Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement Mariana Islands Training and Testing

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2 Description of Proposed Action and Alternatives

The United States (U.S.) Department of the Navy (Navy) proposes to conduct military readiness activities which includes training activities (referred to as "training"), and research, development, testing, and evaluation (referred to as "testing") activities in the Mariana Islands Training and Testing (MITT) Study Area, primarily within the existing Mariana Islands Range Complex (MIRC). This Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (SEIS/OEIS) is being prepared to assess the potential environmental impacts associated with proposed training and testing activities to be conducted at sea and on Farallon de Medinilla (FDM). These proposed activities are generally consistent with those at-sea and FDM activities analyzed in the 2015 MITT Final EIS/OEIS and are representative of activities the military has been conducting in the Study Area since the 1940s. These training and testing activities include the use of active sonar and explosives at sea off the coasts of Guam and the Commonwealth of the Northern Mariana Islands (CNMI), throughout the in-water areas around the MIRC, the transit corridor between the MIRC and the Hawaii Range Complex (HRC), and at select Navy pierside and harbor locations.

In this chapter, the military builds upon the purpose and need to train and test (as described in Chapter 1) by describing the Study Area and identifying the primary mission areas for which these training and testing activities are conducted. Each warfare community (e.g., aviation, surface, submarine, and expeditionary) conducts training and testing activities that contribute to the success of these primary mission areas. Each primary mission area requires unique skills, sensors, weapons, and technologies to accomplish the overall mission. For example, under the anti-submarine warfare 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 anti-submarine warfare by anticipating and identifying technologies and systems that respond to the needs of the warfare communities. See Section 2.2 (Primary Mission Areas) and Section 2.3 (Descriptions of Sonar, Ordnance/Munitions, Targets and Other Systems Employed in MITT Events) for additional information.

This chapter describes the activities that comprise the Proposed Action for this SEIS/OEIS necessary to meet training and testing requirements beyond 2020 and into the reasonably foreseeable future. These at-sea and FDM activities are then analyzed for their potential effects on the environment in the resource-specific chapters of this SEIS/OEIS. For further details regarding specific training and testing activities, please see Appendix A (Training and Testing Activities Descriptions). The Navy intends to request from the National Marine Fisheries Service (NMFS) an incidental take authorization under the Marine Mammal Protection Act (MMPA), and an incidental take statement under the Endangered Species Act (ESA) for marine species. Relative to compliance with the National Environmental Policy Act, NMFS' Proposed Action will be a direct outcome of responding to the Navy's request for an incidental take authorization pursuant to the MMPA.

The 2015 MITT Final EIS/OEIS also analyzed training and testing activities conducted at existing MIRC land-based training areas located on Guam, Saipan, Tinian, and Rota. The Navy consulted with the U.S. Fish and Wildlife Service regarding effects of the land-based training activities on terrestrial species listed under the ESA and received a Biological Opinion (U.S. Fish and Wildlife Service, 2015) and concurrence letter (U.S. Fish and Wildlife Service, 2016). As the Navy is not proposing any changes to those land-based activities on Guam, Saipan, Tinian, and Rota, the Navy will continue to rely on the 2015 MITT Final EIS/OEIS because there is no new information that would affect the EIS analysis. In addition,

in accordance with 50 Code of Federal Regulations (CFR) section 402.16, the 2015 and 2016 consultations remain valid as none of the factors necessary to trigger reinitiating consultation have been met.

2.1 Description of the Mariana Islands Training and Testing Study Area

The Study Area (Figure 2.1-1) for this SEIS/OEIS is the same used for the analysis in the 2015 MITT Final EIS/OEIS (Section 2.1, Description of the Mariana Islands Training and Testing Study Area), and is composed of three components: (1) the MIRC, (2) additional areas on the high seas outside of the MIRC, and (3) a transit corridor between the MIRC and the HRC. Collectively, for the purposes of this SEIS/OEIS, these areas continue to be referred to as the MITT Study Area (Figure 2.1-1). The transit corridor is outside the geographic boundaries of the MIRC and is a direct route across the high seas for Navy ships transiting between the MIRC and the HRC.

Section 2.1.1 (Description of the Mariana Islands Range Complex) and the 2015 MITT Final EIS/OEIS (Section 2.1, Description of the Mariana Islands Training and Testing Study Area) provide complete descriptions of range components that comprise the MIRC. For more information on the areas outside the boundaries of the MIRC but within the Study Area, see Section 2.1.2 (Description of the Ocean Operating Areas Outside the Bounds of the Mariana Islands Range Complex) and Section 2.1.3 (Description of Pierside Locations and Apra Harbor) below and in the 2015 MITT Final EIS/OEIS.

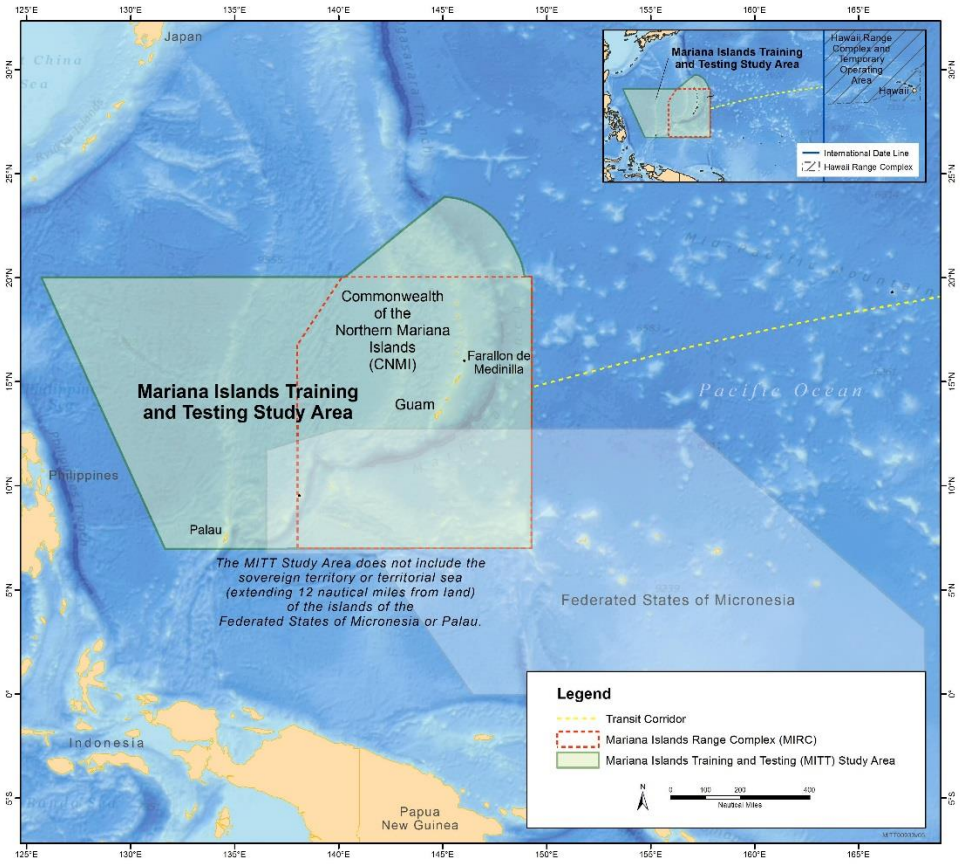

Figure 2.1-1: Mariana Islands Training and Testing Study Area

2.1.1 Description of the Mariana Islands Range Complex

The MIRC includes land training areas, ocean surface and subsurface areas, and special use airspace. These areas extend from the waters south of Guam to north of Pagan (Commonwealth of the Northern Mariana Islands), and from the Pacific Ocean east of the Mariana Islands to the Philippine Sea to the west, encompassing 501,873 square nautical miles (NM^2) of open ocean (Figure 2.1-1). The Department of Defense leases FDM for use as a live and inert gunnery, missile, and bombing range.

2.1.1.1 Special Use Airspace and Air Traffic Controlled Assigned Airspace

The MIRC includes approximately 40,000 NM^2 of special use airspace. Special use airspace is airspace of defined dimensions where activities must be confined because of their nature or where limitations may be imposed upon aircraft operations that are not part of those activities (Federal Aviation Administration, 2013). As described in the 2015 MITT Final EIS/OEIS, Section 2.1 (Description of the Mariana Islands Training and Testing Study Area), special use airspace includes restricted areas, military operations areas, and warning areas. As depicted in Figure 2.1-2 and Figure 2.1-3, most of this airspace is almost entirely over the ocean and includes warning areas, and restricted areas:

Warning Areas (W): W-517 and W-12 include approximately 11,800 NM2 of special use airspace (Figure 2.1-2 and Figure 2.1-3); W-11 (A/B) is approximately 10,500 NM2 of special use airspace, and W-13 (A/B/C) is approximately 18,000 NM2 of special use airspace.

Restricted Area Airspace (R): Over or near land areas within the MIRC includes approximately 2,463 NM^2 of special use airspace and includes restricted areas R-7201 and R-7201A, which extends in a 12 nautical mile radius around FDM (Figure 2.1-2 and Figure 2.1-4).

2.1.1.2 Sea and Undersea Space

The MIRC includes the sea and undersea space from the ocean surface to the ocean floor. The MIRC also consists of designated sea and undersea space training areas, which include designated drop zones, underwater demolition and floating mine exclusion zones, danger zones associated with live fire ranges, and training areas associated with military controlled beaches, harbors, and littoral areas.

W-517, W-12, W-11 and, W-13 (Figure 2.1-2) are designated as special use airspace where the sea space underneath may be restricted from public access during hazardous training events. Portions of the Marianas Trench Marine National Monument, established in January 2009 by Presidential Proclamation under the authority of the Antiquities Act (16 U.S. Code sections 431–433), lie within the MIRC and under all MIRC Warning Areas. However, the prohibitions required by the Proclamation do not apply to activities and exercises of the Armed Forces (including those carried out by the U.S. Coast Guard).

2.1.2 Description of the Ocean Operating Areas Outside the Bounds of the Mariana Islands Range Complex

In addition to the MIRC, the Study Area includes the area to the north of the MIRC that is within the U.S. Exclusive Economic Zone of the CNMI and areas to the west of the MIRC, as depicted in Figure 2.1-1.

The transit corridor between MIRC and HRC, although not part of any defined range complex, is important to the Navy in that it provides available air, sea, and undersea space where vessels and aircraft conduct training and testing while in transit. The transit corridor is the shortest distance between the MIRC and the HRC.

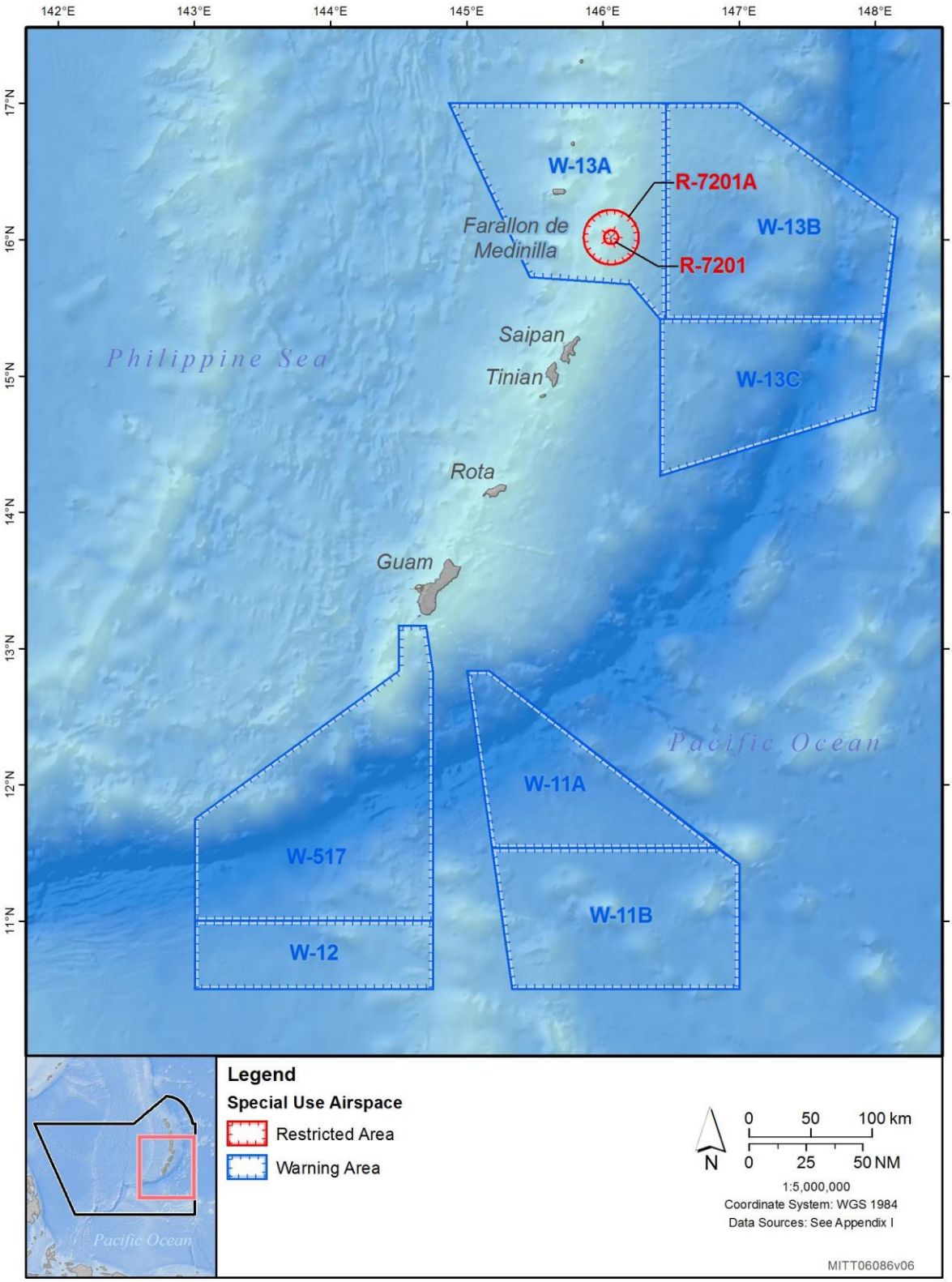

Figure 2.1-2: Mariana Islands Range Complex Airspace

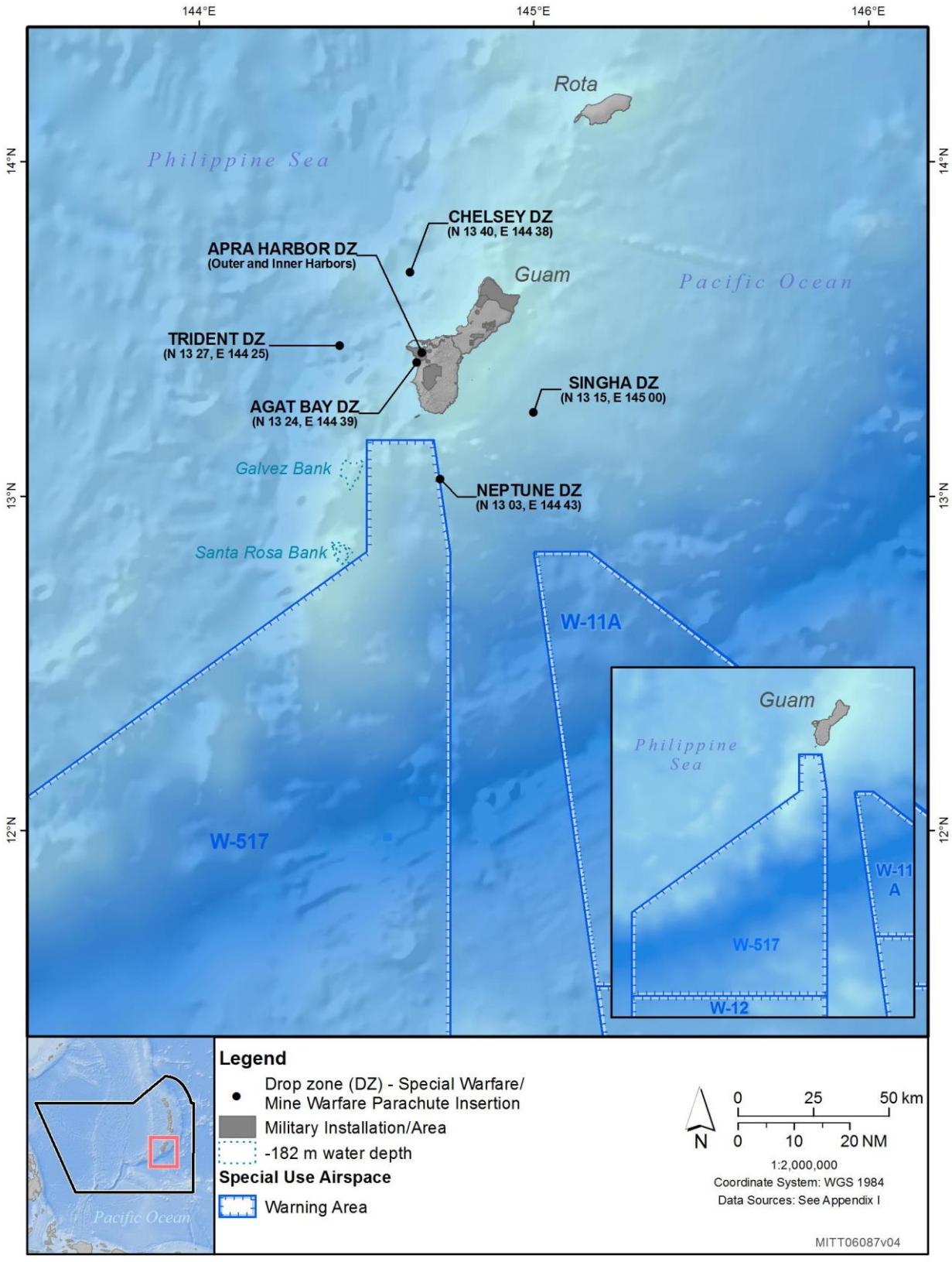

Figure 2.1-3: Warning Area 517

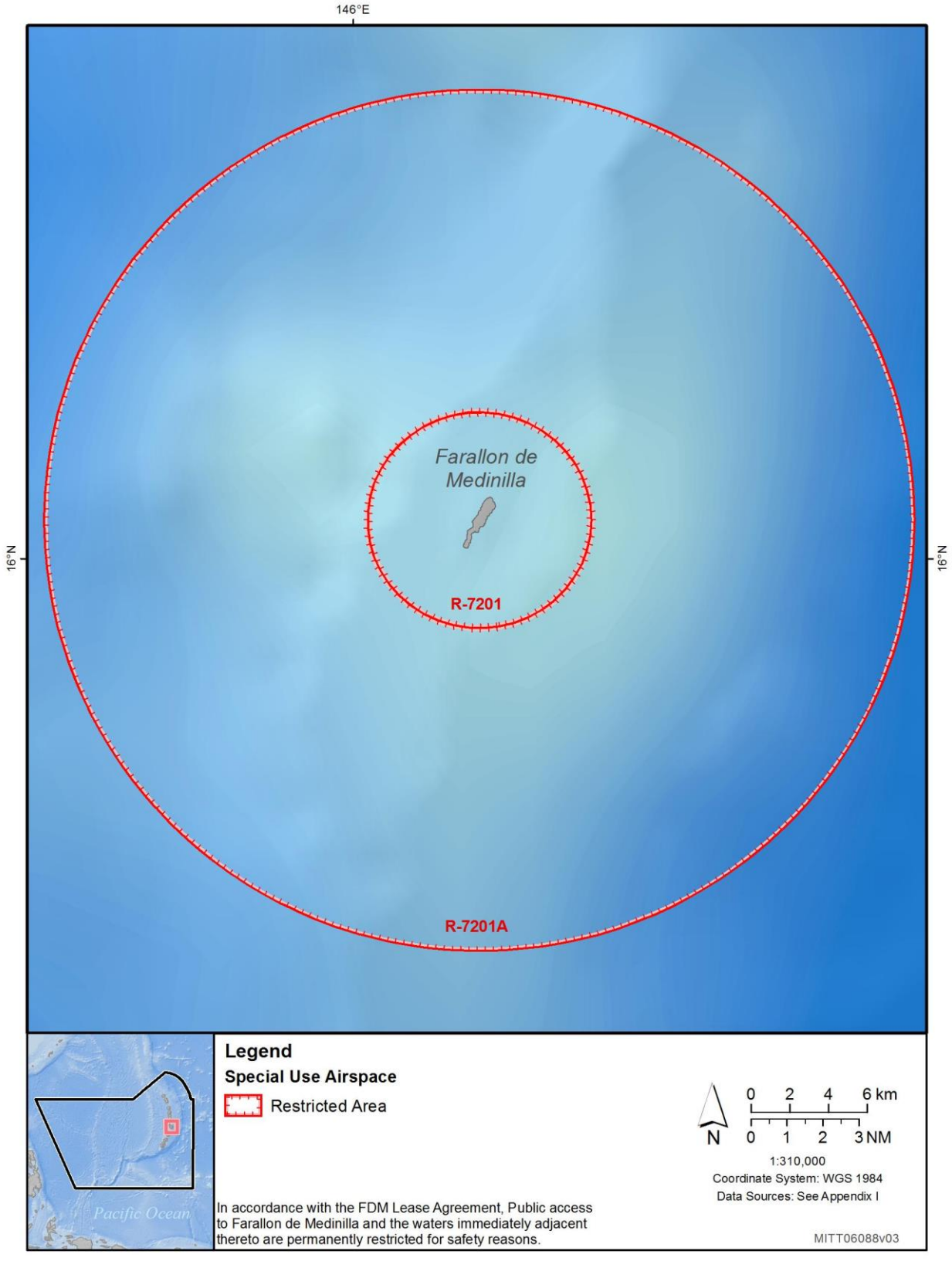

Figure 2.1-4: Farallon de Medinilla Restricted Area 7201, 7201A, and Danger Zone

2.1.3 Description of Pierside Locations and Apra Harbor

The Study Area includes pierside locations in Apra Harbor. For purposes of this SEIS/OEIS, pierside locations include channels and routes to and from the Navy port in the Apra Harbor Naval Complex, and associated wharves and facilities within the Navy port (Figure 2.2-1).

2.2 Primary Mission Areas

The Navy categorizes its at-sea activities into functional warfare areas called primary mission areas. Training and testing activities generally fall into the following eight primary mission areas:

- air warfare
- amphibious warfare
- anti-submarine warfare
- electronic warfare
- expeditionary warfare
- mine warfare
- strike warfare
- surface warfare

Most activities addressed in this SEIS/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" (e.g., precision anchoring, search and rescue at sea). Each warfare community (e.g., surface, subsurface, aviation, and expeditionary warfare) may train in some or all of these primary mission areas. The research and acquisition community also categorizes most, but not all, of its testing activities under these primary mission areas. A description of the sonar, munitions, targets, systems, and other material used during training and testing activities within these primary mission areas is provided in Appendix A (Training and Testing Activities Descriptions).

2.2.1 Air Warfare

The mission of air warfare (referred to as anti-air warfare in the 2015 MITT Final EIS/OEIS) is to destroy or reduce enemy air and missile threats (including unmanned airborne threats) and serves two purposes: to protect U.S. forces from attacks from the air and to gain air superiority. Air warfare provides U.S. forces with adequate attack warnings, while denying hostile forces the ability to gather intelligence about U.S. forces.

Aircraft conduct air warfare through radar search, detection, identification, and engagement of airborne threats. Surface ships conduct air warfare through an array of modern anti-aircraft weapon systems such as aircraft-detecting radar, naval guns linked to radar-directed fire-control systems, surface-to-air missile systems, and radar-controlled guns for close-in point defense.

Testing of air warfare systems is required to ensure the equipment is fully functional under the conditions in which it will be used. Tests may be conducted on radar and other early-warning detection and tracking systems, new guns or gun rounds, and missiles. Testing of these systems may be conducted on new ships and aircraft, and on existing ships and aircraft following maintenance, repair, or modification. For some systems, tests are conducted periodically to assess operability. Additionally, tests may be conducted in support of scientific research to assess new and emerging technologies.

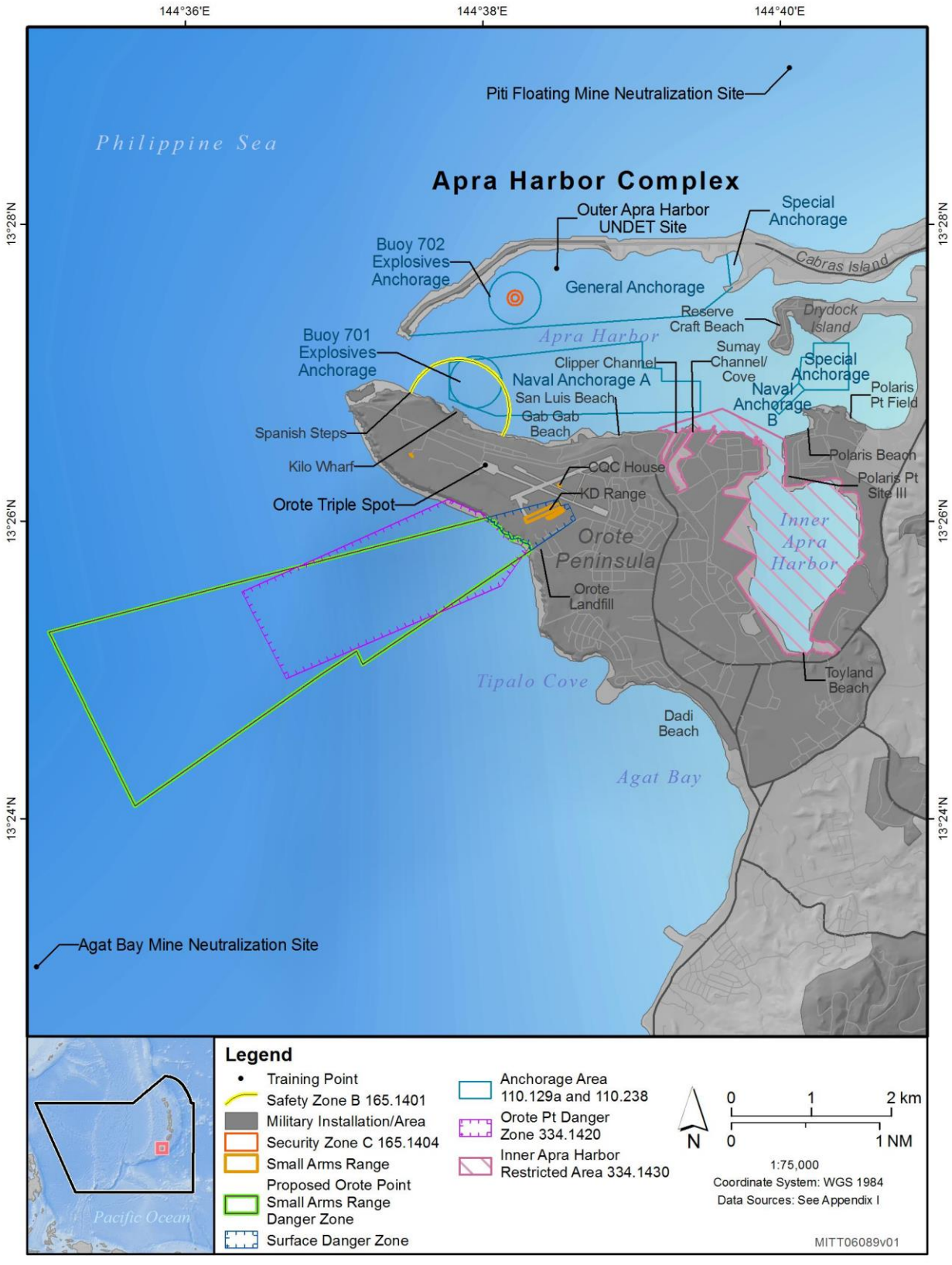

Figure 2.2-1: Apra Harbor Naval Complex (Main Base) and Main Base/Polaris Point

2.2.2 Amphibious Warfare

The mission of amphibious warfare is to project military power from the sea to the shore (i.e., attack a threat on land by a military force embarked on ships) through the use of naval firepower and expeditionary landing forces. Amphibious warfare operations include small unit reconnaissance or raid missions to large-scale amphibious exercises involving multiple ships and aircraft combined into a strike group.

Amphibious warfare training ranges from individual, crew, and small unit events to large task force exercises. Individual and crew training include amphibious vehicles and naval gunfire support training. Such training includes shore assaults, boat raids, airfield or port seizures, and reconnaissance. Large-scale amphibious exercises involve ship-to-shore maneuver, naval fire support, such as shore bombardment, and air strike and attacks on targets that are in close proximity to friendly forces.

2.2.3 Anti-Submarine Warfare

The mission of anti-submarine warfare is to locate, neutralize, and defeat hostile submarine forces that threaten Navy surface forces. Anti-submarine warfare is based on the principle that surveillance and attack aircraft, ships, and submarines all search for hostile submarines. These forces operate together or independently to gain early warning and detection, and to localize, track, target, and attack submarine threats.

Anti-submarine warfare training addresses basic skills such as detection and classification of submarines, as well as evaluating sounds to distinguish between enemy submarines and friendly submarines, ships, and marine life. More advanced training integrates the full spectrum of anti-submarine warfare from detecting and tracking a submarine to attacking a target using either exercise torpedoes (i.e., torpedoes that do not contain a warhead) or simulated weapons. These integrated anti-submarine warfare training exercises are conducted in coordinated, at-sea training events involving submarines, ships, and aircraft.

Testing of anti-submarine warfare systems is conducted to develop new technologies and assess weapon performance and operability with new systems and platforms, such as unmanned systems. Testing uses ships, submarines, and aircraft to demonstrate capabilities of torpedoes, missiles, countermeasure systems, and underwater surveillance and communications systems. Tests may be conducted as part of a large-scale Fleet training event involving submarines, ships, fixed-wing aircraft, and helicopters. These integrated training events offer opportunities to conduct research and acquisition activities and to train aircrew in the use of new or newly enhanced systems during a large-scale, complex exercise.

2.2.4 Electronic Warfare

The mission of electronic warfare is to degrade the enemy's ability to use electronic systems, such as communication systems and radar, and to confuse or deny them the ability to defend their forces and assets. Electronic warfare is also used to detect enemy threats and counter their attempts to degrade the electronic capabilities of the Navy.

Typical electronic warfare activities include threat avoidance training, signals analysis for intelligence purposes, and use of airborne and surface electronic jamming devices (that block or interfere with other devices) to defeat tracking, navigation, and communications systems.

Testing of electronic warfare systems is conducted to improve the capabilities of systems and ensure compatibility with new systems. Testing involves the use of aircraft, surface ships, and submarine crews

to evaluate the effectiveness of electronic systems. Similar to training activities, typical electronic warfare testing activities include the use of airborne and surface electronic jamming devices (including testing chaff and flares; see Appendix A (Training and Testing Activities Descriptions) for a description of these devices) to defeat tracking and communications systems. Chaff tests evaluate newly developed or enhanced chaff, chaff dispensing equipment, or modified aircraft systems' use against chaff deployment. Flare tests evaluate deployment performance and crew competency with newly developed or enhanced flares, flare dispensing equipment, or modified aircraft systems' use against flare deployment.

2.2.5 Expeditionary Warfare

The mission of expeditionary warfare is to provide security and surveillance in the littoral (at the shoreline), riparian (along a river), or coastal environments. Expeditionary warfare is wide ranging and includes defense of harbors, operation of remotely operated vehicles, defense against swimmers, and boarding/seizure operations.

2.2.6 Mine Warfare

The mission of mine warfare is to detect, classify, and avoid or neutralize (disable) mines to protect Navy ships and submarines and to maintain free access to ports and shipping lanes. Mine warfare also includes offensive mine laying to gain control of or deny the enemy access to sea space. Naval mines can be laid by ships, submarines, or aircraft.

Mine warfare neutralization training includes exercises in which ships, aircraft, submarines, underwater vehicles, unmanned vehicles, or marine mammal detection systems search for mine shapes. Personnel train to destroy or disable mines by attaching underwater explosives to or near the mine or using remotely operated vehicles to destroy the mine.

Testing and development of mine warfare systems is conducted to improve sonar, laser, and magnetic detectors intended to hunt, locate, and record the positions of mines for avoidance or subsequent neutralization. Mine warfare testing and development falls into two primary categories: mine detection and classification, and mine countermeasure and neutralization. Mine detection and classification testing involves the use of air, surface, and subsurface vessels and uses sonar, including towed and side-scan sonar, and unmanned vehicles to locate and identify objects underwater. Mine detection and classification systems are sometimes used in conjunction with a mine neutralization system. Mine countermeasure and neutralization testing includes the use of air, surface, and subsurface units to evaluate the effectiveness of tracking devices, countermeasure and neutralization systems, and general purpose bombs to neutralize mine threats. Most neutralization tests use mine shapes, or non-explosive practice mines, to evaluate a new or enhanced capability. For example, during a mine neutralization test, a previously located mine is destroyed or rendered nonfunctional using a helicopter or manned/unmanned surface vehicle-based system that may involve the deployment of a towed neutralization system.

A small percentage of mine warfare tests require the use of high-explosive mines to evaluate and confirm the ability of the system to neutralize a high-explosive mine under operational conditions. The majority of mine warfare systems are deployed by ships, helicopters, and unmanned vehicles. Tests may also be conducted in support of scientific research to support these new technologies.

2.2.7 Strike Warfare

The mission of strike warfare is to conduct offensive attacks on land-based targets, such as refineries, power plants, bridges, major roadways, and ground forces to reduce the enemy's ability to wage war. Strike warfare employs weapons by manned and unmanned air, surface, submarine, and Navy special warfare assets in support of extending dominance over enemy territory (power projection).

Strike warfare includes training fixed-wing attack aircraft pilots and aircrews in the delivery of precision-guided munitions, non-guided munitions, rockets, and other ordnance against land-based targets. Not all strike mission training activities involve dropping ordnance and instead the activity is simulated with video footage obtained by onboard sensors.

2.2.8 Surface Warfare

The mission of surface warfare (referred to as anti-surface warfare in the 2015 MITT Final EIS/OEIS) is to obtain control of sea space from which naval forces may operate, and entails offensive action against other surface, subsurface, and air targets while also defending against enemy forces. In surface warfare, aircraft use guns, air-launched cruise missiles, or other precision-guided munitions; ships employ torpedoes, naval guns, and surface-to-surface missiles; and submarines attack surface ships using torpedoes or submarine-launched, anti-ship cruise missiles.

Surface warfare training includes surface-to-surface gunnery and missile exercises, air-to-surface gunnery and missile exercises, and submarine missile or torpedo launch activities, and other munitions against surface targets.

Testing of weapons used in surface warfare is conducted to develop new technologies and to assess weapon performance and operability with new systems and platforms, such as unmanned systems. Tests include various air-to-surface guns and missiles, surface-to-surface guns and missiles, and bombing tests. Testing activities may be integrated into training activities to test aircraft or aircraft systems in the delivery of munitions on a surface target. In most cases the tested systems are used in the same manner in which they are used for Fleet training activities.

2.3 Proposed Activities

The Navy has been conducting training and testing 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 (organization of ships, submarines, aircraft, weapons, and Sailors). Such developments influence the frequency, duration, intensity, and location of required training and testing activities. The activities analyzed in this SEIS/OEIS are largely a continuation of activities that have been ongoing and were analyzed previously in the 2015 MITT Final EIS/OEIS. This SEIS/OEIS includes the analysis of those at sea and FDM activities necessary to meet readiness requirements beyond 2020 and into the reasonably foreseeable future, includes any changes to those activities previously analyzed, and reflects the most up-to-date compilation of training and testing activities deemed necessary to accomplish military readiness requirements.

2.3.1 Changes to Proposed Activities

The majority of proposed modifications to the activities included in the Proposed Action are changes to tempo of activity, and renaming or combining related types of activities for greater clarity in this document and for consistency across all Navy at-sea planning documents. A few activities assessed in

2015 have been discontinued from analysis, and a few new activities have been added to the proposed activities to enable the Navy to adopt new technology and new capabilities. The new and renamed/combined training and testing activities are listed in Table 2.5-1 and Table 2.5-2 and discussed in greater detail below.

2.3.1.1 New Technologies and Capabilities

As described above, new technologies and capabilities are introduced to be evaluated in testing. Some systems have been used and tested by the Navy in other locations, but not the MITT Study Area. Those systems that are new to the Study Area will be analyzed for environmental impacts in this SEIS/OEIS.

The Navy is proposing the testing of new systems and technologies for Naval Sea Systems Command. Radar and Other Systems Testing may include the 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. Simulant Testing involves the testing of simulated chemical-biological agents and simulants that are deployed against surface ships. Naval Air Systems Command and the Office of Naval Research are not proposing any new testing capabilities in this SEIS/OEIS. Information on all testing activities is provided at the end of this Chapter in Table 2.5-1.

2.3.1.2 Renamed and Reorganized Testing Activities

Some Naval Sea Systems Command testing activities have been renamed. Following is a list of testing activities that have been renamed since the 2015 MITT Final EIS/OEIS:

- Undersea Warfare Testing (previously named Torpedo Testing)
- Mine Countermeasure and Neutralization Testing (previously named Mine Countermeasure Mission Package Testing)
- Anti-Submarine Warfare Mission Package Testing (previously named Anti-Submarine Warfare)

In addition, some Naval Sea Systems Command testing activities have been reorganized under a different primary mission area. Following is a list of testing activities that have been reorganized since the 2015 MITT Final EIS/OEIS:

- Kinetic Energy Weapons Testing (now analyzed under Surface Warfare)
- At-Sea Sonar Testing (now analyzed under Anti-Submarine Warfare)
- Torpedo (Explosive) Testing (now analyzed under Anti-Submarine Warfare)
- Torpedo (Non-explosive) Testing (now analyzed under Anti-Submarine Warfare)
- Undersea Warfare Testing (now analyzed under Vessel Evaluation)
- Anti-Submarine Warfare Mission Package Testing (now analyzed under Anti-Submarine Warfare)
- Mine Countermeasure and Neutralization Testing (now analyzed under Mine Warfare)

2.3.2 Proposed Training and Testing Activities

Table 2.5-1 and Table 2.5-2 at the end of this chapter provides additional information on all training and testing activities, respectively, such as location, number of events per year, and ordnance used, if any. More information about each training and testing activity can be found in Appendix A (Training and Testing Activities Descriptions) and Appendix F (Training and Testing Activities Matrices). Except for the new activities described in Table 2.5-2, the activities proposed by the Navy in this SEIS/OEIS were described in the 2015 MITT Final EIS/OEIS in Table 2.4-2 and Table 2.4-3.

As described in the 2015 MITT Final EIS/OEIS, the Navy's research and acquisition community engages in a broad spectrum of testing activities in support of the Fleet. These activities include, but are not limited

to, basic and applied scientific research and technology development; testing, evaluation, and maintenance of systems (missiles, radar, and sonar) and platforms (surface ships, submarines, and aircraft); and acquisition of systems and platforms. The individual commands within the research and acquisition community included in this SEIS/OEIS are Naval Air Systems Command, Naval Sea Systems Command, and Office of Naval Research.

2.3.3 Standard Operating Procedures

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

In many cases, there are benefits to environmental and cultural resources (some of which have high socioeconomic value in the Study Area) resulting from standard operating procedures. Those standard operating procedures that are recognized as providing a benefit to the resources analyzed in this Draft SEIS/OEIS are included in Appendix A (Training and Testing Activities Descriptions), as applicable. The following standard operating procedure categories apply to the Proposed Action and are generally consistent with those included in the specified sections in Chapter 5 (Standard Operating Procedures, Mitigation, and Monitoring) of the 2015 MITT Final EIS/OEIS:

- Section 5.1.1 (Vessel Safety)
- Section 5.1.2 (Aircraft Safety)
- Section 5.1.3 (Laser Procedures)
- Section 5.1.4 (Weapons Firing Procedures), except Section 5.1.4.3 (Target Deployment Safety), which has been updated in Section 2.3.3.3 (Target Deployment and Retrieval Safety) of this Draft SEIS/OEIS
- Section 5.1.6 (Unmanned Aerial and Underwater Vehicle Procedures)
- Section 5.1.7 (Towed In-Water Device Procedures)
- Section 5.1.8 (Amphibious Assault and Amphibious Raid Procedures)
- Section 5.7.3 (Farallon de Medinilla Access Restrictions)

Standard operating procedures that apply to the Proposed Action and were not included in, or require a clarification from, the 2015 MITT Final EIS/OEIS, are discussed in the following sections.

2.3.3.1 High-Energy Laser Safety

The Navy operates laser systems approved for fielding by the Laser Safety Review Board or service equivalent. Only properly trained and authorized personnel operate high-energy lasers within designated areas. Designated areas where lasers are used are required to have a Laser Range Safety Certification Report that is updated every three years. Prior to commencing activities involving high-energy lasers, the operator performs a search of the intended impact location to ensure that the area is clear of unauthorized persons. These standard operating procedures benefit public health and safety by reducing the potential for interaction with high-energy lasers.

2.3.3.2 Sea Space and Airspace Deconfliction

The Navy schedules training and testing activities to minimize conflicts with the use of sea space and airspace within ranges and throughout the Study Area to ensure the safety of military personnel, the public, commercial aircraft, commercial and recreational vessels, and military assets. The Navy deconflicts its own use of sea space and airspace to allow for the necessary separation of multiple military units to prevent interference with equipment sensors and to avoid interaction with established commercial air traffic routes and commercial shipping lanes. The Navy also minimizes conflicts within areas used for commercial and recreational fishing, subsistence use, and tourism. For example, during applicable seasons around the islands of Guam and the CNMI, the Navy works collaboratively with local communities to deconflict sea space used for fishing to the maximum extent practicable, such as avoiding known fishery infrastructures (e.g., fish aggregating devices) and high-use fishing areas. To help civilian mariners better plan fishing and boating activities that involve accessing the waters around FDM, the Navy notifies them through various means, such as U.S. Coast Guard-issued Notices to Mariners and social media of the time periods when FDM will not be in use for several consecutive days. Announcing in advance when FDM will be in use (and when it will not be in use for an extended period of time) facilitates use of waters around FDM by the public during time periods that will not conflict with training and testing activities. These standard operating procedures benefit public health and safety (including persons participating in activities that have subsistence benefits and socioeconomic value, such as recreational or commercial fishing) by reducing potential interactions with training and testing activities.

2.3.3.3 Target Deployment and Retrieval Safety

The standard operating procedures for target deployment and retrieval safety are consistent with the procedures described in Section 5.1.4.3 (Target Deployment Safety) of the 2015 MITT Final EIS/OEIS, except for the description of which activities will implement them. Under the Proposed Action, the standard operating procedure for target deployment and retrieval safety applies to weapons firing activities that involve small boats deploying or retrieving targets. These activities are typically conducted in daylight hours in Beaufort sea state number 4 conditions or better to ensure safe operating conditions during target deployment and recovery. These standard operating procedures benefit public health and safety, and marine mammals and sea turtles by increasing the effectiveness of visual observations for mitigation, thereby reducing the potential for interactions with the weapons firing activities associated with the use of applicable deployed targets.

During activities that involve recoverable targets (e.g., aerial drones), the military recovers the target and any associated decelerators/parachutes to the maximum extent practicable consistent with personnel and equipment safety. Recovery of these items helps minimize the amount of materials that remain, which could potentially alert enemy forces to the presence of military assets during military missions and combat operations. This standard operating procedure benefits biological resources (e.g., marine mammals, sea turtles, fish, marine birds) by reducing the potential for physical disturbance and strike, entanglement, or ingestion of applicable targets and any associated decelerators/parachutes.

2.3.3.4 Pierside Testing Safety

The *U.S. Navy Dive Manual* (U.S. Department of the Navy, 2011) prescribes safe distances for divers from active sonar sources and in-water explosions. Safety distances for the use of electromagnetic energy are specified in Department of Defense Instruction 6055.11 (U.S. Department of Defense, 2009) and Military Standard 464A (U.S. Department of Defense, 2002). These distances are used as the standard safety buffers for in-water energy to protect military divers. If an unauthorized person is

detected within the exercise area, the activity will be temporarily halted until the area is again cleared and secured. These standard operating procedures benefit public health and safety (including persons participating in activities that have socioeconomic value, such as commercial or recreational diving) by reducing the potential for interaction with pierside testing activities.

2.3.3.5 Underwater Detonation Safety

Underwater detonation training takes place in designated areas that are located away from popular recreational dive sites, primarily for human safety. Recreational dive sites often include shallow-water coral reefs, artificial reefs, and wrecks. If an unauthorized person (e.g., a recreational diver) or vessel is detected within the exercise area, the activity will be temporarily halted until the area is cleared and secured. Notices to Mariners are issued when the events are scheduled to alert the public to stay clear of the area. These standard operating procedures benefit public health and safety, environmental resources (e.g., shallow-water coral reefs, artificial reefs, and the biological resources that inhabit, shelter in, or feed among them), and cultural resources by reducing the potential for interaction with underwater detonation activities.

2.3.3.6 Sonic Booms

As a general policy, aircraft do not intentionally generate sonic booms below 30,000 feet of altitude unless over water and more than 30 miles from inhabited land areas or islands. The military may authorize deviations from this policy for tactical missions, phases of formal training syllabus flights, or research, test, and operational suitability test flights. The standard operating procedures for sonic booms benefit public health and safety by reducing the potential for exposure to sonic booms.

2.3.3.7 Unmanned Surface Vehicle Safety

For activities involving unmanned surface vehicles, the Navy evaluates the need to publish a Notice to Airmen or Notice to Mariners based on the scale, location, and timing of the activity. When necessary, Notices to Airmen and Notices to Mariners are issued to alert the public to stay clear of the area. These standard operating procedures benefit public health and safety by reducing the potential for interaction with unmanned surface vehicles.

2.3.3.8 Sinking Exercise Safety

The Navy is required to conduct sinking exercises greater than 50 nautical miles from land and in waters at least 6,000 feet deep (40 CFR section 229.2). The Navy selects sinking exercise areas to avoid established commercial air traffic routes, commercial vessel shipping lanes, and areas used for recreational activities, and to allow for the necessary separation of Navy units to ensure safety for Navy personnel, the public, commercial aircraft and vessels, and Navy assets. These standard operating procedures benefit public health and safety (including persons participating in activities that have socioeconomic value, such as recreational or commercial fishing) by reducing the potential for interaction with sinking exercises.

2.3.4 Mitigation Measures

The military will implement mitigation measures to avoid or reduce potential impacts from the Proposed Action on environmental and cultural resources. Mitigation measures that the Navy will implement under the Proposed Action are organized into three categories: at-sea procedural mitigation measures, at-sea mitigation areas, and terrestrial mitigation measures. The Navy will implement procedural mitigation measures whenever and wherever applicable training or testing activities take place within the Study Area. Mitigation areas are geographic locations within the Study Area where the military will

implement additional mitigation during all or part of the year. Terrestrial mitigation measures will be implemented during activities conducted on FDM.

A list of the activity categories, stressors, and geographic locations that have mitigation measures is provided in Table 2.3-1. Chapter 5 (Mitigation) of this Draft SEIS/OEIS provides a full description of each mitigation measure that will be implemented under Alternative 1 and Alternative 2 of the Proposed Action. It also presents a discussion of how the Navy developed and assessed each measure and includes maps of the mitigation area locations. Mitigation developed for the Proposed Action is generally in line with the type and level of mitigation included in Chapter 5 (Standard Operating Procedures, Mitigation, and Monitoring) of the 2015 MITT Final EIS/OEIS (U.S. Department of the Navy, 2015). The Navy has updated Chapter 5 (Mitigation) of this Draft SEIS/OEIS in its entirety based on its ongoing analysis of the best available science and practicality of implementing potential mitigation measures. A full analysis of the mitigation areas that the Navy has considered for marine mammals and sea turtles in the Study Area is provided in Appendix I (Geographic Mitigation Assessment). Relevant mitigation details are also provided throughout Appendix A (Training and Testing Activities Descriptions). The Navy and NMFS Records of Decision, MMPA Regulations and Letter of Authorization, and ESA Biological Opinion will document all mitigation measures that the military will implement under the Proposed Action.

Table 2.3-1: Overview of Mitigation Categories

Mitigation Category	*Draft SEIS/OEIS Section*	*Applicable Activity Category, Stressor, Mitigation Area, or Location*
Procedural Mitigation	Section 5.3.2 (Acoustic Stressors)	Active Sonar Weapons Firing Noise
	Section 5.3.3 (Explosive Stressors)	Explosive Sonobuoys Explosive Torpedoes Explosive Medium-Caliber and Large-Caliber Projectiles Explosive Missiles and Rockets Explosive Bombs Sinking Exercises Explosive Mine Countermeasure and Neutralization Activities Explosive Mine Neutralization Activities Involving Navy Divers Maritime Security Operations – Anti-Swimmer Grenades
	Section 5.3.4 (Physical Disturbance and Strike Stressors)	Vessel Movement Towed In-Water Devices Small-, Medium-, and Large-Caliber Non-Explosive Practice Munitions Non-Explosive Missiles and Rockets Non-Explosive Bombs and Mine Shapes
Mitigation Areas	Section 5.4 (At-Sea Mitigation Areas to be Implemented)	Areas with seafloor resources (shallow-water coral reefs, live hard bottom, artificial reefs, and shipwrecks)
	Appendix I (Geographic Mitigation Assessment)	Marine mammal and/or sea turtle mitigation areas (Marpi Reef, Chalan Kanoa Reef, Agat Bay Nearshore)
Terrestrial Mitigation	Section 5.5 (Terrestrial Mitigation Measures to be Implemented)	Farallon de Medinilla

2.4 Action Alternatives Development

The identification, consideration, and analysis of alternatives are critical components of the National Environmental Policy Act process and contribute to the goal of objective decision-making. The Council on Environmental Quality (CEQ) developed regulations to implement National Environmental Policy Act and these regulations require the decision maker to consider the environmental effects of the proposed action and a range of alternatives (including the No Action Alternative) to the proposed action (40 Code of Federal Regulations section 1502.14). CEQ guidance further provides that an EIS must rigorously and objectively explore all reasonable alternatives for implementing the proposed action and, for alternatives eliminated from detailed study, briefly discuss the reasons for their having been eliminated. To be reasonable, an alternative, except for the no action alternative, must meet the stated purpose of and need for the proposed action.

The action alternatives, and in particular the mitigation measures that are incorporated in the action alternatives, were developed to meet both the Navy's purpose and need to train and test, and NMFS' independent purpose and need to evaluate the potential impacts of the Navy's activities, determine whether incidental take resulting from the Navy's activities will have a negligible impact on affected marine mammal species and stocks, and to prescribe measures to effect the least practicable adverse impact on species or stocks and their habitat, as well as monitoring and reporting requirements.

The Navy developed the alternatives considered in this SEIS/OEIS after careful assessment by subject matter experts, including military commands that utilize the ranges, military range management professionals, and Navy environmental managers and scientists.

2.4.1 Alternatives Eliminated from Further Consideration

This SEIS/OEIS serves as an update to the 2015 MITT Final EIS/OEIS; therefore, alternatives eliminated from consideration in the 2015 MITT Final EIS/OEIS were evaluated to determine if they should be reconsidered for this SEIS/OEIS. In response to the comments received during the public scoping period, the Navy also considered developing an alternative that included geographic mitigation. Alternatives eliminated from further consideration are described in the subsections below. 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

As described in Section 2.5.1.1 (Alternative Training and Testing Locations) in the 2015 MITT Final EIS/OEIS, the diverse and multi-dimensional environment provided within the Study Area allows the military to develop and maintain high levels of readiness and interoperability with foreign partners in the Western Pacific. There are no other proximate alternative locations that provide for this capability. As a result, this alternative is neither reasonable or practicable and does not meet the purpose of and need for the Proposed Action and has been eliminated from detailed study.

2.4.1.2 Reduced Training and Testing

As described in Section 2.5.1.2 (Reduced Training and Testing) in the 2015 MITT Final EIS/OEIS, a reduction or cessation of training and testing would prevent the armed forces from meeting its statutory requirements and adequately preparing forces for operations ranging from disaster relief to armed conflict. Therefore, this alternative does not meet the purpose of and need for the Proposed Action and has been eliminated from detailed study.

2.4.1.3 Alternatives Including Geographic Mitigation Measures within the Study Area

The Navy considered developing an alternative based on geographic mitigation which would impose time/area restrictions on an expanded list of specific areas of the MITT Study Area associated with the presence of specific species. However, such an alternative would present a patchwork of areas and time periods in which the Navy could conduct required training and testing, preventing the Navy from conducting the full scope of activities necessary to fulfill its Title 10 responsibilities and running counter to the Purpose and Need of the Proposed Action. Thus, such an alternative would not be reasonable. Further, regulations governing the National Environmental Policy Act allow agencies to, "Include appropriate mitigation measures not already included in the proposed action or alternatives." (40 CFR 1502.14(f)). Under both alternatives, the Navy would implement limited geographic mitigation areas that are biologically supported and are practicable to implement. Such areas are more fully described in Appendix I (Geographic Mitigation Assessment). Therefore, appropriate mitigation protective of impacted species would be implemented regardless of alternative selected..

2.4.1.4 Simulated Training and Testing Only

As described in Section 2.5.1.4 (Simulated Training and Testing) in the 2015 MITT Final EIS/OEIS, the Navy continues to use computer simulation for training and testing activities whenever possible; however, there are limits to the realism that current simulation technology can presently provide, and its use cannot substitute for live training or testing. Training and testing through simulated means cannot replicate the conditions in which Navy personnel and platforms are required to conduct military operations. While beneficial as a complementing medium to train and test personnel and platforms, simulation alone cannot accurately replicate both the conditions and the stresses that must be placed on personnel and platforms during training. These conditions and stresses are absolutely vital to adequately preparing Naval forces to conduct the broad spectrum of military operations required of them by operational Commanders. Therefore, simulation as an alternative that completely 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.

2.4.1.5 Training and Testing Without the Use of Active Sonar

As explained in Section 2.4.1.4 (Simulated Training and Testing Only), in order to detect and counter submerged mines and potentially 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. Training and testing with active sonar is needed to find and counter newer-generation submarines around the world, which are growing in number, as are torpedoes and underwater mines, which 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. The detection and countering of submarines is paramount to national security. Naval forces cannot counter this threat without the use of active sonar. Because the Navy is statutorily responsible to provide combat ready forces to operational Commanders, it must train in a manner in which it will be utilized in military operations. Accordingly, training and testing without active sonar is not a reasonable alternative and will not be carried forward.

2.4.2 Alternatives Carried Forward

The military's anticipated level of training and testing activity evolves over time based on numerous factors. Over the past several years, the Navy's ongoing sonar reporting program has gathered classified data regarding the number of sonar hours used to meet anti-submarine warfare requirements. These

data allow for a more accurate projection of the number of active sonar hours required to meet anti-submarine warfare training requirements into the reasonably foreseeable future. Alternatives carried forward for analysis in this SEIS/OEIS are discussed in the following subsections and presented in Table 2.5-1 and Table 2.5-2 at the end of this Chapter. As previously discussed, in addition to meeting the Navy's purpose and need to train and test, 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 to evaluate the potential impacts of the Navy's activities, determine whether incidental take resulting from the Navy's activities would have a negligible impact on affected marine mammal species and stocks, and prescribe measures to effect the least practicable adverse impact on species or stocks and their habitat, as well as monitoring and reporting requirements.

2.4.2.1 No Action Alternative

As mentioned above in Section 2.4 (Action Alternatives Development), the Council on Environmental Quality implementing regulations require inclusion of a No Action Alternative and analysis of all reasonable alternatives to provide a clear basis for choice among options by the decision maker and the public (40 CFR section 1502.14). Council on Environmental Quality guidance identifies two approaches in developing the No Action Alternative (46 *Federal Register* 18026). One approach for activities that have been ongoing for long periods of time is for the No Action Alternative to be thought of in terms of continuing the present course of action, or current management direction or intensity, such as the continuation of Navy training and testing at sea in the MITT Study Area at current levels, even if separate legal authorizations under the MMPA and ESA are required. Under this approach, which was used in the 2015 MITT Final EIS/OEIS, the analysis compares the effects of continuing current activity levels (i.e., the "status quo") with the effects of the Proposed Action. The second approach depicts a scenario where no authorizations or permits are issued, the Navy's training and testing activities do not take place, and the resulting environmental effects from taking no action are compared with the effects of the Proposed Action. The Navy applied the second approach in this SEIS/OEIS as it further supports NMFS' regulatory process by presenting the scenario where no authorization will be issued. Additionally, the second approach responds to comments submitted at various stages regarding the 2015 MITT Final EIS/OEIS and during the scoping process of this SEIS/OEIS.

Under the No Action Alternative analyzed in this SEIS/OEIS, the Navy would not conduct the proposed training and testing activities in the MITT Study Area. Other military activities not associated with this Proposed Action would continue to occur. For FDM, the lease agreement between the U.S. government and the Commonwealth of the Northern Mariana Islands would remain in place, and the island would continue to be maintained as a Navy range, although strike warfare would no longer continue on the island. Consequently, the No Action Alternative of not conducting the proposed at-sea training and testing activities in the Study Area is inherently unreasonable in that it does not meet the purpose and need (see Section 1.4, Purpose and Need for Proposed Training and Testing Activities) for the reasons stated below. However, the analysis associated with the No Action Alternative is carried forward in order to compare the degree of the potential environmental effects of the Proposed Action with the conditions that would occur if the Proposed Action did not occur (see Section 3.0.1, Overall Approach to Analysis).

From NMFS' perspective, pursuant to its obligation to grant or deny permit applications under the MMPA, the No Action Alternative involves NMFS denying Navy's application for an incidental take authorization 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 at-sea proposed training and testing activities in the MITT Study Area.

Cessation of proposed Navy at-sea training and testing activities would mean that the Navy would not meet its statutory requirements and would be unable to properly defend itself and the United States from enemy forces, unable to successfully detect enemy submarines, and unable to effectively use its weapons systems or defensive countermeasures due to a lack of training of forces and testing of systems that replicate the conditions to which Naval forces must operate while executing the range of military operations required to further national security objectives. Navy personnel would essentially not obtain the unique skills or be prepared to safely and effectively use sensors, weapons, and technologies in realistic scenarios required to accomplish the overall mission. For example, sonar proficiency, which is a complex and perishable skill, requires regular, hands-on training in realistic and diverse conditions. In order to detect and counter potentially hostile submarines, the Navy uses both passive and active sonar. Inability to train with active sonar would result in no or greatly diminished anti-submarine warfare capability.

Additionally, without proper training, individual Sailors and Marines serving onboard Navy vessels would not be taught how to properly operate complex equipment in inherently dynamic and dangerous environments. Even with high levels of training, injuries and sometimes even death occur. Therefore, without proper training, it is likely that there would be an increase in the number of mishaps, potentially resulting in the death or serious injury of Sailors and Marines. Failing to allow our Sailors and Marines to achieve and maintain the skills necessary to defend the United States and its interests would result in an unacceptable increase in the danger they willingly face.

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 technology provides. While simulators are used for the basic training of sonar technicians, they are of limited utility 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. Sole reliance on simulation would deny service members the ability to develop battle-ready required proficiency in the employment of active sonar during military operations (Section 2.4.1.4, Simulated Training and Testing Only).

2.4.2.2 Alternative 1

Alternative 1 reflects a representative year of training and testing to account for the typical fluctuation 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 Navy proposes to conduct training activities into the reasonably foreseeable future, as necessary to meet current and future readiness requirements. These include training 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 leadership. Specifically, training activities are based on changing world events, advances in technology, and U.S. 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 Fleets after August 2020. The numbers and locations of all proposed training activities are provided in Table 2.5-1.

2.4.2.2.2 Testing

Alternative 1 reflects a level of testing activities to be conducted into the reasonably foreseeable future, with adjustments from the 2015 MITT Final EIS/OEIS that account for changes in the types and tempo (increases or decreases) of testing activities to meet current and future military readiness requirements. The majority of testing activities that would be conducted under this alternative are the same as or similar as those conducted currently or in the past. This alternative includes the testing of new systems using new technologies and takes into account inherent uncertainties in this type of testing. The numbers and locations of all proposed testing activities are listed in Table 2.5-2.

2.4.2.2.3 Mitigation Measures

The Navy's entire suite of mitigation measures was applied to Alternative 1 to ensure that: (1) the benefit of mitigation measures to environmental and cultural resources was considered during the applicable environmental analyses, and (2) Navy Senior Leadership approved each mitigation measure included in this Draft SEIS/OEIS under Alternative 1. Navy Senior Leadership reviewed relevant supporting information to make a fully informed decision, including the benefit of mitigation measures to environmental and cultural resources, and the impacts that implementing mitigation will have on training and testing activities under Alternative 1. As discussed in Chapter 5 (Mitigation) and Appendix I (Geographic Mitigation Assessment), the final suite of mitigation measures that will be included in the Final SEIS/OEIS will represent the maximum level of mitigation that is practicable for the Navy to implement when balanced against impacts to safety, sustainability, and the ability to continue meeting its mission requirements.

2.4.2.3 Alternative 2

2.4.2.3.1 Training

Alternative 2 includes the same types of training activities as Alternative 1 but also considers additional Fleet exercises and associated unit-level activities should unanticipated emergent world events require increased readiness levels. For example, Alternative 2 contemplates Joint Multi-Strike Group Exercises (i.e., Valiant Shield) occurring annually as compared to every other year under Alternative 1 (see Table 2.5-1). Additionally, Alternative 2 contemplates three (vice two) Small Joint Coordinated Anti-Submarine Warfare exercises (Multi-Sail/Guam Exercises) per year with a 50 percent increase in associated unit-level events (e.g., Missile Exercise [Surface-to-Air]). The numbers and locations of all proposed training activities are provided in Section 2.3 (Proposed Activities) and listed in Table 2.5-1.

Alternative 2 reflects the maximum number of training activities that could occur within a given year, and assumes that the maximum number of Fleet exercises would occur annually. This allows for the greatest flexibility for the Navy to maintain readiness when considering potential changes in the national security environment, fluctuations in training and deployment schedules, and anticipated in-theater demands.

2.4.2.3.2 Testing

Alternative 2 entails a level of testing activities to be conducted into the reasonably foreseeable future. Under Alternative 2, types and tempo of testing activities would increase compared to Alternative 1 (see Table 2.5-2). This alternative includes the contingency for augmenting some weapon systems tests in response to potential increased world conflicts and changing Navy leadership priorities as the result of a

direct challenge from a naval opponent that possesses near peer capabilities. The numbers and locations of all proposed testing activities are listed in Table 2.5-2.

2.4.2.3.3 Mitigation Measures

The Navy's entire suite of mitigation measures was applied to Alternative 2 to ensure that: (1) the benefit of mitigation measures to environmental and cultural resources was considered during the applicable environmental analyses, and (2) Navy Senior Leadership approved each mitigation measure included in this Draft SEIS/OEIS under Alternative 2. Navy Senior Leadership reviewed relevant supporting information to make a fully informed decision, including the benefit of mitigation measures to environmental and cultural resources, and the impacts that implementing mitigation will have on training and testing activities under Alternative 2. As discussed in Chapter 5 (Mitigation), the final suite of mitigation measures that will be included in the Final SEIS/OEIS will represent the maximum level of mitigation that is practical for the Navy to implement when balanced against impacts to safety, sustainability, and the ability to continue meeting its mission requirements.

2.4.3 Comparison of Proposed Sonar and Explosive Use in the Action Alternatives

2.4.3.1 Sonar Use

As part of the 2015 MITT Final EIS/OEIS and 2015 MMPA Letter of Authorization, NMFS authorized the Navy to use non-impulsive sound sources including sonars and other transducers. Sonars and other transducers were grouped into classes that share one or more attributes, such as frequency range or purpose of use. The classes were further sorted into sound source bins. These bins are defined and quantified in Section 3.0.5.1 (Acoustic Stressors).

In the 2015 analysis, the Navy identified the type of sonar source that resulted in the highest number of exposures to marine mammals, which was hull-mounted mid-frequency active sonar in bin MF1. The Navy was authorized 1,872 hours of MF1 annually in the 2015 MITT Final EIS/OEIS and by NMFS under the MMPA permit and ESA Biological Opinion.

In this SEIS/OEIS, the Navy is evaluating the potential impacts associated with 1,729 hours of MF1 annually under Alternative 1, a reduction of approximately 8 percent from the currently authorized total (Figure 2.4-1). Under Alternative 2, the Navy is evaluating the potential impacts associated with 1,818 hours of MF1 annually, which is a decrease of approximately 3 percent over currently permitted levels.

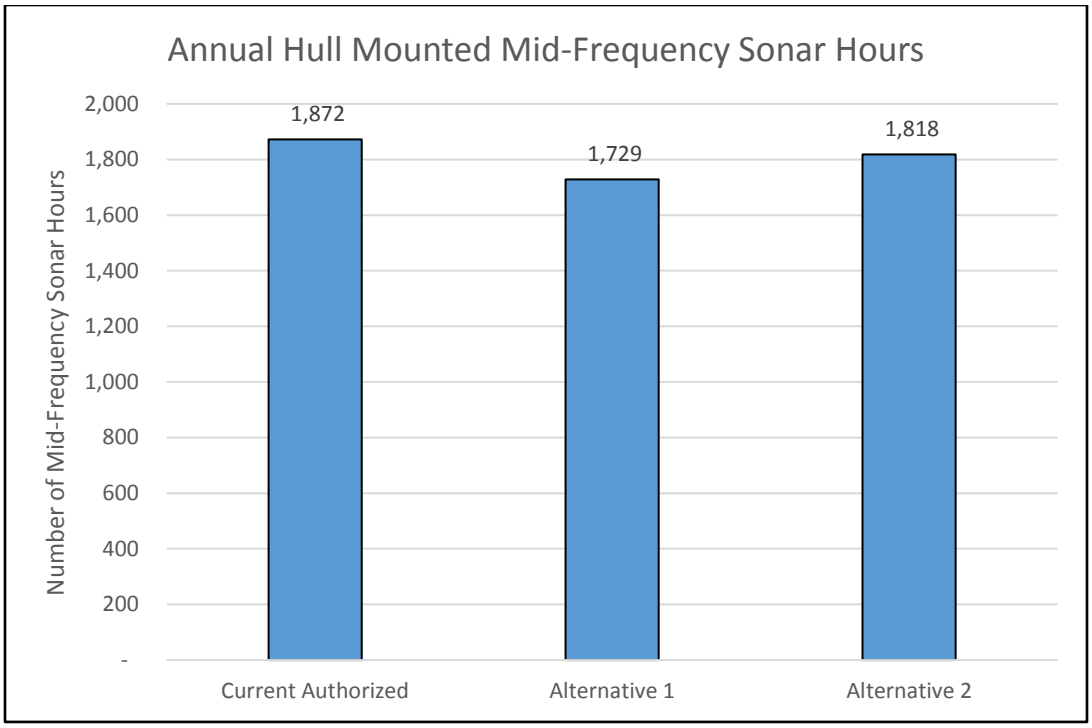

Figure 2.4-1: Proposed Annual Total Hull-Mounted Mid-Frequency Sonar Hour Use Compared to the Number Authorized in the 2015–2020 Marine Mammal Protection Act Permit

2.4.3.2 Explosives Use

As part of the 2015 MITT Final EIS/OEIS and 2015 MMPA Letter of Authorization, NMFS authorized the Navy to use impulsive sources (i.e., explosives). Similar to non-impulsive sources, the Navy sorted explosive sources into bins based on the net explosive weight of the explosive. After analyzing the level of explosive activities conducted during Phase II, the Navy identified that some explosive sources were incorrectly classed into bins with greater net explosive weights than actually is present in the munition. For example, 20 millimeter rounds were considered in bin E1 (defined as 0.1–0.25 pounds net explosive weight) during Phase II, but have less than 0.1 pound of net explosive weight (defined as bin E0) and are, therefore, analyzed qualitatively instead of quantitatively for Phase III. Additionally, in Phase II, munitions within the same category were all analyzed with the highest net explosive weight for all munitions in that category. For example, most bombs were analyzed as bin E12 (to account for the largest potential for environmental impact), whereas many fall within bins E9 and E10. For Phase III, munitions were divided into more appropriate bins based on current and anticipated weapon inventory. Bins used to sort explosive munitions are further defined and quantified in Section 3.0.4.2 (Explosive Stressors).

See Figure 2.4-2 and Figure 2.4-3 for a comparison between explosives authorized for training and testing in the 2015 MITT Final EIS/OEIS and proposed in this SEIS/OEIS. The number of impulsive sources in binsE2, E5, E8, E9, and E10 would increase in this SEIS/OEIS compared with the totals analyzed in the 2015 MITT Final EIS/OEIS. The number of impulsive sources that would decrease under this SEIS/OEIS are in bins E1, E3, E4, E6, E11, and E12.

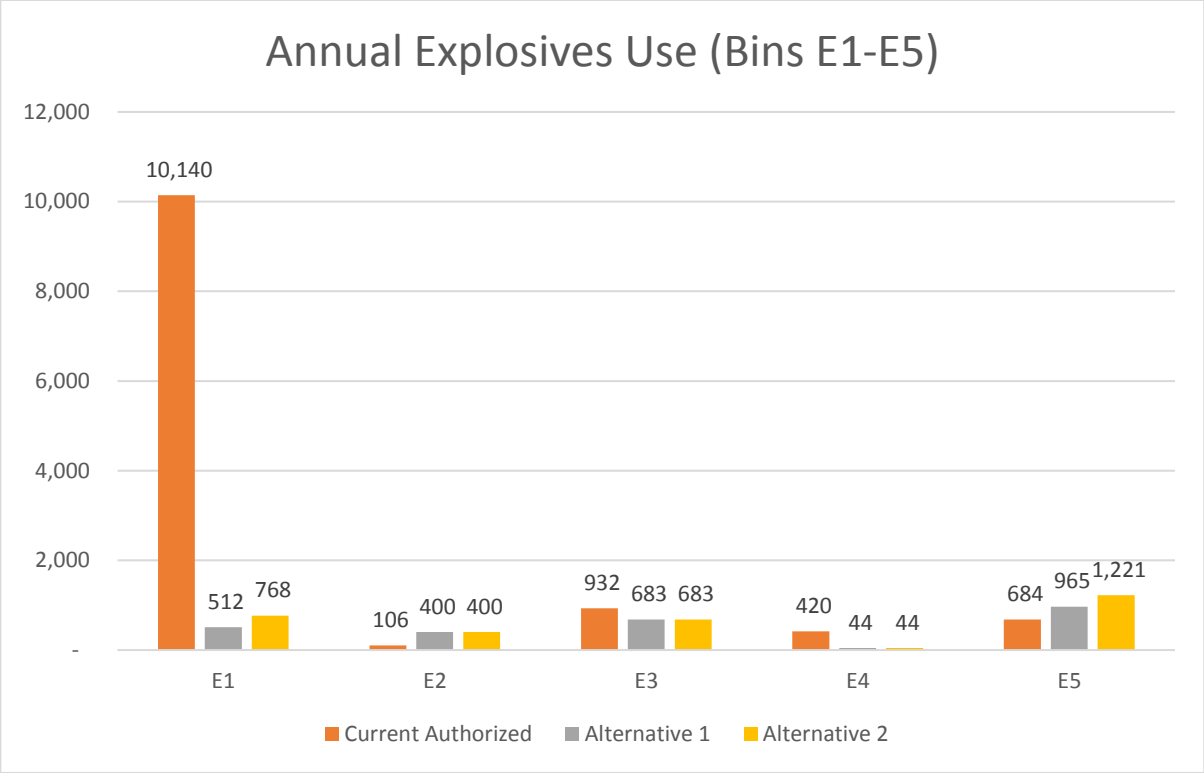

Figure 2.4-2: Proposed Annual Explosives Use (Bins E1–E5) Compared to the 2015–2020 Marine Mammal Protection Act Permit

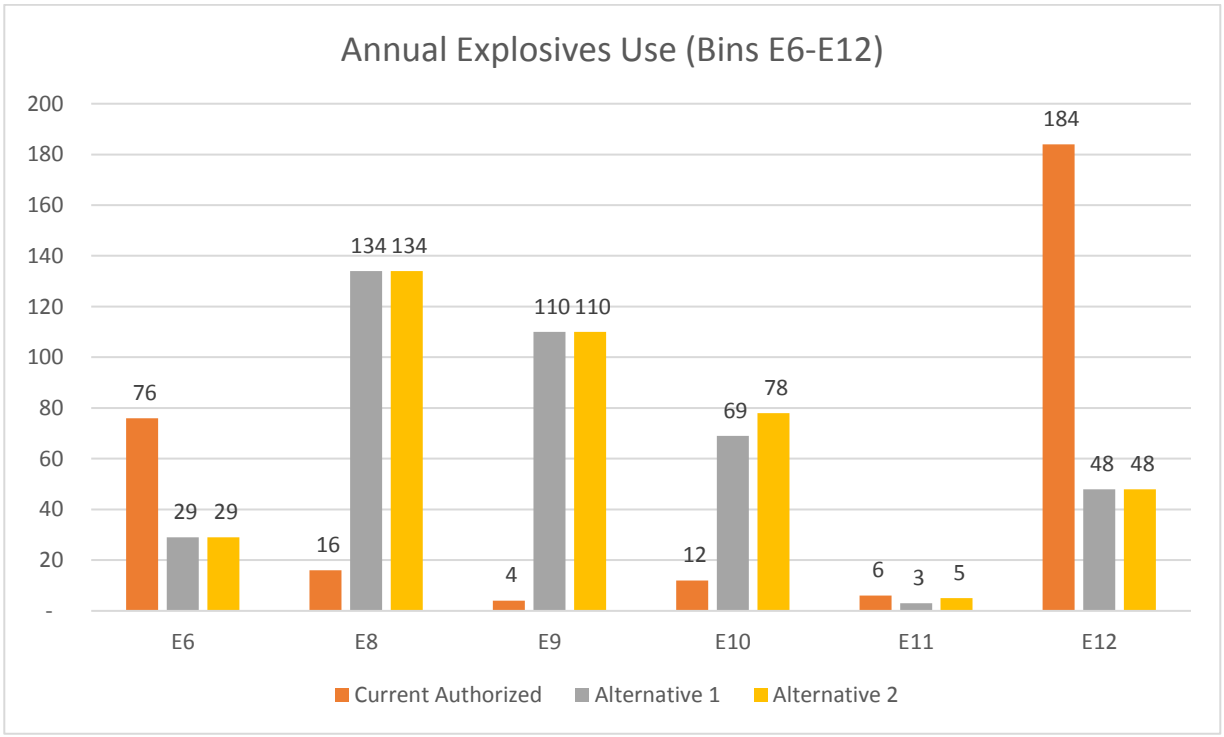

Figure 2.4-3: Proposed Annual Explosives Use (Bins E6–E12) Compared to the 2015–2020 Marine Mammal Protection Act Permit

2.5 Comparison of Alternatives

The following tables compare the proposed SEIS/OEIS action alternatives (Alternative 1 and Alternative 2) with the ongoing training and testing activities (Table 2.5-1, Table 2.5-2). Each table describes the activities in terms of the activity name and where in the Study Area the Navy proposes to conduct it (first two columns). The next two columns show the annual occurrence and ordnance or other expended items (if any) involved in the activity as is currently ongoing (under the heading "2015 MITT EIS/OEIS Ongoing Activities"). The final two pairs of columns present the same information (annual occurrence and ordnance/items) as the activities are analyzed in this SEIS/OEIS for Alternative 1 and Alternative 2, respectively. Table 2.5-1 is the table of training activities, Table 2.5-2 is the table of Naval Sea Systems Command testing activities and Naval Air Systems Command testing activities.

Table 2.5-1: Current and Proposed Training Activities

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
		Legend:	= Decrease in number of events from 2015 Final MITT EIS/OEIS			= Increase in number of events from 2015 Final MITT EIS/OEIS	
Major Training Events							
Joint Expeditionary Exercise	Study Area; MIRC	1	Note 1	1	Note 1	1	Note 1
Joint Multi-Strike Group Exercise	Study Area; MIRC	1	Note 1	1 every other year	Note 1	1	Note 1
Marine Air Ground Task Force Exercise (Amphibious) – Battalion	Study Area to nearshore; MIRC; Tinian; Guam; Rota; Saipan; FDM	4	Note 1	4	Note 1	4	Note 1
Air Warfare (AW) (previously named Anti-Air Warfare in 2015 MITT Final EIS/OEIS)							
Air Combat Maneuver	Study Area > 12 NM from land: SUA	4,800	None	3,800	None	3,800	None
Air Defense Exercise (ADEX)	Study Area > 12 NM from land: SUA	100	None	100	None	100	None
Air Intercept Control (AIC)	Study Area > 12 NM from land: SUA	4,800	None	5,300	None	5,300	None
Gunnery Exercise (GUNEX) (Air-to-Air [A-A]) – Medium-caliber	Study Area SUA > 12 NM from land	36	9,000 rounds	36	9,000 rounds	36	9,000 rounds

Table 2.5-1: Current and Proposed Training Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
Missile Exercise (Missilex) (A-A)	Study Area SUA > 12 NM from land	18	36 explosive missiles	18	36 explosive missiles	18	36 explosive missiles
GUNEX (Surface-to-Air [S-A]) – Large-caliber	Study Area SUA > 12 NM from land	5	40 rounds	6	60 rounds	9	90 rounds
GUNEX [S-A] – Medium-caliber	Study Area SUA > 12 NM from land	12	24,000 rounds	13	26,000 rounds	19	38,000 rounds
MISSILEX [S-A]	Study Area SUA > 12 NM from land	15	15 explosive missiles	18	18 explosive missiles	27	27 explosive missiles
Amphibious Warfare (AMW)							
Naval Surface Fire Support Exercise (FIREX) – Land-based target (Land)	FDM	10	1,800 NEPM rounds 1,000 explosive rounds	10	2,800 explosive rounds	15	4,200 explosive rounds
Amphibious Rehearsal, No Landing	Study Area and Nearshore	12	None	12	None	12	None
Amphibious Assault	MIRC; Tinian; Guam	6	Blanks; Simunitions	6	Blanks; Simunitions	6	Blanks; Simunitions
Amphibious Raid	MIRC; Tinian; Guam; Rota	6	Blanks; Simunitions	6	Blanks; Simunitions	6	Blanks; Simunitions
Noncombatant Evacuation Operation	MIRC; Guam; Tinian; Rota	5	Blanks; Simunitions	5	Blanks; Simunitions	5	Blanks; Simunitions

Table 2.5-1: Current and Proposed Training Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
Humanitarian Assistance/Disaster Relief Operations	MIRC; Guam; Tinian; Rota	5	Blanks; Simunitions	5	Blanks; Simunitions	5	Blanks; Simunitions
Unmanned Aerial Vehicle – Intelligence, Surveillance, and Reconnaissance	MIRC; SUA	100	None	100	None	100	None
Special Purpose Marine Air Ground Task Force Exercise	Study Area to nearshore; MIRC; Tinian; Guam; Rota; Saipan	2	Note 1	2	Note 1	2	Note 1
Anti-Submarine Warfare (ASW)							
Tracking Exercise (TRACKEX) –Helicopter (Helo)	Study Area > 3 NM from land; Transit Corridor	62	None/ REXTORP	10	None	10	None/ REXTORP
Torpedo Exercise (TORPEX)– Helo	Study Area > 3 NM from land	4	4 EXTORP	4	4 EXTORP	6	6 EXTORP
TRACKEX – Maritime Patrol (Extended Echo Ranging Sonobuoys)	Study Area > 3 NM from land	11	None	0	0	0	0
TRACKEX – Maritime Patrol Aircraft	Study Area > 3 NM from land	34	None/ REXTORP	36	None	36	None/ REXTORP
TORPEX – Maritime Patrol Aircraft	Study Area > 3 NM from land	4	4 EXTORP	4	4 EXTORP	6	6 EXTORP

Table 2.5-1: Current and Proposed Training Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
TRACKEX – Surface	Study Area > 3 NM from land	CG/DDG-92 FFG-30 LCS-10	None/ REXTORP	91	None/ REXTORP	91	None/ REXTORP
TORPEX – Surface	Study Area > 3 NM from land	3	3 EXTORP	4	4 EXTORP	6	6 EXTORP
TRACKEX – Submarine (Sub)	Study Area > 3 NM from land; Transit Corridor	12	None	4	None	4	None
TORPEX – Sub	Study Area > 3 NM from land	10	40 MK-48 EXTORP	6	24 MK-48 EXTORP	9	36 MK-48 EXTORP
Small Joint Coordinated ASW exercise (e.g., Multi-Sail/GUAMEX/SWATT)) (see Note 2)	Study Area > 3 NM from land	Not called out in previous document, but components were covered under several unit-level exercises	None	2	None	3	None

Table 2.5-1: Current and Proposed Training Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
Electronic Warfare (EW)							
Electronic Warfare Operations (EW Ops)	Study Area	480	None	522	None	522	None
Counter Targeting Flare Exercise (FLAREX) – Aircraft	Study Area > 12 NM from land	3,200	25,600 rounds	2,200	17,600 rounds	2,200	17,600 rounds
Counter Targeting Chaff Exercise (CHAFFEX) – Ship	Study Area > 12 NM from land	40	240 rounds	41	244 rounds	60	360 rounds
CHAFFEX –Aircraft	Study Area > 12 NM from land	3,200	25,600 rounds	2,200	17,600 rounds	2,200	17,600 rounds
Expeditionary Warfare							
Personnel Insertion/ Extraction	MIRC; Guam; Tinian; Rota	240	None	365	None	365	None
Parachute Insertion	MIRC parachute drop zones; Guam; Tinian; Rota	20	None	64	None	64	None
Mine Warfare (MIW)							
Civilian Port Defense	Mariana littorals; MIRC; Inner and Outer Apra Harbor	1	None	1	None	1	None
Mine Laying	MIRC Warning Areas	4	480 mine shapes	4	480 mine shapes	4	480 mine shapes

Table 2.5-1: Current and Proposed Training Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
Mine Neutralization – Explosive Ordnance Disposal (EOD)	Agat Bay underwater detonation site Piti and Outer Apra Harbor underwater detonation sites	20	20 explosive charges	20	20 explosive charges	20	20 explosive charges
Limpet Mine Neutralization System	Mariana littorals; Inner and Outer Apra Harbor	40	40 charges	60	60 charges	60	60 charges
Airborne Mine Countermeasure – Towed Mine Detection	Study Area; nearshore	4	None	4	None	4	None
Mine Countermeasure Exercise – Towed Sonar (AQS-20, LCS)	Study Area	4	None	4	None	4	None
Mine Countermeasure Exercise – Surface Ship Sonar (SQQ-32, MCM)	Study Area	4	None	4	None	4	None
Mine Neutralization – Remotely Operated Vehicle Sonar (ASQ-235 [AQS-20], SLQ-48)	Study Area	4	4 explosive neutralizers	4	4 explosive neutralizers	4	4 explosive neutralizers

Table 2.5-1: Current and Proposed Training Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
Mine Countermeasure – Towed Mine Neutralization	Study Area	4	None	4	None	4	None
Underwater Demolition Qualification/ Certification	Agat Bay underwater detonation site Piti and Outer Apra Harbor underwater detonation sites	30	30 explosive charges	45	45 explosive charges	45	45 explosive charges
Submarine Mine Exercise	Mariana Littorals, Inner/Outer Apra Harbor	16	None	1	None	1	None
Surface Ship Object Detection	Study Area	Not previously analyzed	Not previously analyzed	6	None	6	None
Strike Warfare (STW)							
Bombing Exercise (BOMBEX) (Air-to-Ground [A-G])	FDM	2,300	2,670 NEPM 6,242 explosive rounds	2,300	2,670 NEPM 6,242 explosive rounds	2,300	2,670 NEPM 6,242 explosive rounds

Table 2.5-1: Current and Proposed Training Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
GUNEX (A-G)	FDM	96	24,000 small-caliber rounds	96	24,000 small-caliber rounds	96	24,000 small-caliber rounds
			94,150 medium-caliber rounds		94,650 medium-caliber rounds		94,650 medium-caliber rounds
			17,350 explosive med.-caliber rounds		17,500 explosive med-caliber rounds		17,500 explosive med -caliber rounds
			200 explosive large-caliber rounds		200 explosive large-caliber rounds		200 explosive large-caliber rounds
MISSILEX	FDM	85	2,000 explosive rockets	115	2,000 explosive rockets	115	2,000 explosive rockets
			85 explosive missiles		115 explosive missiles		115 explosive missiles
Surface Warfare (SUW)							
GUNEX (Air-to-Surface [A-S]) – Small-caliber	Study Area SUA > 12 NM from land	242	48,040 rounds	321	128,400 rounds	321	128,400 rounds

Table 2.5-1: Current and Proposed Training Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
GUNEX (A-S) – Medium-caliber	Study Area SUA > 12 NM from land; Transit Corridor	295	29,500 non-explosive rounds 7,150 explosive rounds	120	3,600 explosive rounds	120	3,600 explosive rounds
MISSILEX (A-S) – Rocket)	Study Area SUA > 12 NM from land	3	114 rockets (114 explosive)	111	2,109	111	2,109
MISSILEX (A-S)	Study Area SUA > 12 NM from land	20	20 explosive missiles	10	18 explosive missiles	10	18 explosive missiles
Laser Targeting (at sea)	Study Area SUA > 12 NM from land	600	None	600	None	600	None
BOMBEX (A-S)	Study Area > 50 NM from land	37	368 NEPM 184 explosive rounds	37	368 NEPM 184 explosive rounds	37	368 NEPM 184 explosive rounds
Torpedo Exercise (Submarine to Surface)	Study Area > 3 NM from land	5	10 EXTORP	0	None	0	None
MISSILEX (Surface-to-Surface [S-S])	Study Area > 50 NM from land	12	12 explosive missiles	19	19 explosive missiles	28	28 explosive missiles

Table 2.5-1: Current and Proposed Training Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
GUNEX (S-S) Ship – Large-caliber	Study Area SUA > 12 NM from land; Transit Corridor	140	5,198 non-explosive rounds	170	16,320 non-explosive rounds	255	24,480 non-explosive rounds
			500 explosive rounds		510 explosive rounds		765 explosive rounds
GUNEX (S-S) Ship – Small- and Medium-caliber	Study Area SUA > 12 NM from land; Transit Corridor	100	21,000 non-explosive rounds	162	172,010 non-explosive rounds	234	250,800 non-explosive rounds
			900 explosive rounds		480 explosive rounds		720 explosive rounds

Table 2.5-1: Current and Proposed Training Activities (continued)

Range Activity		Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
			No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
Sinking Exercise (SINKEX) Representative ordnance. Actual ordnance used will vary.		Study Area > 50 NM from land and > 1,000 fathoms depth	2	28 explosive Bombs 42 explosive Missiles 800 explosive Large-caliber rounds 2 MK-48 explosive 4 explosive Demolitions	1	28 explosive Bombs 42 explosive Missiles 800 explosive Large-caliber rounds 2 MK-48 explosive 4 explosive Demolitions	1	28 explosive Bombs 42 explosive Missiles 800 explosive Large-caliber rounds 2 MK-48 explosive 4 explosive Demolitions
GUNEX [S-S] Boat – Small and Medium-caliber	Medium-caliber	Study Area SUA > 12 NM from land; Transit Corridor	10	2,000 non-explosive rounds	20	4,000 non-explosive rounds	20	4,000 non-explosive rounds
				100 explosive rounds		200 explosive rounds		200 explosive rounds
	Small-caliber	Study Area > 3 NM from land; Transit Corridor	40	36,000 rounds	43	36,600 rounds	43	36,600 rounds

Table 2.5-1: Current and Proposed Training Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
Maritime Security Operations (MSO)	Study Area; MIRC	40	200 G911 anti-swimmer grenades	40	200 G911 anti-swimmer grenades	40	200 G911 anti-swimmer grenades
Other							
Direct Action (Tactical Air Control Party)	FDM	18	18,000 small-caliber rounds	18	30,000 small-caliber rounds	18	30,000 small caliber rounds
			600 explosives (grenade/ mortar)		1,000 med-caliber explosive		1,000 med-caliber explosive
					1,000 explosive (grenade mortar)		1,000 explosive (grenade mortar)
Intelligence, Surveillance, Reconnaissance	MIRC; Guam; Tinian; Rota; Saipan	16	None	44	None	44	None
Precision Anchoring	Apra Harbor; Mariana Islands anchorages	18	None	18	None	18	None
Search and Rescue At Sea	Study Area	40	None	45	None	45	None

Table 2.5-1: Current and Proposed Training Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
Small Boat Attack	Study Area > 3 NM from land	6	2,100 small-caliber rounds	18	2,100 small-caliber rounds	27	3,150 small-caliber rounds
	Study Area	12	4,000 blank rounds		4,000 blank rounds		6,000 blank rounds
Submarine Navigation	Apra Harbor and Mariana littorals	8	None	8	None	8	None
Submarine Sonar Maintenance	Study Area > 3 NM from land; Inner Apra Harbor; Transit Corridor	48	None	86	None	86	None
Surface Ship Sonar Maintenance	Study Area > 3 NM from land; Inner Apra Harbor; Transit Corridor	42	None	44	None	44	None
Underwater Survey	Mariana littorals	16	None	32	None	32	None
Unmanned Aerial Training and Certification	Study Area; MIRC airfields;[1] MIRC SUA	1,000	None	951	None	951	None
Unmanned Underwater Vehicle[2] Training	MIRC, Warning Areas	N/A	N/A	64	None	64	None

Table 2.5-1: Current and Proposed Training Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)

Legend: = Decrease in number of events from 2015 Final MITT EIS/OEIS

= Increase in number of events from 2015 Final MITT EIS/OEIS

Note 1: All ordnance use during the conduct of these exercises is analyzed within the Primary Mission events listed in this table.

Note 2: Small Joint Coordinated ASW exercise was not called out in previous document, but the components of the exercise were covered under several unit level activities.

Notes: MITT = Mariana Islands Training and Testing, ROD = Record of Decision, EIS = Environmental Impact Statement, OEIS = Overseas Environmental Impact Statement, MIRC = Mariana Islands Range Complex, FDM = Farallon de Medinilla, N/A = Not Applicable, No. = Number, SUA = Special Use Airspace, NM = Nautical Mile(s), NEPM = Non-Explosive Practice Munitions, EXTORP = Exercise Torpedo, REXTORP = Recoverable Exercise Torpedo

Table 2.5-2: Current and Proposed Testing Activities

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
Legend:			**= Decrease in number of events from 2015 Final MITT EIS/OEIS**			**= Increase in number of events from 2015 Final MITT EIS/OEIS**	
NAVAL AIR SYSTEMS COMMAND PROPOSED TESTING ACTIVITIES							
Surface Warfare (SUW)							
Air-to-Surface Missile Test	Study Area > 50 NM from land	8	8 Harpoon Missiles (up to 4 explosive)	4	4 Harpoon Missiles (up to 4 explosive)	4	4 Harpoon Missiles (up to 4 explosive)
Anti-Submarine Warfare (ASW)							
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (Sonobuoys)	Study Area > 3 NM from land	188	240 IEER 553 SUS	26	392 SUS	26	392 SUS
Anti-Submarine Warfare Torpedo Test	Study Area > 3 NM from land	40	40 EXTORP	20	20 REXTORPs	20	20 REXTORPs
Electronic Warfare (EW)							
Intelligence, Surveillance, Reconnaissance /Electronic Warfare Testing (previously named Broad Area Maritime Surveillance Testing – MQ-4C)	Study Area > 3 NM from land	10	None	20	None	20	None

Table 2.5-2: Current and Proposed Testing Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
NAVAL SEA SYSTEMS COMMAND TESTING ACTIVITIES							
Anti-Submarine Warfare							
Anti-Submarine Warfare Mission Package Testing	Mariana Island Range Complex	33	None	100	8 torpedoes (non-explosive)	100	8 torpedoes (non-explosive)
At-Sea Sonar Testing	Study Area	20	None	3	None	7	None
Countermeasure Testing	Study Area	2	56 torpedoes	0	None	0	None
Torpedo (Explosive) Testing	Mariana Island Range Complex	2*	20 torpedoes (up to 8 non-explosive*)	2	4 explosive (8 non-explosive)	3	6 explosive (12 non-explosive)
Torpedo (Non-explosive) Testing	Mariana Island Range Complex			6	28 non-explosive	7	37 non-explosive
Mine Warfare							
Mine Countermeasure and Neutralization Testing (Previously covered under Mine Countermeasure Mission Package Testing)	Mariana Island Range Complex	32	48 neutralizers (up to 24 explosive)	3	40 neutralizers	3	40 neutralizers
Electronic Warfare (EW)							
Radar and Other System Testing	Study Area	Not Previously Analyzed	Not Previously Analyzed	54	None	60	None

Table 2.5-2: Current and Proposed Testing Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
Shipboard Protection Systems and Swimmer Defense Testing							
Pierside Integrated Swimmer Defense	Inner Apra Harbor	11	None	0	None	0	None
Surface Warfare							
Gun Testing – Large Caliber	Mariana Island Range Complex	4	5,600 rounds (Up to 3,290 in-air explosives)	0	None	0	None
Gun Testing – Medium Caliber	Mariana Island Range Complex	4	4,080 rounds (up to 2,040 explosives)	0	None	0	None
Gun Testing – Small Caliber	Study Area	4	2,000 rounds	0	None	0	None
Missile and Rocket Testing	Mariana Island Range Complex	4	32 missiles/rockets (up to 16 explosives)	0	None	0	None
Kinetic Energy Weapon Testing	Study Area	50	2,000 projectiles	4	80 projectiles 160 non-explosive projectiles	9	180 projectiles 360 non-explosive projectiles
		1 time-only event	5,000 projectiles				

Table 2.5-2: Current and Proposed Testing Activities (continued)

Range Activity	Location	2015 MITT FINAL EIS/OEIS Ongoing Activities (MITT ROD Alternative)		Supplemental EIS/OEIS (Alternative 1)		Supplemental EIS/OEIS (Alternative 2)	
		No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)	No. of events (per year)	Ordnance (Number per year)
Vessel Evaluation (previously named Life Cycle Activities)							
Ship Signature Testing	MITT Study Area	17	None	0	None	0	None
Undersea Warfare Testing (previously covered under torpedo testing)	Mariana Island Range Complex	2*	20 torpedoes (up to 8 explosive)*	1	8 non-explosive torpedoes	1	8 non-explosive torpedoes
Other Testing Activities							
Simulant Testing	Study Area	Not Previously Analyzed	Not Previously Analyzed	100	None	100	None
OFFICE OF NAVAL RESEARCH							
Acoustic and Oceanographic Research (previously named North Pacific Acoustic Lab Philippine Sea 2018–19 Experiment, Deep Water)	Study Area	1	None	1	None	1	None

Legend: = Decrease in number of events from 2015 Final MITT EIS/OEIS

= Increase in number of events from 2015 Final MITT EIS/OEIS

*Torpedo (Explosive) Testing, Torpedo (Non-explosive) Testing, and Undersea Warfare Testing were previously covered under torpedo testing in the 2015 MITT EIS/OEIS.

Notes: MITT = Mariana Islands Training and Testing, ROD = Record of Decision, EIS = Environmental Impact Statement, OEIS = Overseas Environmental Impact Statement, MIRC = Mariana Islands Range Complex, NM = Nautical Mile(s), No. = Number, EXTORP = Exercise Torpedo (non-explosive), REXTORP = Recoverable Exercise Torpedo (non-explosive), IEER = Improved Extended Echo Ranging, SUS = Signal Underwater Sound

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