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2 Description of Proposed Action and Alternatives

The U.S. Navy (including both the U.S. Navy and the USMC), as the lead agency, jointly with the USCG, Army, and USAF, proposes to conduct training activities (hereinafter referred to as “training”); research, development, testing, and evaluation activities (hereinafter referred to as “testing”); and modernization and sustainment of ranges in the HCTT Study Area, as represented in Figure 2-1. Training, testing, and modernization and sustainment of ranges are collectively referred to as military readiness activities.

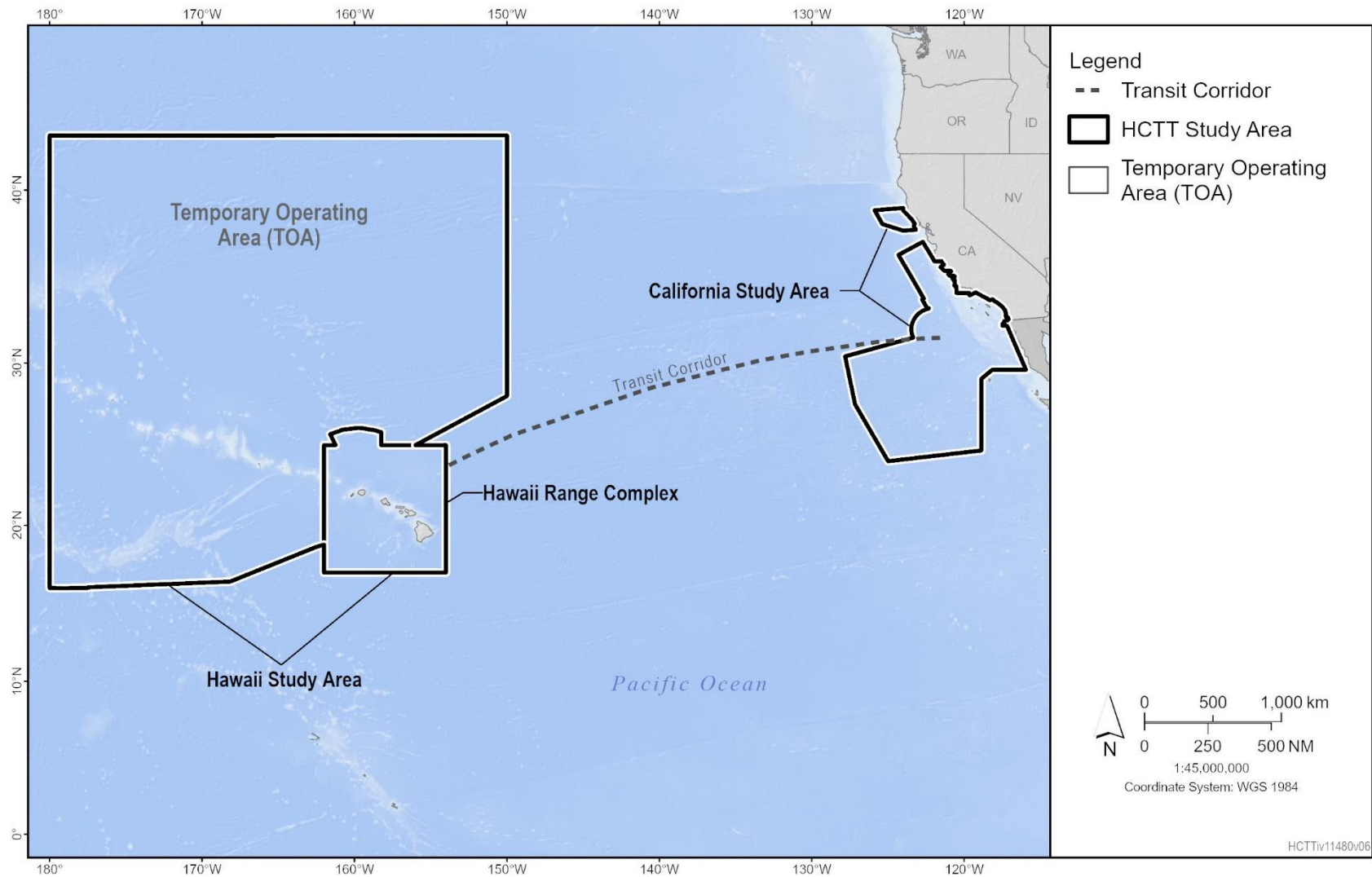
In this chapter, the Navy describes and identifies the primary mission areas under which these military readiness activities are conducted. Each Naval community (e.g., aviation, ship, submarine, and expeditionary) conducts activities that contribute to the success of a primary mission area (described in Section 2.2). Each primary mission area requires unique skills, sensors, weapons, and technologies to accomplish the mission. For example, under the anti-submarine warfare (ASW) primary mission area, surface, submarine, and aviation warfare communities each utilize different skills, sensors, and weapons to locate, track, and eliminate submarine threats. The testing community contributes to the success of ASW by developing technologies and systems that respond to the needs of the warfare communities. As each warfare community develops its basic skills and integrates them into combined units and strike groups, the problems of communication, coordination and planning, movement, and positioning of naval forces and targeting/delivery of weapons become increasingly complex. This complexity creates a need for coordinated training and testing.

This chapter describes the activities necessary to meet military readiness requirements, which includes actions required to modernize and sustain Navy training and testing ranges. The potential effects of those activities on the environment are analyzed in later chapters of this EIS/OEIS. For further details regarding specific training and testing activities, refer to Appendix A. In accordance with the MMPA, the Navy submitted to NMFS an application requesting authorization for the incidental take of marine mammals for proposed military readiness activities described in this EIS/OEIS. NMFS’ proposed action would be a direct outcome of responding to the Navy’s request for an incidental take authorization pursuant to the MMPA.

2.1 Description of the Hawaii-California Training and Testing Study Area

The HCTT EIS/OEIS Study Area (Study Area) consists primarily of the Hawaii Study Area, the California Study Area, and the Transit Corridor connecting the two. The Study Area includes only the at-sea components of the range complexes, Navy pierside locations and port transit channels, bays, harbors, inshore waterways, amphibious approach lanes, and civilian ports where training and testing activities occur as well as transits between homeports and operating areas. While only the at-sea components of the range complexes are considered in this EIS/OEIS, the potential effects of sound related to missiles, targets, or artillery projectiles fired from San Nicolas Island (SNI) and the Pacific Missile Range Facility (PMRF) on pinnipeds hauled out along the coastline are analyzed in this EIS/OEIS.

The Navy chose this approach in order to consolidate marine mammal impacts to support the MMPA permitting process into one analysis and to maintain consistency with the 2022 PMSR EIS/OEIS. The land-based training and testing activities on SNI remain unchanged from the 2022 PMSR EIS/OEIS. All other aspects of PMRF and SNI launches/firing, as well as activities conducted on all land components of the Range Complexes are analyzed in separate NEPA analysis.



Notes: HCTT = Hawaii-California Training and Testing

Figure 2-1: Hawaii-California Training and Testing Study Area

The HCTT Study Area differs from the HSTT Study Area in that HCTT includes an expanded SOCAL Range Complex (Warning Area 293 [W-293] and W-294 and the sea space beneath); new testing sea space between W-293 and PMSR; the inclusion of sea space associated with two existing training and testing at-sea ranges (PMSR and the NOCAL Range Complex); inclusion of sea space along the Southern California coastline from approximately Dana Point to Port Hueneme; and four amphibious approach lanes providing California land access from NOCAL and PMSR (Figure 2-2). This EIS/OEIS covers only the at-sea portion of the amphibious approach lanes; the land areas associated with the lanes will be covered under separate environmental analyses and use agreements. Nearshore areas within the Hawaii Study Area, such as Kaneohe Bay or Marine Corps Training Area Bellows (MCTAB), may be used more frequently or for new training or testing activities, but the geographic boundary of the Hawaii Study Area is unchanged.

As warfare evolves, the Action Proponents will require larger contiguous areas, or more specific areas due to specific attributes, to conduct training and testing. New weapon systems have greater ranges, and tactics to accommodate those extended ranges demand an expanded battlespace. This requirement is met in part by the expansion of the California Study Area to the north, south, and west. Also, the consolidation of several existing ranges with similar activities in this single analysis is more efficient than conducting multiple NEPA analyses.

For further details regarding specific training and testing ranges and locations, refer to Appendix H.

2.2 Primary Mission Areas

The Navy categorizes its activities into functional warfare areas called primary mission areas. These activities generally fall into the following seven primary mission areas:

- air warfare
- amphibious warfare
- ASW
- electronic warfare
- expeditionary warfare
- mine warfare
- surface warfare

Most training activities addressed in this EIS/OEIS are categorized under one of these primary mission areas; activities that do not fall within one of these areas are listed as “other activities.” Each warfare community (aviation, surface, submarine, and expeditionary) may train in some or all of these primary mission areas. The testing community also categorizes most, but not all, of its testing activities under these primary mission areas. A description of the sonar, munitions, targets, systems, and other material used during training and testing activities within these primary mission areas is provided in Appendix H. For a more detailed description of the mission areas, see the 2018 HSTT EIS/OEIS, Section 2.2.

2.3 Proposed Activities

The Action Proponents have been conducting military readiness activities in the Study Area for decades. The tempo and types of training and testing activities have fluctuated because of the introduction of new technologies, the evolving nature of international events, advances in warfighting doctrine and procedures, and changes in force structure (e.g., organization of ships, weapons, and personnel). Such developments influence the frequency, duration, intensity, and location of required training and testing activities. This EIS/OEIS (Phase IV) reflects the most up-to-date compilation of training and testing activities deemed necessary to accomplish military readiness requirements. The types and numbers of activities included in the Proposed Action accounts for fluctuations in training and testing to meet evolving or emergent military readiness requirements.

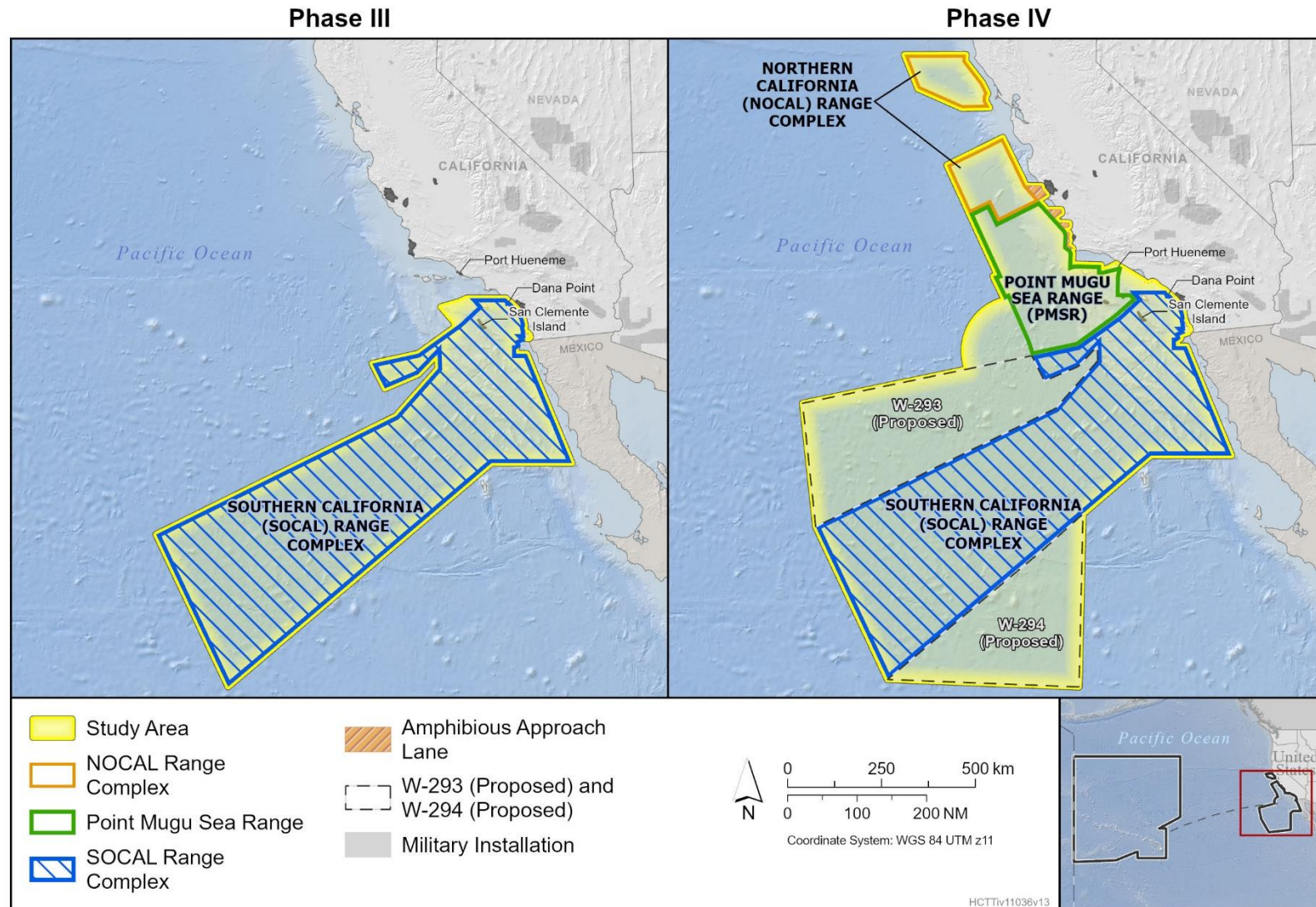


Figure 2-2: Change in the HSTT California Study Area (Phase III) to the HCTT California Study Area (Phase IV)

In addition to training of U.S. Navy and USMC, this EIS/OEIS also covers a limited subset of USCG, Army, and USAF activities. These activities are similar to Navy and USMC military readiness activities.

For training and testing to be effective, units must be able to safely use their sensors and weapon systems, to their optimum capabilities, as they are intended to be used in military missions and combat operations. Standard operating procedures (SOPs) applicable to training and testing have been developed through years of experience, and their primary purpose is to provide for both safety (including public health and safety) and mission success. Because they are essential to safety and mission success, SOPs are part of the Proposed Action and are considered in Chapter 3 environmental analyses for applicable resources. For a detailed discussion of the SOPs, see Section 3.0.4.

2.3.1 Foreign Military Participation

In furtherance of national security objectives, foreign militaries may participate in multinational training and testing events in the Study Area. Foreign military activities that are planned and under the substantial control and responsibility of the Action Proponents are included in the Proposed Action. These participants could be in various training or testing events described in Appendix A, and their effects are analyzed in this EIS/OEIS. However, when foreign militaries operate independently within the Study Area as sovereign vessels or aircraft outside the planning and control of the Action Proponents, those activities are not considered part of the Proposed Action. There are many reasons why foreign military vessels may traverse U.S. waters or come into U.S. port, not all of which are at the request of any of the Action Proponents. Foreign military vessels and aircraft operate pursuant to their own national authorities and have independent rights under customary international law, embodied in the principle of sovereign immunity, to engage in various activities on the world's oceans and seas.

2.3.2 Proposed Training Activities

Training includes tasks at increasing levels of complexity, from individual, crew, and small-unit events to large major training exercises. A major training exercise is comprised of several "unit-level" range events conducted by several units operating together while commanded and controlled by a single commander. These exercises typically employ an exercise scenario developed to train and evaluate the participants in naval tactical tasks. In a major training exercise, most of the operations and activities being directed and coordinated by the strike group commander are identical in nature to the operations conducted during individual, crew, and smaller unit-level training events. In a major training exercise, however, these individual training tasks are conducted in concert, rather than in isolation. Major training exercises can sometimes include participation by other U.S. services and foreign militaries.

Some integrated or coordinated exercises are similar in that they are comprised of several unit-level exercises but are generally on a smaller scale than a major training exercise, are shorter in duration, and use fewer assets. Three key factors used to identify and group the exercises are the scale of the exercise, duration of the exercise, and amount of hull-mounted sonar hours used during the exercise.

Training activity descriptions are provided in Table 2-1 (Navy and USMC), Table 2-2 (USCG), Table 2-3 (Army), and Table 2-4 (USAF). Navy-led major training exercises and integrated/coordinated exercises shown in Table 2-1 may include joint participation (other U.S. and non-U.S. military services). Appendix A has more detailed descriptions of the activities.

Many of the proposed training activities involve vessels maneuvering as part of the training or transiting to and from the training area. Some vessel maneuvering is associated with normal underway operation of the vessel, such as underway replenishment and the launch and recovery of aircraft on Navy ships.

The vessel movements associated with these operations are not part of specific training activities listed in Table 2-1; however, these and all Navy and USCG vessel movements within the Study Area are considered in the analyses.

Table 2-1: Navy and Marine Corps Proposed Training Activity Descriptions

Activity Name	Activity Description
Major Training Exercises – Large Integrated Anti-Submarine Warfare	
Composite Training Unit Exercise – Strike Group	Aircraft carrier and carrier air wing integrate with surface, submarines, and unmanned systems in a challenging multi-threat operational environment that certifies them ready to deploy.
Rim of the Pacific (RIMPAC) Exercise	A biennial multinational training exercise in which navies from Pacific Rim nations and other allies assemble in Pearl Harbor, Hawaii, to conduct training throughout the Hawaiian Islands in a number of warfare areas. Components of a RIMPAC exercise, such as mine warfare, surface warfare, and amphibious training, may be conducted in the California Operating Area.
Major Training Exercises – Medium Integrated Anti-Submarine Warfare	
Task Force/Sustainment Exercise	Aircraft carrier and carrier air wing integrates with surface and submarine units in a challenging multi-threat operational environment to maintain ability to deploy.
Integrated/Coordinated Anti-Submarine Warfare	
Medium Coordinated Anti-Submarine Warfare	Typically, a 3–10-day exercise with multiple ships, aircraft, and submarines integrating the use of their sensors, including sonobuoys and unmanned systems, to search, detect, and track threat submarines; event may include inert torpedo firings.
Small Coordinated Anti-Submarine Warfare	Typically, a 2–5-day exercise with multiple ships, aircraft and submarines integrating the use of their sensors, including sonobuoys, to search, detect, and track threat submarines.
Integrated/Coordinated Training – Other	
Composite Training Unit Exercise – Amphibious Ready Group/Marine Expeditionary Unit	Navy and U.S. Marine Corps forces conduct integration training at sea in preparation for deployment.
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.
Innovation and Demonstration Exercise (also called Tactical Development Exercise)	These exercises are conducted to demonstrate or test new capabilities, tactics, techniques, and procedures; and generate standardized, actionable data for evaluation.
Integrated Air Missile Defense Exercise	Missiles are launched from a ship against a dynamic test target, simulating an airborne threat to ships. These events could be U.S.-led with joint and Coalition forces.
Large Amphibious Exercise	The Large Amphibious Exercise utilizes all elements of the Marine Air Ground Task Force (Amphibious) to secure the battlespace (air, land, and sea), maneuver to and seize the objective, and conduct self-sustaining operations ashore with logistic support of the Expeditionary Strike Group. This exercise could include manned and unmanned activities in multiple warfare areas to secure the battlespace (air, land, and sea) and maneuver and secure operations ashore.

Table 2-1: Navy and Marine Corps Proposed Training Activity Descriptions (continued)

Activity Name	Activity Description
Integrated/Coordinated Training – Other (continued)	
Multi-Warfare Exercise	Multi-Warfare Exercises are integrated events that include training in multiple warfare areas. Events could be comprised of small units up to and including Carrier and Amphibious Strike Groups. Live-fire events could be air-to-surface, ship-to-shore, shore-to-offshore target, and ship-to-ship utilizing live ordnance and laser systems.
Air Warfare	
Air Combat Maneuvers	Fixed-wing aircrews aggressively maneuver against threat aircraft to gain tactical advantage.
Air Defense Exercise	Aircrew and ship crews conduct defensive measures against threat aircraft or simulated missiles.
Gunnery Exercise Air-to-Air Medium-Caliber	Fixed-wing aircraft fire medium-caliber guns at air targets.
Gunnery Exercise Air-to-Air Small-Caliber	Helicopter aircrews fire small-caliber guns at threat air targets.
Gunnery Exercise Surface-to-Air Large-Caliber	Surface ship crews fire large-caliber guns at air targets.
Gunnery Exercise Surface-to-Air Medium-Caliber	Surface ship crews fire medium-caliber guns at air targets.
High-Energy Laser Exercise Surface-to-Air	Ship crews disable or destroy air targets with high-energy laser systems.
Medium Range Interceptor Capability	Ground personnel defend against threat missiles and aircraft with vehicle-launched ground-to-air missile systems.
Missile Exercise Air-to-Air	Fixed-wing aircrews fire air-to-air missiles at air targets.
Missile Exercise Man-portable Air Defense System	Personnel employ a shoulder-fired surface-to-air missile at air targets.
Missile Exercise Surface-to-Air	Surface ship crews defend against threat missiles and aircraft with missiles.
Amphibious Warfare	
Amphibious Assault	Large unit forces move ashore from amphibious ships at sea for the immediate execution of inland objectives.
Amphibious Operations in a Contested Environment	Navy and Marine Corps forces conduct operations in coastal and offshore waterways against air, surface, and subsurface threats.
Amphibious Raid	Small unit forces move from amphibious ships at sea for a specific short-term mission. These are quick operations with as few personnel as possible.
Amphibious Vehicle Maneuvers	Crews practice the employment of amphibious craft, amphibious vehicles, and small boats.

Table 2-1: Navy and Marine Corps Proposed Training Activity Descriptions (continued)

Activity Name	Activity Description
Expeditionary Fires Exercise/Supporting Arms Coordination Exercise	Military units provide integrated and effective close air support, Naval Surface Fire Support fire, and Marine Corps artillery fire in support of amphibious operations.
Naval Surface Fire Support Exercise-At Sea	Surface ship crews fire large-caliber guns at a passive acoustic hydrophone scoring system.
Naval Surface Fire Support Exercise – Land-Based Target	Surface ship crews fire large-caliber guns at land-based targets to support forces ashore.
Non-Combat Amphibious Operation	Amphibious vehicles move personnel and equipment from ships to shore and back.
Shore-to-Surface Artillery Exercise	Amphibious land-based forces fire artillery guns at surface targets.
Shore-to-Surface and/or Air-to-Surface Missile Exercise	Amphibious land-based forces fire anti-surface missiles, rockets, and loitering munitions at surface targets.
Anti-Submarine Warfare	
Anti-Submarine Warfare Torpedo Exercise – Helicopter	Helicopter crews search for, track, and detect submarines. Recoverable air launched torpedoes are employed against submarine targets.
Anti-Submarine Warfare Torpedo Exercise – Maritime Patrol Aircraft	Maritime patrol aircraft aircrews search for, track, and detect submarines. Recoverable air launched torpedoes are employed against submarine targets.
Anti-Submarine Warfare Torpedo Exercise – Ship	Surface ship crews search for, track, and detect submarines. Exercise torpedoes are used.
Anti-Submarine Warfare Torpedo Exercise – Submarine	Submarine crews search for, track, and detect submarines. Exercise torpedoes are used.
Anti-Submarine Warfare Tracking Exercise – Helicopter	Helicopter and tilt-rotor crews search for, track, and detect submarines.
Anti-Submarine Warfare Tracking Exercise –Unmanned Surface Vessel	Unmanned surface vessels search for, detect, and track a sub-surface target simulating a threat submarine with the goal of determining a firing solution that could be used to launch a torpedo.
Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft	Maritime patrol aircraft aircrews search for, track, and detect submarines.
Anti-Submarine Warfare Tracking Exercise – Ship	Surface ship crews search for, track, and detect submarines.
Anti-Submarine Warfare Tracking Exercise – Submarine	Submarine crews search for, track, and detect submarines.
Training and End-to-End Mission Capability Verification – Torpedo	A submarine launches exercise and explosive torpedoes at a suspended target.

Table 2-1: Navy and Marine Corps Proposed Training Activity Descriptions (continued)

Activity Name	Activity Description
Electronic Warfare	
Counter Targeting Chaff Exercise – Aircraft	Fixed-wing aircraft and helicopter aircrews deploy chaff to disrupt threat targeting and missile guidance radars.
Counter Targeting Chaff Exercise – Ship	Surface ship crews deploy chaff to disrupt threat targeting and missile guidance radars.
Counter Targeting Flare Exercise	Fixed-wing aircraft and helicopter aircrews deploy flares to disrupt threat infrared missile guidance systems.
Electronic Warfare Operations	Aircraft and surface ship crews control the electromagnetic spectrum used by enemy systems to degrade or deny the enemy's ability to take defensive actions.
Expeditionary Warfare	
Dive and Salvage Operations	Navy divers perform dive and salvage operations training.
Gunnery Exercise Ship-to-Shore	Small boat crews fire small- and medium-caliber guns at land-based targets.
Obstacle Clearance	Trains forces to create cleared lanes in simulated enemy obstacle systems to allow friendly forces safe transit from sea to shore.
Personnel Insertion/Extraction – Air	Personnel are inserted into a water objective via fixed-wing aircraft using parachutes or by helicopters via ropes or jumping into the water. Personnel are extracted by helicopters or small boats.
Personnel Insertion/Extraction – Surface and Subsurface	Personnel are inserted into and extracted from an objective area by small boats or subsurface platforms.
Personnel Insertion/Extraction – Swimmer/Diver	Divers and swimmer infiltrate harbors, beaches, or moored vessels and conduct a variety of tasks.
Port Damage Repair	Navy Expeditionary forces train to repair critical port facilities. Training could include diving operations, salvage operations, vibratory and impact pile driving, and vibratory pile removal.
Small Boat Attack	Afloat units defend against attacking watercraft. For this activity, one or two small boats or personal watercraft conduct attack activities on units afloat.
Mine Warfare	
Airborne Mine Countermeasure – Mine Detection	Helicopter aircrews detect mines using towed or laser mine detection systems.
Airborne Mine Laying	Fixed-wing aircraft drop non-explosive mine shapes.
Amphibious Breaching Operations	Amphibious forces use explosive clearing systems to clear simulated mines on beaches, shallow water, and surf zones for potential landing of personnel and vehicles.

Table 2-1: Navy and Marine Corps Proposed Training Activity Descriptions (continued)

Activity Name	Activity Description
Civilian Port Defense – Homeland Security Anti-Terrorism/Force Protection Exercise	Maritime security personnel train to protect civilian ports against enemy efforts to interfere with access to those ports.
Mine Countermeasure Exercise – Ship Sonar	Littoral Combat Ship crews detect and avoid mines while navigating restricted areas or channels using remotely operated active sonar systems.
Mine Countermeasures – Mine Neutralization – Remotely Operated Vehicle	Ship, small boat, and helicopter crews locate and disable mines using remotely operated underwater vehicles.
Mine Countermeasures – Towed Mine Neutralization	Unmanned Surface Vessels tow systems through the water that are designed to disable or trigger mines.
Mine Neutralization Explosive Ordnance Disposal	Personnel disable threat mines using explosive charges.
Submarine Mine Avoidance Exercise	Submarine crews use active sonar or Unmanned Underwater Vehicles (UUVs), and shore-based personnel operate UUVs to detect and avoid training mine shapes or other underwater hazardous objects.
Submarine Mobile Mine and Mine Laying Exercise	Submarine crews and shore-based personnel operating a UUV deploy exercise (inert) mobile mines or mines.
Surface Ship Object Detection	Ship crews detect and avoid mines while navigating restricted areas or channels, using active sonar.
Training and End-to-End Mission Capability Verification – Mobile Mine and Mine Laying Exercise	Submarine crew launches explosive mobile mine(s), and shore-based personnel operating a UUV or a service craft deploy mine(s) to a planned location where the mines are detonated.
Underwater Demolition Qualification and Certification	Navy divers conduct various levels of training and certification in placing underwater demolition charges.
Underwater Demolitions Multiple Charge – Large Area Clearance	Military personnel use diver-placed explosive charges to destroy barriers or obstacles to amphibious vehicle access to beach areas.
Underwater Mine Countermeasure Raise, Tow, Beach, and Exploitation	Personnel locate mines, perform mine neutralization, raise and tow mines to the beach, and conduct exploitation operations for intelligence gathering.
Surface Warfare	
Bombing Exercise Air-to-Surface	Fixed-wing aircrews and Unmanned Aircraft Systems (UASs) deliver bombs against surface targets.
Gunnery Exercise Air-to-Surface Medium Caliber	Fixed-wing and helicopter aircrews fire medium-caliber guns at surface targets.
Gunnery Exercise Air-to-Surface Small Caliber	Helicopter and tilt-rotor aircrews use small-caliber guns to engage surface targets.

Table 2-1: Navy and Marine Corps Proposed Training Activity Descriptions (continued)

Activity Name	Activity Description
Gunnery Exercise Surface-to-Surface Boat Medium Caliber	Small boat crews fire medium-caliber guns at surface targets.
Gunnery Exercise Surface-to-Surface Boat Small Caliber	Small boat crews fire small-caliber guns at surface targets.
Gunnery Exercise Surface-to-Surface Ship Large Caliber	Surface ship crews fire large-caliber guns at surface targets.
Gunnery Exercise Surface-to-Surface Ship Medium Caliber	Surface ship crews fire medium-caliber guns at surface targets.
Gunnery Exercise Surface-to-Surface Ship Small Caliber	Surface ship crews fire small-caliber guns at surface targets.
Laser Targeting – Aircraft	Fixed-wing and helicopter aircrews illuminate surface targets with lasers.
High-Energy Laser Exercise Surface-to-Surface	Surface ship crews disable or destroy surface targets with high-energy laser systems.
Maritime Security Operations	Helicopter, surface ship, and small boat crews conduct security operations at sea, to include visit, board, search, and seizure; maritime interdiction operations; force protection; and anti-piracy operations.
Missile Exercise Air-to-Surface	Fixed-wing and helicopter aircrews and UASs fire air-to-surface missiles at surface targets.
Missile Exercise Air-to-Surface Rocket	Helicopter aircrews fire both precision-guided and unguided rockets at surface targets.
Missile Exercise Surface-to-Surface	Surface ship crews defend against surface threats (ships or small boats) and engage them with missiles or loitering munitions.
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 ordnance.
Surface Warfare Torpedo Exercise – Submarine	Submarine crews search for, detect, and track a surface ship simulating a threat surface ship with the goal of determining a firing solution that could be used to launch a torpedo with the intent to simulate destroying the targets.
Training and End-to-End Mission Capability Verification – Submarine Missile Maritime	Submarine crews launch missile(s) which may have an explosive warhead at a maritime target simulating an adversary surface ship with the goal of destroying or disabling adversary surface ship.
Other Training Exercises	
Aerial Firefighting	Helicopter aircrews conduct proficiency training in the use of airborne firefighting water baskets, dropping seawater on terrestrial targets on San Clemente Island (SCI).

Table 2-1: Navy and Marine Corps Proposed Training Activity Descriptions (continued)

Activity Name	Activity Description
At-Sea Vessel Refueling Training	Crews practice refueling boats at sea from other vessels.
Combat Swimmer/Diver Training and Certification	Navy and Marine Corps personnel conduct combat swimming conditioning swims and surf passage to execute a variety of tasks in the open water and littoral waterways.
Kilo Dip	Functional check of the dipping sonar prior to conducting a full test or training event on the dipping sonar.
Multi-Domain Unmanned Autonomous Systems	Multi-domain (surface, subsurface, and airborne) unmanned autonomous systems are launched from land, ships, and boats, in support of intelligence, surveillance, and reconnaissance operations; and deliver munitions or other non--munition systems to support mission and intelligence requirements.
Precision Anchoring	Surface ship crews release and retrieve anchors in designated locations.
Ship-to-Shore Fuel Transfer Training	Personnel train in the transfer of petroleum (though only sea water is used during training) from a ship to the shore.
Submarine and UUV Subsea and Seabed Warfare Exercise	Submarine crews and shore-based operators train to launch or recover and operate all classes of UUVs in the subsea and seabed environment in order to defend deep ocean and seabed infrastructure or take offensive action against a simulated adversary's subsea and seabed infrastructure.
Submarine Navigation Exercise	Submarine crews operate sonar for navigation and object detection while transiting into and out of port during reduced visibility.
Submarine Sonar Maintenance and Systems Checks	Maintenance of submarine sonar systems is conducted pierside or at sea.
Submarine Under Ice Training and Certification	Submarine crews train to operate under ice. Ice conditions are simulated during training and certification events.
Surface Ship Sonar Maintenance and Systems Checks	Maintenance of surface ship sonar systems is conducted pierside or at sea.
Training and End-to-End Mission Capability Verification – Subsea and Seabed Warfare Kinetic Effectors	Submarine crews or shore-based operators employ UUV with munitions or non--munition systems on the sea floor or in the water column.
Training and End-to-End Mission Capability Verification – Unmanned Aerial Vehicle (UAV)	Submarine crews or shore-based personnel controlling a UUV launch a capsule containing a UAV. The canister is deployed underwater and ascends to a programmed depth. The canister subsequently launches a UAV, and the canister sinks.
Underwater Survey	Personnel perform methodical reconnoitering of beaches and surf conditions during the day and night to find and clear underwater obstacles and determine the feasibility of landing an amphibious force on a particular beach.
Unmanned Aerial System Training and Certification	Surface ships and submarines launch unmanned aerial systems to conduct intelligence, surveillance, and reconnaissance (ISR) missions.

Table 2-1: Navy and Marine Corps Proposed Training Activity Descriptions (continued)

Activity Name	Activity Description
Unmanned Underwater Vehicle Training – Certification and Development Exercises	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.
Waterborne Training	Small boat crews conduct a variety of training, including boat launch and recovery, operation of crew-served unmanned vehicles, mooring to buoys, anchoring, and maneuvering. Small boats include rigid hull inflatable boats, and riverine patrol, assault, and command boats up to approximately 50 feet in length.

Table 2-2: Coast Guard Proposed Training Activity Descriptions

Activity Name	Activity Description
Air Warfare	
Gunnery Exercise Surface-to-Air Large Caliber	Surface ship crews fire large-caliber guns at air targets.
Gunnery Exercise Surface-to-Air Medium Caliber	Surface ship crews fire medium-caliber guns at air targets.
Electronic Warfare	
Counter Targeting Chaff Exercise – Ship	Surface ship crews deploy chaff to disrupt threat targeting and missile guidance radars.
Counter Targeting Flare Exercise	Fixed-wing aircraft and helicopter aircrews deploy flares to disrupt threat infrared missile guidance systems.
Expeditionary Warfare	
Underwater Construction Team Training	Coast Guard personnel conduct diving and salvage operations and perform cutting, welding, assembly, and installation of deep-water structures, mooring systems, underwater instrumentation, and other systems as needed.
Surface Warfare	
Gunnery Exercise Air-to-Surface Medium Caliber	Fixed-wing and helicopter aircrews fire medium-caliber guns at surface targets.
Gunnery Exercise Surface-to-Surface Boat Medium Caliber	Small boat crews fire medium-caliber guns at surface targets.
Gunnery Exercise Surface-to-Surface Boat Small Caliber	Small boat crews fire small-caliber guns at surface targets.
Gunnery Exercise Surface-to-Surface Ship Large Caliber	Surface ship crews fire large-caliber guns at surface targets.

Table 2-2: Coast Guard Proposed Training Activity Descriptions (continued)

Activity Name	Activity Description
Gunnery Exercise Surface-to-Surface Ship Medium Caliber	Surface ship crews fire medium-caliber guns at surface targets.
Gunnery Exercise Surface-to-Surface Ship Small Caliber	Surface ship crews fire small-caliber guns at surface targets.
High-Energy Laser Exercise Surface-to-Surface	Surface ship crews disable or destroy surface targets with high-energy laser systems.
Maritime Security Operations	Helicopter, surface ship, and small boat crews conduct security operations at sea, to include visit, board, search, and seizure; maritime interdiction operations; force protection; maritime environmental response; oil platform defense; ship force protection; and anti-piracy operations.
Other Training Exercises	
Precision Anchoring	Surface ship crews release and retrieve anchors in designated locations.
Search and Rescue	Navy and Coast Guard helicopter and ship crews practice the skills required to recover personnel lost at sea.
Unmanned Aerial System Training and Certification	Coast Guard crews launch and operate unmanned aerial systems.
Unmanned Underwater Vehicle Training – Certification and Development Exercises	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.
Waterborne Training	Small boat crews conduct a variety of training, including boat launch and recovery, operation of crew-served unmanned vehicles, mooring to buoys, anchoring, safety swimmer and safety lookout qualifications, shallow water training, and maneuvering. Small boats include rigid hull inflatable boats, and riverine patrol, assault, and command boats up to approximately 50 feet in length.

Table 2-3: Army Proposed Training Activity Descriptions

Activity Name	Activity Description
<i>Air Warfare</i>	
Missile Exercise – Man-Portable Air Defense System	Personnel employ a shoulder-fired surface-to-air missile at air targets.
<i>Amphibious Warfare</i>	
Shore-to-Surface Artillery Exercise	Amphibious land-based forces fire artillery guns at surface targets.
Shore-to-Surface Missile Exercise	Amphibious land-based forces fire anti-surface missiles, rockets, and loitering munitions at surface targets.
<i>Surface Warfare</i>	
Gunnery Exercise Surface-to-Surface Boat Medium Caliber	Small boat crews fire medium-caliber guns at surface targets.
Gunnery Exercise Surface-to-Surface Boat Small Caliber	Small boat crews fire small-caliber guns at surface targets.

Table 2-4: Air Force Proposed Training Activity Descriptions

Activity Name	Activity Description
<i>Air Warfare</i>	
Air Combat Maneuvers	Fixed-wing aircrews aggressively maneuver against threat aircraft to gain tactical advantage.
Gunnery Exercise Air-to-Air Medium Caliber	Fixed-wing aircraft fire medium-caliber guns at air targets.

2.3.3 Proposed Testing Activities

The Navy's testing community engages in a broad spectrum of research, development, testing, and evaluation activities as part of the acquisition process and in support of the fleet. These activities include, but are not limited to, basic and applied scientific research and technology development; testing, evaluation, and maintenance of systems (e.g., missiles, radar, and sonar) and platforms (e.g., surface ships, submarines, and aircraft); and acquisition of systems and platforms to support Navy missions and give a technological edge over adversaries.

The Navy operates in an ever-changing strategic, tactical, financially constrained, and time-constrained environment. Testing activities occur in response to emerging science or fleet operational needs. For example, future Navy experiments to develop a better understanding of ocean currents may be designed based on advancements made by non-government researchers not yet published in the scientific literature. Similarly, the Navy may be required to conduct specific operations in a geographic area where those operations have never been conducted before, which may require modifications to Navy assets to account for local environmental conditions. Such modifications must be tested in the field to ensure they meet fleet needs and requirements. Accordingly, generic descriptions of some of these activities are the best that can be articulated in a long-term, comprehensive document, like this EIS/OEIS.

Appendix A has more detailed descriptions of the activities.

2.3.3.1 Naval Air Systems Command Testing Activities

NAVAIR's proposed testing activities generally fall in the primary mission areas used by the fleet and include the evaluation of new and in-service aircraft platforms and systems to deliver critical aviation capabilities to the fleet. NAVAIR's proposed testing activities are described in Table 2-5.

Table 2-5: Naval Air Systems Command Proposed Testing Activity Descriptions

Activity Name	Activity Description
Air Warfare	
Air Combat Maneuver Test	Aircrews engage in flight maneuvers designed to gain a tactical advantage during combat. Fixed-wing aircrews maneuver against threat aircraft to gain tactical advantage.
Air Platform – Vehicle Test	Testing is performed to quantify the flying qualities, handling, airworthiness, stability, controllability, and integrity of an air platform or vehicle. No explosive weapons are released during an air platform vehicle test.
Air Platform Weapons Integration Test	Testing performed to quantify the compatibility of weapons with the aircraft from which they would be launched or released. Non-explosive weapons or shapes are used.
Air-to-Air Missile Test	Test is performed to evaluate the effectiveness of air-launched missiles against designated airborne targets. Fixed-wing aircraft will be used.
Intelligence, Surveillance, and Reconnaissance Test	Aircrews use all available sensors to collect data on threat vessels.
Large Force Test Event	Navy led Large Force Test Event focused on interoperability testing and tactics of near-future capabilities in a maritime environment across the DoD's air, sea, and space domains. No ordnance would be used.
Surface-to-Air Gunnery Test – Large Caliber	Evaluates the performance and effectiveness of software and hardware modifications or upgrades of ground-based and ship-based large-caliber gunnery systems against aerial targets.
Surface-to-Air Gunnery Test – Medium Caliber	Evaluates the performance and effectiveness of software and hardware modifications or upgrades of ground-based and ship-based medium-caliber gunnery systems against aerial targets.
Surface-to-Air High-Energy Laser Test	The specifications, integration, and performance of a vessel-mounted, high-energy laser are evaluated against an unmanned aerial target.
Surface-to-Air High-Power Microwave Test	High-power microwave systems, operating within a wide range of frequencies from 1 megahertz to 100 gigahertz, transmit energy from a ship or land-based system to a target to degrade or destroy electrical components in the target.
Surface-to-Air Missile Test	Testing with surface-to-air missiles involves Navy ships firing their self-defense missiles against airborne targets.

Table 2-5: Naval Air Systems Command Proposed Testing Activity Descriptions (continued)

Activity Name	Activity Description
Anti-Submarine Warfare	
Anti-Submarine Warfare Torpedo Test (Aircraft)	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.
Anti-Submarine Warfare Tracking Test (Fixed--Wing)	The test evaluates the sensors and systems used by fixed-wing 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.
Anti-Submarine Warfare Tracking Test (Rotary-Wing)	The test evaluates the sensors and systems used to detect and track submarines and to ensure that rotary-wing aircraft systems used to deploy the tracking systems perform to specifications.
Kilo Dip Test	Functional check of a rotary-wing aircraft-deployed dipping sonar system prior to conducting a testing or training event using the dipping sonar system.
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.
Electronic Warfare	
Chaff Test	Chaff tests evaluate newly developed or enhanced chaff, chaff dispensing equipment, or modified aircraft systems against chaff deployment. Tests may also train pilots and aircrew in the use of new chaff dispensing equipment. Chaff tests are often conducted with flare tests and air combat maneuver events, as well as other test events, and are not typically conducted as standalone tests.
Electronic Systems Test	Test that evaluates the effectiveness of electronic systems to control, deny, or monitor critical portions of the electromagnetic spectrum. In general, electronic warfare testing will assess the performance of three types of electronic warfare systems: electronic attack, electronic protect, and electronic support.
Flare Test	Flare tests evaluate newly developed or enhanced flares, flare dispensing equipment, or modified aircraft systems against flare deployment. Tests may also train pilots and aircrew in the use of newly developed or modified flare deployment systems. Flare tests are often conducted with chaff tests and air combat maneuver events, as well as other test events, and are not typically conducted as standalone tests.
Mine Warfare	
Airborne Dipping Sonar Minehunting Test	A mine-hunting dipping sonar system is deployed from rotary-wing aircraft and uses high-frequency sonar for the detection and classification of bottom and moored mines.
Airborne Laser Mine Detection System Test	An airborne laser mine detection system test that is operated from a rotary-wing aircraft and evaluates the system's ability to detect, classify, and fix the location of floating and near-surface, moored mines. The system uses a low-energy laser to locate mines.

Table 2-5: Naval Air Systems Command Proposed Testing Activity Descriptions (continued)

Activity Name	Activity Description
Airborne Mine Neutralization System Test	A test of the airborne mine neutralization system evaluates the system's ability to detect and destroy mines from an airborne mine countermeasures capable rotary-wing aircraft. 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.
Airborne Sonobuoy Minehunting Test	A mine-hunting system made up of sonobuoys is deployed from rotary-wing aircraft. A field of sonobuoys, using high-frequency sonar, is used for detection and classification of bottom and moored mines.
Mine Laying Test	Fixed-wing aircraft evaluate the performance of mine laying equipment and software systems to lay mines. A mine test may also train aircrew in laying mines using a new or enhanced mine deployment system.
Surface Warfare	
Air-to-Surface Bombing Test	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.
Air-to-Surface Gunnery Test	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.
Air-to-Surface High-Energy Laser Test	High-energy laser tests would evaluate the specifications, integration, and performance of an aircraft-mounted, approximately 25-kilowatt high-energy laser. The laser is intended to be used as a weapon to disable small surface vessels.
Air-to-Surface High-Power Microwave Test	A High-Power Microwave Test is where energy is directed from a ship or land-based system to engage a surface target, or energy is directed from a system mounted on an aircraft platform onto a surface target.
Air-to-Surface Laser Targeting Test	Aircrews illuminate enemy targets with lasers.
Air-to-Surface Missile Test	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.
Long-Range Weapons Delivery Systems (Over-the-Horizon)/Hypersonic Vehicle Test	A flight vehicle is released from a platform where its solid rocket motor booster ignites. The spent booster or boosters and protective shroud then separate from the test vehicle, which continues towards a pre-determined impact site.
Rocket Test	Rocket tests are conducted to evaluate the integration, accuracy, performance, and safe separation of guided and unguided rockets fired from a hovering or forward flying rotary-wing aircraft or tiltrotor aircraft.
Subsurface-to-Surface Missile Test	Submarines launch missiles at surface maritime targets with the goal of destroying or disabling enemy ships or boats.

Table 2-5: Naval Air Systems Command Proposed Testing Activity Descriptions (continued)

Activity Name	Activity Description
Surface-to-Surface Gunnery Test – Large-Caliber	Evaluates the performance and effectiveness of software and hardware modifications or upgrades of ship-based large-caliber gunnery systems against surface targets.
Surface-to-Surface Gunnery Test – Medium-Caliber	Evaluates the performance and effectiveness of software and hardware modifications or upgrades of ship-based medium-caliber gunnery systems against surface targets.
Surface-to-Surface Gunnery Test – Small-Caliber	Evaluates the performance and effectiveness of software and hardware modifications or upgrades of ship-based small-caliber gunnery systems against surface targets.
Surface-to-Surface High-Energy Laser Test	High-energy laser weapons tests evaluate the specifications, integration, and performance of a vessel-mounted high-energy laser which can be used as a weapon to disable small surface targets.
Surface-to-Surface High-Power Microwave Test	A High-Power Microwave Test where energy is directed from a ship or land-based system to engage a surface target, or energy is directed from a system mounted on an aircraft platform onto a surface target.
Surface-to-Surface Missile Test	Surface ships launch missiles at surface maritime targets.
Other Testing Activities	
Acoustic and Oceanographic Research	Active transmissions within the band 10 hertz–100 kilohertz from sources deployed from ships and aircraft.
Air Platform Shipboard Integration Test	Aircraft are tested to determine operability from shipboard platforms, performance of shipboard physical operations, and to verify and evaluate communications and tactical data links.
Undersea Range System Test	Following installation of a Navy underwater warfare training and testing range, tests of the nodes (components of the range) will be conducted to include node surveys and testing of node transmission functionality.

2.3.3.2 Naval Facilities Engineering and Expeditionary Warfare Center Proposed Testing Activities

EXWC provides research, development, testing, and evaluation, as well as in-service engineering and lifecycle management for the shore, oceans, and expeditionary domains. EXWC's proposed activities include ocean energy and cable systems research; undersea range system testing; and underwater search, deployment, and recovery. Table 2-6 describes EXWC's proposed testing activities.

Table 2-6: Naval Facilities Engineering and Expeditionary Warfare Center Proposed Testing Activity Descriptions

Activity Name	Activity Description
Unmanned Systems	
Ocean Energy and Cable Systems Research	Testing of ocean and marine energy harvesting/producing systems, energy storage & distribution, subsea power systems and associated infrastructure, and temporary subsea cable network deployment and interoperability.
Undersea Range System Testing	This activity supports advanced ocean technology development for fixed ocean and seafloor systems, including deployment of free-fall penetrometers and gravity deployed anchors used to determine seafloor characteristics and seafloor interaction testing of anchors, small foundations, and packages.
Other Testing Activities	
Underwater Search, Deployment, and Recovery	Tests various systems associated with Remotely Operated Vehicles and Unmanned Underwater Vehicles, to include seafloor sampling, surveying, seafloor soil excavating, and subsea cable deployment.

2.3.3.3 Naval Sea Systems Command Testing Activities

NAVSEA's proposed testing activities are generally aligned with the primary mission areas used by the fleet. NAVSEA's proposed activities include, but are not limited to, testing of new ship constructions, life cycle support, and other weapon system development and testing. Table 2-7 describes NAVSEA's proposed testing activities.

Table 2-7: Naval Sea Systems Command Proposed Testing Activity Descriptions

Activity Name	Activity Description
Anti-Submarine Warfare	
Anti-Submarine Warfare Mission Package Testing	Ships and their supporting platforms (e.g., rotary-wing aircraft, unmanned aerial systems) detect, localize, and prosecute submarines.
At-Sea Sonar Testing	At-sea testing to ensure systems are fully functional in an open ocean environment.
Pierside Sonar Testing	Pierside testing to ensure systems are fully functional in a controlled pierside environment prior to at-sea test activities.
Surface Ship Sonar Testing/Maintenance	Pierside and at-sea testing of ship systems occur periodically following major maintenance periods and for routine maintenance.
Torpedo (Explosive) Testing	Air, surface, or submarine crews employ explosive and non-explosive torpedoes against virtual targets.
Torpedo (Non-Explosive) Testing	Air, surface, or submarine crews employ non-explosive torpedoes against targets, submarines, or surface vessels.
Electronic Warfare	
Radar and Other System Testing	Test may include use of military or commercial radar, communication systems (or simulators), or high-energy lasers. Testing may occur aboard a ship against drones, small boats, rockets, missiles, or other targets.

Table 2-7: Naval Sea Systems Command Proposed Testing Activity Descriptions (continued)

Activity Name	Activity Description
Mine Warfare	
Mine Countermeasure and Neutralization Testing	Air, surface, and subsurface vessels neutralize threat mines and mine-like objects.
Mine Countermeasure Mission Package Testing	Vessels and associated aircraft conduct mine countermeasure operations.
Mine Detection and Classification Testing	Air, surface, and subsurface vessels and systems detect, classify, and avoid mines and mine-like objects. Vessels also assess their potential susceptibility to mines and mine-like objects.
Surface Warfare	
Gun Testing – Large Caliber	Surface crews test large-caliber guns to defend against surface targets.
Gun Testing – Medium Caliber	Surface crews test medium-caliber guns to defend against surface targets.
Gun Testing – Small Caliber	Surface crews test small-caliber guns to defend against surface targets.
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.
Unmanned Systems	
Underwater Search, Deployment, and Recovery	Various underwater, bottom crawling, robotic vehicles are utilized in underwater search, recovery, installation, and scanning activities.
Unmanned Surface Vehicle System Testing	Unmanned surface vehicles are primarily autonomous systems designed to augment current and future platforms to help deter maritime threats. They employ a variety of sensors designed to extend the reach of manned ships.
Unmanned Underwater Vehicle Testing	Testing involves the production or upgrade of unmanned underwater vehicles. This may include testing mine detection capabilities, evaluating the basic functions of individual platforms, or conducting complex events with multiple vehicles.
Vessel Evaluation	
Air Defense Testing	Test the ship's capability to detect, identify, track, and successfully engage live and simulated targets. Gun systems are tested using explosive and non-explosive rounds.
In-Port Maintenance Testing	Each combat system is tested to ensure they are functioning in a technically acceptable manner and are operationally ready to support at-sea testing.
Propulsion Testing	Ship is run at high speeds in various formations (e.g., straight-line and reciprocal paths).

Table 2-7: Naval Sea Systems Command Proposed Testing Activity Descriptions (continued)

Activity Name	Activity Description
Signature Analysis Operations	Surface ship and submarine testing of electromagnetic, acoustic, optical, and radar signature measurements.
Small Ship Shock Trial	Underwater detonations are used to test new ships or major upgrades.
Submarine Sea Trials – Weapons System Testing	Submarine weapons and sonar systems are tested at-sea to meet integrated combat system certification requirements.
Surface Warfare Testing	Tests capability 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).
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.
Vessel Signature Evaluation	Surface ship, submarine, and auxiliary system signature assessments. This may include electronic, radar, acoustic, infrared, and magnetic signatures.
Other Testing Activities	
Acoustic and Oceanographic Research	Research using active transmissions from sources deployed from ships, aircraft, and unmanned underwater vehicles. Research sources can be used as proxies for current and future Navy systems.
Countermeasure Testing	Countermeasure testing involves the testing of systems that detect, localize, and engage incoming weapons, including marine vessel targets. Testing includes surface ship torpedo defense systems, marine vessel stopping payloads.
Insertion/Extraction	Testing of submersibles capable of inserting and extracting personnel and payloads into denied areas from strategic distances.
Non-Acoustic Component Testing	Testing of towed or floating buoys for communications through radio frequencies or two-way optical communications between an aircraft and underwater system(s). Also includes testing of non-acoustic and <i>de minimis</i> sources.
Semi-Stationary Equipment Testing	Semi-stationary equipment (e.g., hydrophones) is deployed to determine functionality.
Simulant Testing	Testing of the capability of surface ship and aircraft defense systems to detect and protect against chemical and biological attacks.

2.3.3.4 Naval Information Warfare Systems Command Testing Activities

NAVWAR is the information warfare systems command for the Navy. The mission of NAVWAR is to identify, develop, deliver, and sustain information warfare capabilities and services that enable naval, joint, coalition, and other national missions operating in warfighting domains from seabed to space; and to perform such other functions and tasks as directed.

Table 2-8 describes the proposed NAVWAR testing activities to be conducted in the Study Area.

Table 2-8: Naval Information Warfare Systems Command Proposed Testing Activity Descriptions

Activity Name	Activity Description
Acoustic and Oceanographic Science and Technology	
Acoustic, Oceanographic, and Energy Research	Testing includes activities utilizing the marine environment for research, development, test, and evaluation of activity-related systems. Tests may involve radar, environmental sensors, magnetic sensors, passive and active acoustic sensors, optical sensors, and lasers. Surface operations utilize a variety of vessels and vehicles for deployment, operation, and testing. Energy research would include the development and testing of energy harvesting and storage technologies, maritime charging stations, remote communications, and associated infrastructure. This testing would also include bioacoustics research in support of marine mammal science.
Other Testing Activities	
Communications	Testing of maritime communications, underwater network systems with fiber optics cables, laser communications, acoustic modem networks and deployment of communication payloads and objects.
Intelligence, Surveillance, Reconnaissance	Testing intelligence, surveillance, and reconnaissance technologies may include mine detection and classification, detection and classification of targets of interest, devices under test on submarine cables, systems to detect mine shapes on ship hulls and pier structures, sensors for swimmer interdiction and other threats, and instrumentation that can detect explosive, radioactive, and other signatures of concern.
Vehicle Testing	Testing of autonomous, remotely operated, or manned vehicles in multiple domains (surface, subsurface, and airborne), and related sensor systems, communication systems, navigation systems, and payloads. Test events may evaluate vehicles individually or with multiple vehicles at a time.

2.3.3.5 Office of Naval Research Testing Activities

ONR's mission is to plan, foster, and encourage scientific research in recognition of its paramount importance as related to the maintenance of future naval power, and the preservation of national security. ONR manages the Navy's basic, applied, and advanced research to foster transition from science and technology to higher levels of research, development, test, and evaluation. ONR is also a parent organization for the Naval Research Laboratory, which operates as the Navy's corporate research laboratory and conducts a broad multidisciplinary program of scientific research and advanced technological development. Table 2-9 describes ONR's proposed testing activities.

Table 2-9: Office of Naval Research Proposed Testing Activity Descriptions

Activity Name	Activity Description
Acoustic and Oceanographic Science and Technology	
Acoustic and Oceanographic Research	Research using active transmissions from sources deployed from ships, aircraft, and unmanned underwater vehicles. Research sources can be used as proxies for current and future Navy systems.
Large Displacement Unmanned Undersea Vehicle Testing	Autonomy testing and environmental data collection with Large Displacement Unmanned Underwater Vehicles.
Long Range Acoustic Communications	Low-frequency bottom-mounted acoustic source off of the Hawaiian island of Kauai transmitting a variety of acoustic communications sequences.
Mine Countermeasure Technology Research	Test involves the use of broadband acoustic sources on unmanned underwater vehicles.

2.3.4 Proposed Modernization and Sustainment of Ranges

The Navy's training and testing ranges provide the air, sea, and undersea space necessary for personnel to conduct live training and testing. As technology changes, weapons and systems evolve to provide improved capabilities. Often those new capabilities require modifications to the range to allow for full utilization of the new technology. In addition, existing components of the ranges require maintenance or replacement as they come to the end of their service life. These modernization and sustainment actions are described briefly in Table 2-10. See Section A.3 of Appendix A for a complete description of these activities.

Table 2-10: Proposed Modernization and Sustainment of Ranges

Activity Name	Activity Description
Special Use Airspace Modification	The Navy proposes to increase the Study Area in the Southern California Range Complex with a corresponding increase in special use airspace proximate to the current Warning Area 291 (W-291). The Navy is coordinating with the Federal Aviation Administration in its non-rulemaking action for establishing the two new airspace areas.
Southern California Offshore Anti-Submarine Warfare Range (SOAR) Modernization	The Navy proposes to upgrade the existing, deep-water SOAR, located west of SCI, by installing new hydrophones and undersea cables.
Shallow Water Training Ranges (SWTRs) Installation	The Navy would install and maintain two underwater hydrophone instrumentation systems that would establish two SWTRs to enhance training in conjunction with the SOAR. The proposed instrumentation would be in the form of undersea cables and sensor nodes, similar to instrumentation currently in place in SOAR.
Sustainment of Undersea Ranges	Sustainment of undersea ranges includes the maintenance of systems and associated components. Maintenance may include, but is not limited to inspections, system replacement to extend service life (e.g., anodes and clamps), replacement of corrosion inhibitor solutions, and catastrophic repairs.

Table 2-10: Proposed Modernization and Sustainment of Ranges (continued)

Activity Name	Activity Description
Deployment of Seafloor Cables and Instrumentation	The Navy proposes to deploy undersea fiber optic cables and devices under test to existing undersea infrastructure along the seafloor in three locations in the HCTT Study Area: south and west of SCI in the California Study Area, to the northeast of Oahu, and west of Kauai in the Hawaii Study Area.
Installation and Maintenance of Mine Warfare and Other Training Areas	Support crews deploy, move, and retrieve mine countermeasure (MCM) targets or targets simulating adversary subsea and seabed infrastructure to include cables of varying diameters and lengths, bottom equipment, and equipment tethered to the bottom that is floating in the water column. MCM targets could be inserted on the seafloor (bottom targets) or tethered to anchors that are on the seafloor (moored). Other temporary training areas can be established by installing devices that could include hydrophones anchored to the seafloor similarly to anchored mine training shapes or other subsea/seabed targets.
Installation and Maintenance of Underwater Platforms	Underwater landing platforms would be installed to support underwater vehicle pilot proficiency training. One platform would be installed in Hawaii, in an open sandy bottom area just west of the Daniel K. Inouye International Airport, and one would be installed just west of the Silver Strand Training Complex boat lanes. Maintenance would include removal of each platform and transfer to a shipyard approximately every 5 years for in-depth inspection, repairs, and preservation.

2.4 Action Alternatives Development

The identification, consideration, and analysis of alternatives are critical components of the NEPA process and contribute to the goal of informed decision making. The decision maker considers the environmental effects of the proposed action and a reasonable range of alternatives (including the No Action Alternative) on the proposed action. This EIS/OEIS evaluates reasonable alternatives to the proposed actions and, for alternatives eliminated from detailed study, briefly discusses the reasons for their elimination. To be reasonable, an alternative, except for the No Action Alternative, must be technically and economically feasible and meet the purpose and need for the proposed action.

The following screening criteria were developed to determine that a potential alternative is reasonable and meets the purpose and need if it supports:

- the conduct of realistic military readiness activities
- unit-level to advanced training
- requisite air, surface, and sub-surface range tracking, instrumentation, and communications capabilities
- variable training and testing schedules by allowing year-round training and testing
- the training tempo as required by the Optimized Fleet Response Plan
- military readiness by allowing for testing and introduction of new weapon systems and platforms
- training and testing in proximity to home ports where crews are located

- maximizes access to and utilization of existing and future offshore and land--based range infrastructure resources and facilities
- training and testing access to diverse and variable marine environments that replicate real-world conditions where Service members would be expected to operate
- a continuous operating area large enough to test and train new weapons systems and the tactics to employ them

The Action Alternatives, and in particular the mitigation measures incorporated within the Action Alternatives, were developed to meet both the Action Proponents' purpose and need and NMFS' independent purpose and need. The Action Proponents will implement mitigation measures to avoid or reduce potential impacts from the Proposed Action on environmental resources. Mitigation measures could be implemented under either Action Alternative and are detailed and analyzed in Chapter 5.

The Action Proponents developed the alternatives considered in this EIS/OEIS after careful assessment by subject matter experts, including military commands that utilize the ranges, military range management professionals, and environmental managers and scientists. The Action Proponents also used the most recent military policy and historical data in developing alternatives.

By comparing Navy's Strategic Planning for projected capability requirements against historical analysis of multiple years of classified sonar usage data, followed by cross referencing the training requirements during the same time period, the Action Proponents produced a refined estimate of sonar usage anticipated to meet its training and testing requirements, which support the development of the action alternatives. The Navy, in its role as the Lead Agency, continues this refining process of checks and balances from phase to phase.

With regards to testing activities, the level of activity in any given year is highly variable and is dependent on technological advancements, emergent requirements identified during operations, and fiscal fluctuations. Therefore, the environmental analysis must consider all testing activities that could possibly occur to ensure that the analysis fully captures the potential environmental effects. These factors were considered in alternatives carried forward for consideration and analysis as described in Section 2.4.2.

2.4.1 Alternatives Eliminated from Further Consideration

Alternatives eliminated from further consideration are described in the following sections. The Navy determined that these alternatives did not meet the purpose of and need for the Proposed Action after a thorough consideration of each.

2.4.1.1 Alternative Training and Testing Locations

Navy ranges have evolved over the decades and, considered together, allow for the entire spectrum of training and testing to occur in a given range complex. While some unit-level training and some testing activities may require only one training element (e.g., airspace, sea surface space, or undersea space), more advanced training and testing events may require a combination of air, surface, and undersea space as well as access to land ranges. The ability to utilize the diverse and multi-dimensional capabilities of each range complex or testing range allows the Navy to develop and maintain high levels of readiness. The Study Area and the range complexes and testing ranges it contains have attributes necessary to support effective training and testing. No other locations match the Study Area attributes, which are as follows:

- proximity to the homeport regions of San Diego and Hawaii, and the Navy, USMC, and USCG commands, ships, submarines, schools, and aircraft units stationed there
- proximity to shore-based facilities and infrastructure, and the logistical support provided for training and testing activities
- proximity to military families, minimizing the length of time Sailors and Marines spend deployed away from home and benefitting overall readiness and retention
- presence of unique ranges, which include instrumented deep and shallow ranges in Hawaii and Southern California that offer training and testing capabilities not available elsewhere in the Pacific, and ranges that offer both actual and simulated shore gunnery training for Navy ships
- environmental conditions (e.g., bathymetry, topography, and weather) found in the Study Area that maximize the training realism and testing effectiveness

The uniquely interrelated nature of the features and attributes of the range complexes located within the Study Area (as detailed in Section 2.1) provides the training and testing support needed for complex military activities. There is no other series of integrated ranges in the Pacific Ocean that affords this level of operational support and comprehensive integration for range activities. There are no other potential locations in the Pacific where land ranges, Operating Areas (OPAREAs), undersea terrain and ranges, and military airspace combine to provide the venues necessary for the training and testing realism and effectiveness required to train and certify naval forces for combat operations.

2.4.1.2 No Change to the Current Study Area

The Action Proponents considered alternatives within the same Study Area as analyzed in the 2018 HSTT EIS/OEIS. Since 2018, adversary countries have significantly improved and enlarged their naval capability to the point where some of these countries' navies are considered "near peer" with respect to U.S. capabilities. To ensure that the U.S. military services can continue to maintain, train, and equip combat-ready forces that can effectively deter aggression and, if necessary, win wars against these countries, the United States must test and train using the most advanced technology and most capable weapon systems available. These systems, and the tactics to employ them, require a complex of ranges larger than the 2018 HSTT Study Area. The addition of the NOCAL and PMSR areas provide a continuous naval operating area of over 400 nautical miles from north to south. Therefore, any alternatives that do not include the expanded HCTT Study Area described in Section 2.1 would not meet the Navy's Purpose and Need.

2.4.1.3 Simulated Training and Testing Only

The Navy currently uses simulation for training and testing whenever possible (e.g., command and control exercises conducted without operational forces); however, there are significant limitations, and its use cannot replace live training or testing.

To detect and counter mine shapes and hostile submarines, the Navy uses both passive and active sonar. Sonar proficiency is a complex and perishable skill that requires regular, hands-on training in realistic and diverse conditions. More than 300 extremely quiet, newer-generation submarines are operated by more than 40 nations worldwide, and these numbers are growing. These difficult-to-detect submarines, as well as torpedoes and underwater mines, are true threats to global commerce, national security, and the safety of military personnel. As a result, defense against enemy submarines is a top priority for the Navy. ASW training and testing activities include the use of active and passive sonar

systems and small explosive charges, which prepare and equip Sailors for countering threats. Inability to train with sonar would eliminate or diminish ASW readiness. Failure to detect and defend against hostile submarines can cost lives, such as the 46 Sailors who lost their lives when a Republic of Korea frigate (CHEONAN) was sunk by a North Korean submarine in March 2010.

There are limits to the realism that current simulation technology can presently provide. Unlike live training, today's simulation technology does not permit ASW training with the degree of realism and complexity required to maintain proficiency. While simulators are used for the basic training of sonar technicians, they are of limited value beyond basic training. A simulator cannot match the dynamic nature of the environment, such as bathymetry and sound propagation properties, or the training activities involving several units with multiple crews interacting in a variety of acoustic environments.

Sonar operators must train regularly and frequently to develop and maintain the skills necessary to master the process of identifying underwater threats in the complex subsurface environment. Sole reliance on simulation would deny service members the ability to develop battle-ready proficiency in the employment of active sonar in the following areas:

- Bottom bounce and other environmental conditions. Sound hitting the ocean floor (bottom bounce) reacts differently depending on the bottom type and depth. Likewise, sound passing through changing currents, eddies, or across differences in ocean temperature, pressure, or salinity is also affected. Both are extremely complex and difficult to simulate, and both are common in actual sonar operations.
- Mutual sonar interference. When multiple sonar sources are operating in the vicinity of each other, interference due to similarities in frequency can occur. Again, this is a complex variable that must be recognized by sonar operators but is difficult to simulate with any degree of fidelity.
- Interplay between ship and submarine target. Ship crews, from the sonar operator to the ship's Captain, must react to the changing tactical situation with a real, thinking adversary (a Navy submarine for training purposes). Training in actual conditions with actual submarine targets provides a challenge that cannot be duplicated through simulation.
- Interplay between ASW teams in the strike group. Similar to the interplay required between ships and submarine targets, a ship's crew must react to all changes in the tactical situation, including changes from cooperating ships, submarines, and aircraft.

Similar to the challenges presented in the training situations described in the preceding paragraphs, operational testing cannot be based exclusively on computer modeling or simulation either (see 10 U.S.C. sections 2366 and 2399). At-sea testing provides the critical information on operability and supportability needed by the Navy to make decisions on the procurement of platforms and systems, ensuring that what is purchased performs as expected and that tax dollars are not wasted. Meeting this testing requirement is also critical to protecting the Sailors and Marines who depend on these technologies to execute their mission with minimal risk to themselves.

As the acquisition authority for the Navy, the Systems Commands are responsible for administering large contracts for the Navy's procurement of platforms and systems. These contracts include performance criteria and specifications that must be verified to ensure that the Navy accepts platforms and systems that support the warfighter's needs. Although simulation is a key component in platform and systems development, it does not adequately provide information on how a system will perform or

whether it will be available to meet performance and other specification requirements because of the complexity of the technologies in development and marine environments in which they will operate. For this reason, at some point in the development process, platforms and systems must undergo at-sea or in-flight testing. Therefore, simulation as an alternative that replaces training and testing in the field does not meet the purpose of and need for the Proposed Action and has been eliminated from detailed study.

2.4.1.4 Training and Testing Without the Use of Active Sonar

As explained in Section 2.4.1.4, in order to detect and counter submerged mines and hostile submarines, the Navy needs to use both passive and active sonar. Therefore, training and testing without the use of active sonar does not meet the purpose and need for the Proposed Action.

2.4.1.5 Alternative Including Geographic Mitigation

The Action Proponents considered, but did not develop, an alternative based solely on geographic mitigation. Developing such an alternative would mean that geographic or temporal restrictions would be included for one action alternative but not for others. Such a framework would not meet the Navy's purpose and need for the reasons described in the following text and outlined in Chapter 1.

The Action Proponents have included appropriate mitigation measures not already included in the Proposed Action or alternatives. The Navy defines its Proposed Action and alternatives prior to conducting its environmental analyses. As a general approach, the Navy develops mitigation outside of (i.e., after) the alternatives development framework, and mitigation is designed to be implemented under all action alternatives carried forward. This approach allows the Navy to refine and tailor its mitigation measures based on the findings of its environmental analyses, potential benefits to marine resources, suggestions received through public comments during scoping and on the Draft EIS/OEIS, consultations with environmental regulatory agencies, and operational practicality assessments. The Action Proponents considered applicable existing mitigation measures developed during previous EIS/OEIS projects and developed new mitigations as appropriate.

The Action Proponents conduct extensive biological effectiveness and operational practicality assessments of all potential mitigations. Senior military leadership reviews and approves all mitigations included in a Draft or Final EIS/OEIS. Therefore, if the Navy were to create a geographic mitigation alternative, all mitigations included in that alternative would have been verified as effective and practical, and approved by senior military leadership prior to publication of the Draft EIS/OEIS. From an MMPA compliance standpoint, NMFS would consequently require the Navy to implement those mitigations that benefit marine mammals under all action alternatives (i.e., not only the mitigation alternative) in order to meet the least practicable adverse impact standard. In other words, approved and effective mitigation would be implemented regardless of its association with an alternative; therefore, basing an alternative solely on geographic mitigation would not be reasonable. Overall, the Navy's mitigation development process ensures that it includes the maximum level of mitigation that is practical to implement under the Proposed Action.

2.4.1.6 "Status Quo" Alternative

The Action Proponents considered a Status Quo Alternative based on the 2018 HSTT EIS/OEIS Preferred Alternative (Section 2.5.2), the 2018 HSTT EIS/OEIS Record of Decision, the 2022 PMSR EIS/OEIS, and the 2022 PMSR EIS/OEIS Record of Decision (U.S. Department of the Navy, 2022). Under such an alternative, the Navy would continue the present course of action, such as continuation of Navy military readiness activities in the Study Area at current levels documented in the 2018 HSTT EIS/OEIS and the 2022 PMSR

EIS/OEIS Records of Decision and requesting separate authorizations under the MMPA and ESA as required. A Status Quo Alternative would limit the Navy's ability to expand training and testing in the SOCAL and NOCAL Range Complexes, thereby preventing Navy forces from effectively training with new weapon systems and tactics. The Navy could continue to conduct training and testing activities, but not at the level and scope of activities necessary to fulfill its statutory responsibilities described in the Purpose and Need of the Proposed Action. A Status Quo Alternative would lock the Navy into using obsolete systems and platforms, and unneeded training; would not allow for new testing requirements; and, therefore, would not allow the Navy to meet future training and testing requirements necessary to achieve and maintain Fleet readiness. Thus, such an alternative would not be reasonable and has been eliminated from detailed study.

2.4.2 Alternatives Carried Forward

Historical usage data from the Navy's ongoing sonar reporting program was used to project the number of active sonar hours required to meet ASW training requirements into the reasonably foreseeable future. In addition to meeting the Navy's purpose and need, the Action Alternatives, and in particular the mitigation measures that are incorporated in the Action Alternatives, were developed to meet NMFS' independent purpose and need.

2.4.2.1 No Action Alternative

Under the No Action Alternative, the Action Proponents would not conduct the proposed training and testing activities in the HCTT Study Area. Consequently, the No Action Alternative of not conducting the proposed live, at-sea training and testing in the Study Area is inherently unreasonable in that it does not meet the purpose and need (see Section 1.5). However, the analysis associated with the No Action Alternative is carried forward in order to compare the magnitude of the potential environmental effects of the Proposed Action with the conditions that would exist if the Proposed Action did not occur (refer to Section 3.0).

From NMFS' perspective, pursuant to its obligation to grant or deny requests for authorization to take marine mammals under the MMPA, the No Action Alternative involves NMFS denying the Navy's application for ITAs (e.g., LOAs) under section 101(a)(5)(A) of the MMPA. If NMFS were to deny the Navy's application, the Navy would not be authorized to incidentally take marine mammals, and the Navy would not conduct the proposed training and testing activities proposed in this EIS/OEIS. Thus, NMFS assumes that there would be no take of marine mammals by the applicant.

Cessation of proposed at-sea training and testing activities would mean that the Action Proponents would not meet their statutory requirements and would be unable to properly defend themselves and the United States from enemy forces, unable to successfully detect enemy submarines, and unable to effectively use their weapons systems or defensive countermeasures. Military personnel would essentially not be taught how to use necessary weapon systems in any realistic scenario.

Additionally, without proper training, members of the military and Coast Guard would not be prepared to operate complex equipment in inherently dynamic and dangerous environments. Thus, even during routine non-combat operations, it is likely that there would be an increase in the number of mishaps, potentially resulting in death or serious injury. Failing to allow our military members and Guardsmen to achieve and maintain the skills necessary to defend the United States and its interests results in an unacceptable increase in the danger they willingly face.

Adverse effects could include a reduced ability of U.S. military services to provide humanitarian/disaster relief and rescue services, and to enforce freedom of navigation for commercial shipping traffic.

Finally, the lack of live training and testing would require a higher reliance on simulated training and testing. While the Navy continues to research new ways to provide realistic training through simulation, there are limits to the realism that current technology can provide. Sole reliance on simulation would deny service members the ability to develop battle-ready proficiency in the employment of active sonar (Section 2.4.1.4).

2.4.2.2 Alternative 1 (Preferred Alternative)

Alternative 1 reflects a representative level of training and testing to account for the natural fluctuations of training cycles, testing programs, and deployment schedules that generally limit the maximum level of training and testing from occurring for the reasonably foreseeable future.

2.4.2.2.1 Training

Under this alternative, the Action Proponents propose to conduct training activities in the expanded HCTT Study Area into the reasonably foreseeable future, as necessary to meet current and future readiness requirements. These training activities include new activities as well as activities subject to previous analysis that are currently ongoing and have historically occurred in the Study Area. The requirements for the types of activities to be conducted, as well as the intensity at which they need to occur, have been validated by senior military leadership. Specifically, training activities are based on the requirements of the Optimized Fleet Response Plan and on changing world events, advances in technology, and Navy tactical and strategic priorities. These activities account for force structure changes and include training with new aircraft, vessels, unmanned/autonomous systems, and weapon systems that will be introduced to the fleet after December 2025. The numbers and locations of all proposed training activities are provided in Table 2-11 through Table 2-14 in Section 2.5.1.

Using a representative level of activity rather than a yearly maximum tempo of training activity has reduced the amount of hull-mounted mid-frequency active sonar estimated to be necessary to meet training requirements. Both unit-level training and major training exercises are adjusted to meet this representative year, as discussed in the following text.

Under Alternative 1, the Action Proponents assume that some unit-level ASW training would be conducted using synthetic means (e.g., simulators). Additionally, this alternative assumes that some unit-level active sonar training would be completed during integration with other larger training exercises. This alternative takes a similar approach to estimating levels of some of the larger training exercises as it does for unit-level training. Specifically, this alternative does not analyze a maximum number of carrier strike group Composite Training Unit Exercises (one type of major certification exercise) every year, but instead assumes a maximum number of exercises would occur during four years of any 7-year period. As a result, Alternative 1 analyzes a maximum of two Composite Training Unit Exercises (and certain other coordinated events leading up to a Composite Training Unit Exercise) in any given year.

The Optimized Fleet Response Plan and various training plans identify the number and duration of training cycles that could occur over a 7-year period. Alternative 1 considers fluctuations in training cycles and deployment schedules that do not follow a traditional annual calendar but instead are influenced by in-theater demands and other external factors.

This alternative incorporates a degree of risk that the Navy will not have sufficient capacity in potential MMPA and ESA authorizations to support the full spectrum of training potentially necessary to respond to a future national emergency crisis. This risk associated with the preferred alternative was deemed acceptable by Commander, Pacific Fleet based on training requirements needed to meet the current world geo-political environment.

2.4.2.2.2 Testing

Under Alternative 1, the Action Proponents propose an annual level of testing that reflects the fluctuations in testing programs by recognizing that the maximum level of testing would likely not be conducted each year. Most testing activities that would be conducted under this alternative are the same as, or similar to, those conducted currently or in the past. This alternative also includes the testing of new technologies and considers the inherent uncertainties in this type of testing after December 2025.

Alternative 1 presumes a typical level of readiness requirements. The numbers and locations of all proposed testing activities are listed in Table 2-15 through Table 2-19.

2.4.2.2.3 Modernization and Sustainment of Ranges

This alternative includes the establishment of new special use airspace, modernization of the existing Southern California Offshore Anti-Submarine Warfare Range (SOAR) underwater tracking and communication range, the installation of two Shallow Water Training Ranges (SWTRs) as extensions to the SOAR, sustainment of undersea ranges, deployment of seafloor cables and instrumentation, installation and maintenance of mine warfare and other training areas, and installation and maintenance of underwater platforms, as described in Section 2.3.4.

2.4.2.3 Alternative 2

2.4.2.3.1 Training

As under Alternative 1, this alternative includes new and ongoing activities. Under this alternative, the Action Proponents would be enabled to meet the highest levels of military readiness by conducting the majority of its training live at sea, and by meeting unit-level training requirements using dedicated, discrete training events, instead of combining them with other training activities as described in Alternative 1. The numbers and locations of all proposed training activities are provided in Table 2-11 through Table 2-14.

Alternative 2 reflects the maximum number of training activities that could occur within a given year and assumes that the maximum level of activity would occur every year over a 7-year period. This allows for the greatest flexibility for the Action Proponents to maintain readiness when considering potential changes in the national security environment, fluctuations in training and deployment schedules, and anticipated in-theater demands. Both unit-level training and major training exercises are assumed to occur at a maximum level every year.

2.4.2.3.2 Testing

As under Alternative 1, this alternative includes new and ongoing activities. Under this alternative, the Action Proponents would be enabled to meet the highest levels of military readiness by conducting the proposed testing.

Alternative 2 would include the testing of some new systems using new technologies, taking into account the potential for delayed or accelerated testing schedules, variations in funding availability, and

innovations in technology development. To account for these inherent uncertainties in testing, this alternative assumes a greater level of testing efforts predicted for each individual system or program could occur in any given year. This alternative also includes the contingency for augmenting some weapon systems tests in response to potential increased world conflicts and changing military leadership priorities as the result of a direct challenge from a naval opponent that possesses near-peer capabilities. Therefore, this alternative includes the provision for higher levels of annual testing of certain systems to support expedited delivery of these systems to the fleet. All proposed testing activities are listed in Table 2-15 through Table 2-19.

2.4.2.3.3 Modernization and Sustainment of Ranges

Under Alternative 2, Range Modernization and Sustainment is unchanged from Alternative 1.

2.5 Proposed Training and Testing Activities for Both Action Alternatives

Because the level of activities in Alternative 1 are expected to fluctuate from year to year, and the level in Alternative 2 is proposed to be a maximum level every year, the difference between Alternative 1 and Alternative 2 becomes apparent when aspects of the activities are compared over a 7-year period. For example, hull-mounted mid-frequency active sonar use over 7 years is 24 percent greater under Alternative 2 than under Alternative 1 (63,178 hours vs. 51,103 hours).

2.5.1 Proposed Training Activities

All proposed training activities are listed in Table 2-11 through Table 2-14.

Table 2-11: Navy and Marine Corps Proposed Training Activities

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Major Training Exercises - Large Integrated Anti-Submarine Warfare			
Composite Training Unit Exercise (Carrier Strike Group)	HCTT Study Area	1–2	2
Rim of the Pacific (RIMPAC) Exercise	Hawaii Study Area	0–1	1
Major Training Exercises - Medium Integrated Anti-Submarine Warfare			
Task Force/Sustainment Exercise ¹	Hawaii Study Area	0–1	1
	California Study Area	0–1	1
Integrated/Coordinated Anti-Submarine Warfare Training			
Independent Deployer Certification Exercise/Tailored Surface Warfare Training	California Study Area	9–18	18
Medium Coordinated Anti-Submarine Warfare	Hawaii Study Area	12–17	17
	California Study Area	5–13	13

Table 2-11: Navy and Marine Corps Proposed Training Activities (continued)

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Small Coordinated Anti-Submarine Warfare	Hawaii Study Area	1	1
	California Study Area	4–9	9
Integrated/Coordinated Training – Other			
Composite Training Unit Exercise (Amphibious Ready Group/Marine Expeditionary Unit)	California Study Area	1–2	2
Innovation and Demonstration Exercise	Hawaii Study Area	1	1
	California Study Area	3	3
	Transit Corridor	1	1
Integrated Air Missile Defense Exercise	Hawaii Study Area	0–1	1
Large-Scale Amphibious Exercise	Hawaii Study Area	0–1	1
	California Study Area	2–3	3
Multi-Warfare Exercise	Hawaii Study Area	6–7	7
	California Study Area	2	2
Air Warfare			
Air Combat Maneuvers	Hawaii Study Area	2,314	2,314
	California Study Area	10,400–11,400	11,400
Air Defense Exercise	Hawaii Study Area	40–50	50
	California Study Area	550	550
Gunnery Exercise Air-to-Air Medium Caliber	Hawaii Study Area	2	3
	California Study Area	2	2
Gunnery Exercise Air-to-Air Small Caliber	Hawaii Study Area	5	5
	California Study Area	5	5
Gunnery Exercise Surface-to-Air Large Caliber	Hawaii Study Area	25	25
	California Study Area	55	55
Gunnery Exercise Surface-to-Air Medium Caliber	Hawaii Study Area	79	79
	California Study Area	85	85
High-Energy Laser Exercise Surface-to-Air	Hawaii Study Area	4	4
	California Study Area	4	4
Medium Range Interceptor Capability	Hawaii Study Area	14–21	21
	California Study Area	10	10
Missile Exercise Air-to-Air	Hawaii Study Area	23–28	28
	California Study Area	123	123
Missile Exercise – Man Portable Air Defense System	Hawaii Study Area	7	7
	California Study Area	10	10
Missile Exercise Surface-to-Air	Hawaii Study Area	30	30
	California Study Area	36	36

Table 2-11: Navy and Marine Corps Proposed Training Activities (continued)

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Amphibious Warfare			
Amphibious Assault	Hawaii Study Area	48	48
	California Study Area	21	21
Amphibious Operations in a Contested Environment	Hawaii Study Area	15	15
	California Study Area	10	10
Amphibious Raid	Hawaii Study Area	24	24
	California Study Area	2,404	2,404
Amphibious Vehicle Maneuvers	Hawaii Study Area	20	20
	California Study Area	31–35	35
Expeditionary Fires Exercise/Supporting Arms Coordination Exercise	California Study Area	8	8
Naval Surface Fire Support Exercise – At Sea	Hawaii Study Area	20–25	25
Naval Surface Fire Support Exercise – Land-Based Target	California Study Area	67	67
Non-Combat Amphibious Operation ²	Hawaii Study Area	6	6
	California Study Area	1	1
Shore-to-Surface Artillery Exercise	Hawaii Study Area	4	4
	California Study Area	12	12
Shore-to-Surface Missile Exercise	Hawaii Study Area	10	10
	California Study Area	15	15
Anti-Submarine Warfare			
Anti-Submarine Warfare Torpedo Exercise – Helicopter	Hawaii Study Area	3–5	5
	California Study Area	3–5	5
Anti-Submarine Warfare Torpedo Exercise – Maritime Patrol Aircraft	Hawaii Study Area	20–80	80
	California Study Area	60–80	80
Anti-Submarine Warfare Torpedo Exercise – Ship	Hawaii Study Area	34	34
	California Study Area	104	104
Anti-Submarine Warfare Torpedo Exercise – Submarine	Hawaii Study Area	48	48
	California Study Area	26	26
Anti-Submarine Warfare Tracking Exercise – Helicopter	Hawaii Study Area	125–130	130
	California Study Area	125–130	130
Anti-Submarine Warfare Tracking Exercise – Unmanned Surface Vessel	Hawaii Study Area	5	5
	California Study Area	2	2
Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft	Hawaii Study Area	150–200	200
	California Study Area	200	200
Anti-Submarine Warfare Tracking Exercise – Ship	Hawaii Study Area	60–119	119
	California Study Area	240–480	480
Anti-Submarine Warfare Tracking Exercise – Submarine	Hawaii Study Area	205	205
	California Study Area	64	64
	Transit Corridor	9	9

Table 2-11: Navy and Marine Corps Proposed Training Activities (continued)

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Training and End-to-End Mission Capability Verification - Torpedo	Hawaii Study Area	2	2
	California Study Area	1	1
Electronic Warfare			
Counter Targeting Chaff Exercise – Aircraft	Hawaii Study Area	26–31	31
	California Study Area	148–153	153
Counter Targeting Chaff Exercise – Ship	Hawaii Study Area	37	37
	California Study Area	125	125
Counter Targeting Flare Exercise	Hawaii Study Area	101–108	108
	California Study Area	115–123	123
Electronic Warfare Operations	Hawaii Study Area	55	60
	California Study Area	222–326	326
Expeditionary Warfare			
Dive and Salvage Operations	Hawaii Study Area	17–18	18
	California Study Area	6–8	8
Gunnery Exercise Ship-to-Shore	California Study Area	380–480	480
Obstacle Loading	Hawaii Study Area	70	70
	California Study Area	106–156	156
Personnel Insertion/Extraction – Air	Hawaii Study Area	534	534
	California Study Area	1,354–1,554	1,554
Personnel Insertion/Extraction – Surface and Subsurface	Hawaii Study Area	270–336	336
	California Study Area	1,049–1,149	1,149
Personnel Insertion/Extraction – Swimmer/Diver	Hawaii Study Area	495	495
	California Study Area	1,080–1,280	1,280
Port Damage Repair	California Study Area	12	12
Small Boat Attack	Hawaii Study Area	6	6
	California Study Area	115	115
Mine Warfare			
Airborne Mine Countermeasure – Mine Detection	Hawaii Study Area	20	20
	California Study Area	20	20
Airborne Mine Laying	California Study Area	4–6	6
Amphibious Breaching Operations	Hawaii Study Area	100	100
	California Study Area	638–645	645
Civilian Port Defense – Homeland Security Anti-Terrorism/Force Protection Exercise	Hawaii Study Area	3–4	4
	California Study Area	2–3	3
Mine Countermeasure Exercise – Ship Sonar	Hawaii Study Area	72	72
	California Study Area	256	256
Mine Countermeasures – Mine Neutralization – Remotely Operated Vehicle Operations	Hawaii Study Area	7–8	8
	California Study Area	30–33	33
Mine Countermeasures – Towed Mine Neutralization	California Study Area	30	30
Mine Neutralization Explosive Ordnance Disposal	Hawaii Study Area	11–15	15

Table 2-11: Navy and Marine Corps Proposed Training Activities (continued)

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
	California Study Area	400–431	431
Submarine Mine Avoidance Exercise	Hawaii Study Area	80	80
	California Study Area	40	40
Submarine Mobile Mine and Mine Laying Exercise	Hawaii Study Area	20	20
	California Study Area	30	30
Surface Ship Object Detection	Hawaii Study Area	72	72
	California Study Area	256	256
Training and End-to-End Mission Capability Verification – Mobile Mine and Mine Laying Exercise	Hawaii Study Area	2	2
	California Study Area	2	2
Underwater Demolition Qualification and Certification	Hawaii Study Area	5	5
	California Study Area	34–44	44
Underwater Demolitions Multiple Charge – Large Area Clearance	California Study Area	6	6
Underwater Mine Countermeasure Raise, Tow, Beach, and Exploitation	Hawaii Study Area	6	6
	California Study Area	372	372
Surface Warfare			
Bombing Exercise Air-to-Surface	Hawaii Study Area	194	194
	California Study Area	663	663
Gunnery Exercise Air-to-Surface Medium Caliber	Hawaii Study Area	191–201	201
	California Study Area	469–479	479
Gunnery Exercise Air-to-Surface Small Caliber	Hawaii Study Area	229–429	429
	California Study Area	490–690	690
Gunnery Exercise Surface-to-Surface Boat Medium Caliber	Hawaii Study Area	10	10
	California Study Area	14	14
Gunnery Exercise Surface-to-Surface Boat Small Caliber	Hawaii Study Area	31	31
	California Study Area	345	345
Gunnery Exercise Surface-to-Surface Ship Large Caliber	Hawaii Study Area	32	32
	California Study Area	125	125
	Transit Corridor	13	13
Gunnery Exercise Surface-to-Surface Ship Medium Caliber	Hawaii Study Area	5–50	50
	California Study Area	17–180	180
	Transit Corridor	6–40	40
Gunnery Exercise Surface-to-Surface Ship Small Caliber	Hawaii Study Area	65	65
	California Study Area	355	355
	Transit Corridor	20	20
Laser Targeting – Aircraft	Hawaii Study Area	50–100	100
	California Study Area	50–100	100
High-Energy Laser Exercise Surface-to-Surface	Hawaii Study Area	4	4
	California Study Area	4	4
Maritime Security Operations	Hawaii Study Area	70	70

Table 2-11: Navy and Marine Corps Proposed Training Activities (continued)

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
	California Study Area	250	250
Missile Exercise Air-to-Surface	Hawaii Study Area	17–22	22
	California Study Area	94–99	99
Missile Exercise Air-to-Surface – Rocket	Hawaii Study Area	109–129	129
	California Study Area	251–271	271
Missile Exercise Surface-to-Surface	Hawaii Study Area	28–32	32
	California Study Area	10	10
Sinking Exercise	Hawaii Study Area	2–3	3
	California Study Area	0–1	1
Surface Warfare Torpedo Exercise – Submarine	Hawaii Study Area	30	30
	California Study Area	10	10
Training and End-to-End Mission Capability Verification – Submarine Missile Maritime	Hawaii Study Area	2	2
	California Study Area	3	3
Other Training Activities			
Aerial Firefighting	California Study Area	4	4
At-Sea Vessel Refueling Training	California Study Area	10	10
Combat Swimmer/Diver Training and Certification	Hawaii Study Area	395	395
	California Study Area	320	320
Kilo Dip	Hawaii Study Area	30	30
	California Study Area	30	30
Multi-Domain Unmanned Autonomous Systems	Hawaii Study Area	50–100	100
	California Study Area	100–200	200
Precision Anchoring	Hawaii Study Area	20	20
	California Study Area	37–48	48
Ship-to-Shore Fuel Transfer Training	Hawaii Study Area	4	4
	California Study Area	6	6
Submarine and UUV Subsea and Seabed Warfare Exercise	Hawaii Study Area	20	20
	California Study Area	20	20
Submarine Navigation Exercise	Hawaii Study Area	220	220
	California Study Area	80	80
Submarine Sonar Maintenance and Systems Checks	Hawaii Study Area	520	520
	California Study Area	185	185
	Transit Corridor	10	10
Submarine Under Ice Training and Certification	Hawaii Study Area	12	12
	California Study Area	6	6
Surface Ship Sonar Maintenance and Systems Checks	Hawaii Study Area	155	155
	California Study Area	500	500
	Transit Corridor	8	8
Training and End-to-End Mission Capability	Hawaii Study Area	20	20

Table 2-11: Navy and Marine Corps Proposed Training Activities (continued)

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Verification – Subsea and Seabed Warfare Kinetic Effectors	California Study Area	20	20
Training and End-to-End Mission Capability Verification – UAV	Hawaii Study Area	10	70
	California Study Area	10	10
Underwater Survey	Hawaii Study Area	60	60
	California Study Area	260–360	360
Unmanned Aerial System Training	Hawaii Study Area	192–234	234
	California Study Area	120	120
	Transit Corridor	3	3
Unmanned Underwater Vehicle Training – Certification and Development Exercises	Hawaii Study Area	182–278	278
	California Study Area	532–888	888
Waterborne Training	Hawaii Study Area	16–30	30
	California Study Area	612–715	715

¹ Sustainment Exercise was called “Fleet Exercise/Sustainment Exercise” in Phase III.

² Non-Combat Amphibious Operation was called “Humanitarian Assistance Operations” in Phase III.

Note: HCTT = Hawaii-California Training and Testing, UAV = Unmanned Aerial Vehicle.

The majority of the Composite Training Unit Exercise and all of the Anti-Submarine Warfare associated with it would be conducted in the California Study Area. Only small elements of the exercise would be conducted in the Hawaii Study Area.

Table 2-12: Coast Guard Proposed Training Activities

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Air Warfare			
Gunnery Exercise Surface-to-Air Large Caliber	Hawaii Study Area	15	15
	California Study Area	45	45
Gunnery Exercise Surface-to-Air Medium Caliber	Hawaii Study Area	19	19
	California Study Area	70	70
Electronic Warfare			
Counter Targeting Chaff Exercise – Ship	Hawaii Study Area	5	5
	California Study Area	20	20
Counter Targeting Flare Exercise	California Study Area	10	10
Expeditionary Warfare			
Underwater Construction Team Training	Hawaii Study Area	8	8
	California Study Area	1,048	1,048

Table 2-12: Coast Guard Proposed Training Activities (continued)

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Surface Warfare			
Gunnery Exercise Air-to-Surface Medium Caliber	Hawaii Study Area	100	100
	California Study Area	120	120
Gunnery Exercise Surface-to-Surface Boat Medium Caliber	Hawaii Study Area	2	2
	California Study Area	158	158
Gunnery Exercise Surface-to-Surface Boat Small Caliber	Hawaii Study Area	100	100
	California Study Area	188	188
Gunnery Exercise Surface-to-Surface Ship Large Caliber	Hawaii Study Area	5	5
	California Study Area	24	24
Gunnery Exercise Surface-to-Surface Ship Medium Caliber	Hawaii Study Area	20	20
	California Study Area	36	36
Gunnery Exercise Surface-to-Surface Ship Small Caliber	Hawaii Study Area	100	100
	California Study Area	220	220
High-Energy Laser Exercise Surface-to-Surface	Hawaii Study Area	4	4
	California Study Area	4	4
Maritime Security Operations	Hawaii Study Area	145	145
	California Study Area	887	887
Other Training Activities			
Precision Anchoring	Hawaii Study Area	9	9
	California Study Area	950	950
Search and Rescue	Hawaii Study Area	110	110
	California Study Area	580	580
Unmanned Aerial System Training	Hawaii Study Area	50	50
	California Study Area	350	350
Unmanned Underwater Vehicle Training – Certification and Development Exercises	Hawaii Study Area	200	200
	California Study Area	310	310
Waterborne Training	Hawaii Study Area	69	69
	California Study Area	436	436

Table 2-13: Army Proposed Training Activities

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Air Warfare			
Missile Exercise – Man Portable Air Defense System	Hawaii Study Area	2	2
Amphibious Warfare			
Shore-to-Surface Artillery Exercise	Hawaii Study Area	37	37
Shore-to-Surface Missile Exercise	Hawaii Study Area	5	5
Surface Warfare			
Gunnery Exercise Surface-to-Surface Boat Medium Caliber	Hawaii Study Area	4	8
Gunnery Exercise Surface-to-Surface Boat Small Caliber	Hawaii Study Area	4	8

Table 2-14: Air Force Proposed Training Activities

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Air Warfare			
Air Combat Maneuvers	Hawaii Study Area	272	272
Gunnery Exercise Air-to-Air Medium Caliber	Hawaii Study Area	12	12

2.5.2 Proposed Testing Activities

All proposed testing activities are listed in Table 2-15 through Table 2-19.

Table 2-15: Naval Air Systems Command Proposed Testing Activities

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Air Warfare			
Air Combat Maneuvers Test	Hawaii Study Area	22–24	24
	California Study Area	310–321	321
Air Platform – Vehicle Test	Hawaii Study Area	7–8	8
	California Study Area	50–54	54
Air Platform Weapons Integration Test	Hawaii Study Area	10–11	11
	California Study Area	10–11	11
Air-to-Air Missile Test	California Study Area	49	49
Intelligence, Surveillance, and Reconnaissance Test	Hawaii Study Area	14–15	15
	California Study Area	254–279	279
Large Force Test Event	California Study Area	6	42
Surface-to-Air Gunnery Test – Large Caliber	California Study Area	12	12

Table 2-15: Naval Air Systems Command Proposed Testing Activities (continued)

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Air Warfare			
Surface-to-Air Gunnery Test – Medium Caliber	California Study Area	12	12
Surface-to-Air High-Energy Laser Test	California Study Area	50	50
Surface-to-Air High-Power Microwave Test	California Study Area	75	75
Surface-to-Air Missile Test	California Study Area	155	155
Anti-Submarine Warfare			
Anti-Submarine Warfare Torpedo Test (Aircraft)	Hawaii Study Area	24–26	26
	California Study Area	71–78	78
Anti-Submarine Warfare Tracking Test (Fixed-Wing)	Hawaii Study Area	61–67	67
	California Study Area	68–75	75
Anti-Submarine Warfare Tracking Test (Rotary-Wing)	Hawaii Study Area	66–73	73
	California Study Area	132–145	145
Kilo Dip Test	Hawaii Study Area	6–7	7
	California Study Area	6–7	7
Sonobuoy Lot Acceptance Test	Hawaii Study Area	32–38	38
	California Study Area	320–352	352
Electronic Warfare			
Chaff Test	Hawaii Study Area	10–11	11
	California Study Area	29–31	31
Electronic Systems Test	Hawaii Study Area	4	4
	California Study Area	204	204
Flare Test	Hawaii Study Area	10–11	11
	California Study Area	29–31	31
Mine Warfare			
Airborne Dipping Sonar Minehunting Test	Hawaii Study Area	18–20	20
	California Study Area	18–20	20
Airborne Laser Mine Detection System Test	Hawaii Study Area	20–22	22
	California Study Area	20–22	22
Airborne Mine Neutralization System Test	Hawaii Study Area	36–39	39
	California Study Area	81–84	84
Airborne Minehunting Test – Sonobuoy	Hawaii Study Area	9–10	10
	California Study Area	9–10	10
Mine Laying Test	Hawaii Study Area	1	1
	California Study Area	2	2

Table 2-15: Naval Air Systems Command Proposed Testing Activities (continued)

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Surface Warfare			
Air-to-Surface Bombing Test	Hawaii Study Area	8–9	9
	California Study Area	66–67	67
Air-to-Surface Gunnery Test	Hawaii Study Area	6–7	7
	California Study Area	70–76	76
Air-to-Surface High-Energy Laser Test	Hawaii Study Area	54–59	59
	California Study Area	324–329	329
Air-to-Surface High-Power Microwave Test	California Study Area	25	25
Air-to-Surface Laser Targeting Test	Hawaii Study Area	5–6	6
	California Study Area	5–6	6
Air-to-Surface Missile Test	Hawaii Study Area	18–20	20
	California Study Area	188–194	194
Long-Range Weapons Delivery Systems/ Hypersonic Vehicle Test	California Study Area	56	56
Rocket Test	Hawaii Study Area	2	2
	California Study Area	30–32	32
Subsurface-to-Surface Missile Test	California Study Area	4	4
Surface-to-Surface Gunnery Test – Large-Caliber	California Study Area	10	10
Surface-to-Surface Gunnery Test – Medium-Caliber	California Study Area	26	26
Surface-to-Surface Gunnery Test – Small-Caliber	California Study Area	10	10
Surface-to-Surface High-Energy Laser Test	California Study Area	50	50
Surface-to-Surface High-Power Microwave Test	California Study Area	25	25
Surface-to-Surface Missile Test	California Study Area	44	44
Other Testing Activities			
Acoustic and Oceanographic Research	Hawaii Study Area	2	2
	California Study Area	3	3
Air Platform Shipboard Integration Test	Hawaii Study Area	7–8	8
	California Study Area	136–150	150
Undersea Range System Test	Hawaii Study Area	30–33	33
	California Study Area	19–21	21

Table 2-16: Naval Facilities Engineering and Expeditionary Warfare Center Proposed Testing Activities

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Unmanned Systems			
Ocean Energy and Cable System Research	Hawaii Study Area	2–4	4
	California Study Area	2–6	6
Undersea Range System Testing	California Study Area	8–12	12
Other Testing Activities			
Underwater Search, Deployment, and Recovery	California Study Area	20–30	30

Table 2-17: Naval Sea Systems Command Proposed Testing Activities

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Anti-Submarine Warfare			
Anti-Submarine Warfare Mission Package Testing	Hawaii Study Area	1	1
	California Study Area	1	1
At-Sea Sonar Testing	Hawaii Study Area	8–11	11
	California Study Area	27–43	43
Pierside Sonar Testing	Hawaii Study Area	13–24	24
	California Study Area	59–75	76
Surface Ship Sonar Testing/Maintenance	Hawaii Study Area	6	6
	California Study Area	6	6
Torpedo (Explosive) Testing	Hawaii Study Area	1–2	2
	California Study Area	1–2	2
Torpedo (Non-Explosive) Testing	Hawaii Study Area	6–8	8
	California Study Area	7–9	9
Electronic Warfare			
Radar and Other System Testing	Hawaii Study Area	9–25	25
	California Study Area	22–44	44
Mine Warfare			
Mine Countermeasure and Neutralization Testing	California Study Area	18–45	45
Mine Countermeasure Mission Package Testing	Hawaii Study Area	16	16
	California Study Area	25–26	26
Mine Detection and Classification Testing	Hawaii Study Area	6–10	10
	California Study Area	10–20	20
Surface Warfare			
Gun Testing – Large Caliber	California Study Area	8–33	33
Gun Testing – Medium Caliber	California Study Area	9–14	14
Gun Testing – Small Caliber	California Study Area	0–5	5

Table 2-17: Naval Sea Systems Command Proposed Testing Activities (continued)

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Surface Warfare (continued)			
Missile and Rocket Testing	Hawaii Study Area	1	1
	California Study Area	232–238	238
Unmanned Systems			
Underwater Search, Deployment, and Recovery	California Study Area	17–30	30
Unmanned Surface Vehicle System Testing	California Study Area	4–10	10
Unmanned Underwater Vehicle Testing	Hawaii Study Area	2	2
	California Study Area	680–685	685
Vessel Evaluation			
Air Defense Testing	Hawaii Study Area	4	4
	California Study Area	18–27	27
In-Port Maintenance Testing	Hawaii Study Area	5	5
	California Study Area	15	15
Propulsion Testing	Hawaii Study Area	0–41	41
	California Study Area	0–23	23
Signature Analysis Operations	Hawaii Study Area	2–4	4
	California Study Area	0–1	1
Small Ship Shock Trial	California Study Area	0–1	0–1*
Submarine Sea Trials – Weapons System Testing	Hawaii Study Area	2–4	4
	California Study Area	2–4	4
Surface Warfare Testing	Hawaii Study Area	4–16	16
	California Study Area	18–53	53
Undersea Warfare Testing	Hawaii Study Area	3–13	13
	California Study Area	25–60	60
Vessel Signature Evaluation	California Study Area	2–6	6
Other Testing Activities			
Acoustic and Oceanographic Research	Hawaii Study Area	5–6	6
	California Study Area	2–3	3
Countermeasure Testing	Hawaii Study Area	2–4	4
	California Study Area	8–14	14
Insertion/Extraction	Hawaii Study Area	2	2
	California Study Area	2	2
Non-Acoustic Component Testing	California Study Area	0–4	4
Semi-Stationary Equipment Testing	Hawaii Study Area	4–8	8
	California Study Area	4–8	8
Simulant Testing	California Study Area	0–5	5

*Only one small ship shock trial would be conducted for the 7-year period 2026–2032.

Table 2-18: Naval Information Warfare Systems Command Proposed Testing Activities

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Acoustic and Oceanographic Science and Technology			
Acoustic, Oceanographic, and Energy Research	Hawaii Study Area	2	2
	California Study Area	145–180	180
Other Testing Activities			
Communications	Hawaii Study Area	4	4
	California Study Area	8	8
Intelligence, Surveillance, Reconnaissance	Hawaii Study Area	6	6
	California Study Area	200–287	287
Vehicle Testing	Hawaii Study Area	16–23	23
	California Study Area	42–51	51
	Transit Corridor	3–7	7

Table 2-19: Office of Naval Research Proposed Testing Activities

Activity Name	Location	Annual # of Events	
		Alternative 1	Alternative 2
Acoustic and Oceanographic Science and Technology			
Acoustic and Oceanographic Research	Hawaii Study Area	4–5	5
	California Study Area	8–10	10
Large Displacement Unmanned Undersea Vehicle Testing	Hawaii Study Area	2–3	3
	California Study Area	6–8	8
Long Range Acoustic Communications	Hawaii Study Area	1–2	2
Mine Countermeasure Technology Research	California Study Area	6–8	8
	Hawaii Study Area	1–2	2

REFERENCES

U.S. Department of the Navy. (2022). *Record of Decision for the Final Environmental Impact Statement/Overseas Environmental Impact Statement for Point Mugu Sea Range*. Washington, DC: U.S. Department of Defense.