areas.* The Navy must report any use that occurred as specifically described in these areas. Information included in the classified annual reports may be used to inform future adaptive management of activities within the HSTT Study Area.

(6) *Geographic information presentation.* The reports must present an annual (and seasonal, where practical) depiction of training and testing bin usage (as well as pile driving activities) geographically across the HSTT Study Area.

(7) *Sonar exercise notification.* The Navy must submit to NMFS (contact as specified in the LOA) an electronic report within fifteen calendar days after the completion of any MTE indicating:

(i) Location of the exercise;

(ii) Beginning and end dates of the exercise; and

(iii) Type of exercise.

(f) *Seven-year close-out comprehensive training and testing activity report.* This report must be included as part of the 2025 annual training and testing report. This report must provide the annual totals for each sound source bin with a comparison to the annual allowance and the seven-year total for each sound source bin with a comparison to the seven-year allowance. Additionally, if there were any changes to the sound source allowance, this report must include a discussion of why the change was made and include the analysis to support how the change did or did not affect the analysis in the 2018 HSTT FEIS/OEIS and MMPA final rule. The draft report must be submitted within three months after the expiration of this subpart to the Director, Office of Protected Resources, NMFS. 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 3 months after the submittal of the draft if NMFS does not provide comments.

§ 218.76 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) LOAs, unless suspended or revoked, may be effective for a period of time not to exceed December 20, 2025.

(c) If an LOA expires prior to December 20, 2025, 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 § 218.77(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 § 218.77.

(e) Each LOA must 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 or 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) must be published in the **Federal Register** within 30 days of a determination.

§ 218.77 Renewals and modifications of Letters of Authorization.

(a) An LOA issued under §§ 216.106 of this chapter and 218.76 for the activity identified in § 218.70(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 LOA(s) 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 218.76 may be modified by NMFS under the following circumstances:

(1) *Adaptive management.* 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.

(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 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 the regulations in 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) *Emergencies.* 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 218.76, 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.

§§ 218.78–218.79 [Reserved]

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