Appendix A Military Readiness Activities Descriptions

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

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APPENDIX A MILITARY READINESS ACTIVITIES DESCRIPTIONS

A.1 Why the Action Proponents Train

The Action Proponents are statutorily mandated to protect U.S. national security by being ready to effectively prosecute war and defend the nation by conducting operations at sea. Naval operations at sea are essential to protecting U.S. national interests, considering that 70 percent of the earth is covered in water, 80 percent of the planet's population lives within proximity to coastal areas, and 90 percent of global commerce is conducted by sea.

Through its continuous presence on the world's oceans, the Navy can respond to a wide range of situations because, on any given day, over one-third of its ships, submarines, and aircraft are deployed to overseas locations. Before deploying, Sailors and Marines train to develop a broad range of capabilities to respond to threats, from full-scale armed conflict in a variety of different geographic areas and environmental conditions to humanitarian assistance and disaster relief efforts. Training prepares Navy and Marine Corps personnel to be proficient in operating and maintaining the equipment, weapons, and systems they will use to conduct their assigned missions. Refer to Section 1.4.1 in the 2020 SEIS/OEIS for additional information on the Action Proponents' Training.

The USCG has broad, multifaceted, jurisdictional authority for management of activities over all waters subject to jurisdiction of the U.S. The USCG's law enforcement and national defense mission authority is based on 14 U.S.C. section 102, requiring the USCG to "maintain a state of readiness to assist in the defense of the United States, including when functioning as a specialized service in the Navy pursuant to section 103." The USCG has national defense and statutory missions. The four major national defense missions are maritime intercept operations, deployed port operations/security and defense, peacetime engagement, and environmental defense operations. These missions are essential military tasks assigned to the USCG as a component of joint and combined forces in peacetime, crisis, and war. For specific information on the USCG, please refer to Appendix A.1 of this SEIS/OEIS.

The USAF and Army are increasingly required to operate in a marine environment with naval forces and therefore have a requirement to train in this environment.

A.2 Why the Navy Tests

The Navy's research and acquisition community, including research-funding organizations, laboratory facilities, and SYSCOMs, has a mission to provide weapons, systems, and platforms for the Navy to support its missions and ensure a technological edge over the U.S.'s potential adversaries. This community is at the forefront of researching, developing, testing, evaluating, acquiring, and delivering modern platforms, systems, and related equipment to meet Fleet capability and readiness requirements. The Navy's research-funding organizations and laboratories concentrate primarily on the development of new science and technology, and the initial testing of concepts that are relevant to the Navy in the future. SYSCOMs develop ship, aircraft, and weapons systems that support all Navy platforms throughout their lifecycles from systems acquisition through sustainment to end of life.

Testing of weapons, systems, and platforms must be conducted at sea to ensure these technologies perform as designed and expected in the environment where they will be relied upon by the services.

A.3 Training Activities

The proposed training activities would be conducted by the U.S. Navy (Navy), U.S. Marine Corps (USMC), U.S. Air Force (USAF), U.S. Army (Army), and U.S. Coast Guard (USCG). The Navy as the lead agency, jointly with the USAF, Army, and USCG, are action proponents for the training activities described in this appendix. The training activities are organized generally into eight primary mission areas and a miscellaneous category (Other Training) that includes those activities that do not fall within a primary mission area but are an essential part of military training.

Descriptions of military readiness activities are included in Data Sheets. Location information provided on the Data Sheets indicate where activities would occur within the broad MITT Study Area. Specific locations which are typically scheduled for the activity are included and are not intended to restrict activity to only those locations.

The tempo of activities (i.e., the number of events per year) are found in Chapter 2, Table 2-4. The number of events per year by Action Proponent (Services) are found at the end of this Appendix. Newly proposed activities in this Draft SEIS/OEIS are designated as a "New Activity." All acronyms included in the Data Sheets are defined in the Acronyms and Abbreviations list within the MITT SEIS/OEIS. All in-water explosive bin descriptions are found in Section 3.0.

In addition, because the military conducts a number of activities within larger training exercises, descriptions of those larger exercises are also included here. It is important to note that these larger exercises are comprised entirely of individual activities described in the primary mission areas. These exercises frequently include multiple services (Navy, USMC, USCG, Army, USAF) and could include foreign participants. Foreign participation is episodic to location and time (by year). Data collected to make assumptions about events has factored a certain number of participants which could include foreign participants.

New technologies and tactics require forces to be distributed over increasingly larger areas to conduct realistic training and testing.

A.3.1 Major Anti-Submarine Warfare Training Exercises

A major training exercise is comprised of multiple "unit level" activities conducted by several units operating together while commanded and controlled by a single commander. The Anti-Submarine Warfare (ASW) exercises typically employ an exercise scenario developed to train and evaluate the larger integrated force 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 training events. In a major training exercise, however, these disparate training tasks are conducted in concert, rather than by an individual smaller unit. Table A-1 describes the differences between major training exercises and smaller integrated/coordinated anti-submarine warfare exercises based on scale, duration, and sonar hours.

Table A-1: Major Anti-Submarine Warfare Training Exercises and Integrated/Coordinated Anti-Submarine Warfare Training

	Exercise Group	Description	Scale	Duration	Location	Exercise Examples	Modeled Hull-mounted Sonar per Exercise
Major Training Exercises	Large Integrated ASW	Larger-scale, longer duration integrated ASW exercises	Up to three Carrier Strike Groups in coordination with other Services, 2 or more submarines, multiple ASW aircraft	Typically, a 10-day exercise	Study Area	Joint Multi-Strike Group Exercise (e.g., Valiant Shield)	>500 hours
Integrated/Coordinated Training	Small Integrated ASW	Small-scale, short duration integrated ASW exercises	Approximately 3–6 surface ASW units, at least 1 submarine, 2–6 ASW aircraft	Generally, <5 days	Study Area; Apra Harbor	SWATT, NUWTAC	50–100 hours
	Medium Coordinated ASW	Medium-scale, short duration, coordinated ASW exercises	Approximately 2–4 surface ASW units, possibly a submarine, 2–5 ASW aircraft	Generally 3–10 days	Study Area	GuamEx	<100 hours
	Small Coordinated ASW	Small-scale, short duration, coordinated ASW exercises	Approximately 2–4 surface ASW units, possibly a submarine, 1–2 ASW aircraft	Generally 2–4 days	Study Area	Group Sail	<50 hours

Notes: ASW = Anti-Submarine Warfare, SWATT = Surface Warfare Advanced Tactical Training, GuamEx = Guam Exercise, NUWTAC = Naval Undersea Warfare Training Assessment Course

Major ASW training exercises are listed below.

A.3.1.1 Joint Multi-Strike Group Exercise

Major Training Exercise - Large Integrated ASW		
Joint Multi-Strike Group Exercise		
Short Description	Typically, a 10-day Joint exercise, in which up to three carrier strike groups would conduct training exercises simultaneously.	
Long Description	The Joint Multi-Strike Group Exercise, or Fleet Exercise, demonstrates the Navy's ability to operate a large naval force of up to three Carrier Strike Groups in coordination with other Services. In addition to this joint warfare demonstration, it also fulfills the Navy's requirement to maintain, train, and equip combat-ready naval forces capable of winning wars, deterring aggression, and maintaining freedom of the seas. The exercise would involve Joint assets engaging in a "free play" battle scenario, with U.S. forces pitted against a replicated opposition force. The exercise provides realistic in-theater training. Coast Guard cutters and aircraft may participate in this activity. Anti-Submarine Warfare exercises could occur concurrent with amphibious activities, which bring forces ashore such as an Amphibious Assault. The MITT action will include anti-submarine warfare exercises and amphibious activities in the water. Land-based amphibious activities on Tinian will be included in CJMT.	
Typical Components	**Platforms:** Aircraft Carrier, Fixed Wing – Patrol Aircraft, Rotary-Wing Aircraft, Submarine, Surface Combatant, Unmanned Aerial Vehicle – Fixed Wing, Unmanned Surface Vehicle, Unmanned Underwater Vehicle **Targets:** Sub-surface Targets – Maneuvering **Systems being Trained/Tested:** Sonar Systems - Hull Mounted, Countermeasures, Sonar Systems - Towed, Sonar Systems - Dipping, Sonobuoys **Munitions:** See notes in parameters for analysis	
Active Sonar	LFH, MFM, MFH, MF1, MF1C, HFH, Broadband (LF to HF), Broadband (MF to HF)	
In-Water Explosives	See notes in parameters for analysis	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels Towed in-water devices Unmanned vehicles	
Parameters for Analysis	Only the anti-submarine warfare activities were analyzed as a Joint Multi-Strike Group Exercise. Other warfare area training conducted during the Joint Multi-Strike Group Exercise is analyzed elsewhere as unit-level training (e.g., gunnery exercise, missile exercise). This activity occurs > 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Mariana Islands Range Complex	MITT Study Area
	MITT Study Area	Mariana Islands Range Complex

A.3.2 Integrated/Coordinated Training Anti-Submarine Warfare

Integrated or coordinated anti-submarine warfare training exercises are similar to major training exercises in that they are comprised of several basic, unit-level exercises, with training conducted by an individual unit, but are generally on a smaller scale, are of shorter duration, and use fewer hours of active sonar than a major training exercise.

A.3.2.1 Surface Warfare Advanced Tactical Training

Small Integrated Anti-Submarine Warfare Training		
Surface Warfare Advanced Tactical Training		
Short Description	Multiple ships and aircraft coordinate the use of sensors, including sonobuoys, to search, detect, and track a threat submarine. Surface Warfare Advanced Tactical Training (SWATT) exercises are not dedicated anti-submarine warfare exercises and involve multiple warfare areas.	
Long Description	SWATT is an intermediate training exercise designed primarily to increase operator proficiency and exercise combined force responses to surface warfare, anti-submarine warfare, air warfare and electromagnetic spectrum operations. Within the MITT Study Area, SWATT occurs annually and consists of multiple surface warfare, anti-submarine and air warfare live fire events. Multiple ships and aircraft search for, locate, and track one submarine. Occurs once per carrier strike group training cycle. Use of other munitions and explosives in SWATT are included in unit-level events. Anti-Submarine Warfare exercises could occur with amphibious activities, which bring forces ashore such as Amphibious Assault.	
Typical Components	**Platforms:** Amphibious Warfare Vessels, Fixed Wing – Patrol Aircraft, Rotary-Wing Aircraft, Submarine, Surface Combatant, Unmanned Aerial Vehicle – Rotary Wing, Unmanned Surface Vehicle, Unmanned Underwater Vehicle **Targets:** Sub-surface Targets - Maneuvering **Systems being Trained/Tested:** Sonar Systems - Hull Mounted, Countermeasures, Sonar Systems - Towed, Sonar Systems - Dipping, Sonobuoys **Munitions:** See notes in parameters for analysis	
Active Sonar	LFH, MFM, MFH, MF1, MF1C, Broadband (MF to HF)	
In-Water Explosives	See notes in parameters for analysis	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels Towed in-water devices Unmanned vehicles	
Parameters for Analysis	Only the anti-submarine warfare activities were analyzed as a SWATT. Other warfare area training conducted during SWATT was analyzed as unit-level training (e.g., gunnery exercises, missile exercises). This activity occurs > 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.2.2 Small Integrated Anti-Submarine Warfare – NUWTAC/Multi-Sail

Small Integrated Anti-Submarine Warfare Training	
NUWTAC/Multi-Sail	
Short Description	Multiple ships, aircraft, and submarines integrate the use of their sensors, including sonobuoys, to search for, detect, classify, localize, and track a threat submarine.
Long Description	Small Integrated ASW operations include the Navy Undersea Warfare Training and Assessment Course and Small Joint Coordinated ASW Exercises like Multi-Sail/GUAMEX. The Navy Undersea Warfare Training and Assessment Course (NUWTAC) is a tailored course of instruction designed to improve Sea Combat Commander and strike group integrated anti-submarine warfare warfighting skill sets. The submarine may practice simulated attacks against the ships while being tracked. Hull-mounted, towed array, and dipping sonar is employed by ships and helicopters. The submarine also periodically operates its sonar. Multi-Sail/GUAMEX is an Anti-Submarine Warfare (ASW) exercise conducted by the forward deployed Navy Strike Groups to sustain and assess their ASW proficiency while located in the Seventh Fleet area of operations, and includes such recent exercises as Sea Dragon, Pacific Griffin, Pacific Vanguard. The exercise is designed to assess the Strike Groups' ability to conduct ASW in the most realistic environment, against the level of threat expected, in order to effect changes to both training and capabilities (e.g., equipment, tactics, and changes to size and composition) of U.S. Navy Strike Groups. The Strike Group receives significant sustainment training value in ASW and other warfare areas, as training is inherent in all at-sea exercises. Additional unit-level activities, such as MISSILEX, may be conducted during these events. Anti-Submarine Warfare exercises could occur concurrent with amphibious activities, which bring forces ashore such as Amphibious Assault.
Typical Components	**Platforms:** Fixed Wing – Patrol Aircraft, Rotary-Wing Aircraft, Submarine, Surface Combatant, Unmanned Aerial Vehicle – Rotary Wing, Unmanned Surface Vehicle, Unmanned Underwater Vehicle **Targets:** Sub-surface Targets – Maneuvering **Systems being Trained/Tested:** Sonar Systems - Hull Mounted, Countermeasures, Sonar Systems - Towed, Sonar Systems - Dipping, Sonobuoys **Munitions:** See notes in parameters for analysis
Active Sonar	LFH, MFM, MFH, MF1, MF1C, Broadband (MF to HF)
In-Water Explosives	See notes in parameters for analysis
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels Towed in-water devices Unmanned vehicles

Small Integrated Anti-Submarine Warfare Training		
NUWTAC/Multi-Sail		
Parameters for Analysis	Only the anti-submarine warfare activities were analyzed as a Small Integrated ASW – NUWTAC/Multi-Sail. All other warfare area training conducted during Small Integrated ASW – NUWTAC/Multi-Sail was analyzed as unit-level training (e.g., gunnery, missile exercise). ASW activity occurs > 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.2.3 Medium Coordinated Anti-Submarine Warfare

Medium Coordinated Anti-Submarine Warfare Training		
Medium Coordinated Anti-Submarine Warfare		
Short Description	Typically, a 3–10-day exercise with multiple ships, aircraft, and submarines integrating the use of their sensors, including sonobuoys, to search, detect, and track threat submarines.	
Long Description	Medium coordinated ASW exercises are tailored events designed to train submarines and surface combatants and develop warfighting tactics, techniques, and procedures, and may include torpedo firing. These exercises generally consist of a coordinated training scenario that typically involves two to four surface ships, embarked helicopters, two to three submarines, unmanned vehicles, and maritime patrol aircraft. Medium Coordinated Anti-Submarine Warfare exercises include stand-alone ASW events, such as an Anti-Submarine Warfare Tactical Development Exercise (TACDEVEX) or a Group Sail event, generally lasting 3-10 days. Anti-Submarine Warfare exercises could occur concurrent with amphibious activities, which bring forces ashore such as Amphibious Assault.	
Typical Components	**Platforms:** Fixed Wing – Patrol Aircraft, Rotary-Wing Aircraft, Submarine, Surface Combatant, Unmanned Aerial Vehicle – Fixed Wing, Unmanned Surface Vehicle, Unmanned Underwater Vehicle **Targets:** Sub-surface Targets - Maneuvering, Surface Targets - Maneuvering **Systems being Trained/Tested:** Sonar Systems - Hull Mounted, Countermeasures, Sonar Systems - Towed, Safety and Navigation, Sonar Systems - Dipping, Pinger, Sonobuoys **Munitions:** Torpedoes - Exercise, see notes in parameters for analysis	
Active Sonar	MFM, MFH, MF1, MF1C, HFH, Broadband (LF to HF), Broadband (MF to HF)	
In-Water Explosives	See notes in parameters for analysis	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels Towed in-water devices Unmanned Vehicles	
Parameters for Analysis	Only the anti-submarine warfare activities were analyzed as a medium coordinated ASW exercise. All other warfare area training conducted during a medium coordinated ASW exercise was analyzed as unit-level training (e.g., bombing exercises, gunnery exercises, missile exercises). ASW activity occurs > 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.2.4 Independent Deployer Certification Exercise/Tailored Surface Warfare Training

Small Coordinated Anti-Submarine Warfare Training		
Independent Deployer Certification Exercise/Tailored Surface Warfare Training		
Short Description	Multiple ships, aircraft, and submarines conduct integrated multi-warfare training with a surface warfare. Serves as a ready-to-deploy certification for individual surface ships tasked with surface warfare missions.	
Long Description	This event stresses planning, coordination, and communications during multiple warfare training scenarios. Multiple ships and multiple helicopters searching for, locating, and attacking a submarine. Typically, one group is actively prosecuting while another group is repositioning. Simultaneously, the submarine may practice simulated attacks against the ships. Example exercises include Pacific Griffin and Pacific Vanguard. Multiple acoustic sources may be active at one time. Anti-Submarine Warfare exercises could occur concurrent with amphibious activities, which bring forces ashore such as Amphibious Assault.	
Typical Components	**Platforms:** Rotary-Wing Aircraft, Submarine, Surface Combatant, Unmanned Aerial Vehicle - Fixed Wing, Unmanned Surface Vehicle, Unmanned Underwater Vehicle **Targets:** Sub-surface Targets - Maneuvering **Systems being Trained/Tested:** Anti-Submarine Warfare systems **Munitions:** See notes in parameters for analysis	
Active Sonar	See notes in parameters for analysis	
In-Water Explosives	See notes in parameters for analysis	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels Towed in-water devices Unmanned vehicles	
Parameters for Analysis	All ASW acoustic sources which may be used during Independent Deployer Certification Exercise/Tailored Surface Warfare Training have been accounted for in the modeling and analysis of ASW Unit Level Training events presented in this Draft SEIS/OEIS. All other warfare area training conducted during Independent Deployer Certification Exercise/Tailored Surface Warfare Training ASW exercise was analyzed as unit-level training (e.g., bombing exercises, gunnery exercises, missile exercises). ASW activity occurs > 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area; Mariana Islands Range Complex	MITT Study Area; Mariana Islands Range Complex

A.3.3 Air Warfare Training

The mission of air warfare 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.

A.3.3.1 Air Combat Maneuvers

Air Warfare		
Air Combat Maneuvers		
Short Description	Fixed-wing aircrews aggressively maneuver against threat aircraft to gain tactical advantage.	
Long Description	Basic flight maneuvers in which fixed-wing aircrew engage in offensive and defensive maneuvering against each other. No ordnance is expended during this training, however countermeasures such as chaff and flares may be used. These maneuvers typically involve two aircraft; however, based upon the training requirement, air combat maneuvers may involve over a dozen aircraft. Includes Air Intercept Control activities from Ph III.	
Typical Components	**Platforms:** Fixed Wing – Strike Aircraft **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	None	
Parameters for Analysis	No munitions are fired. Flares and chaff may be used. All flares and chaff are accounted for in flare exercise and chaff exercise. This activity occurs greater than 12 NM from land (FDM excepted).	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.3.2 Air Defense Exercise

Air Warfare		
Air Defense Exercise		
Short Description	Aircrew and ship crews conduct defensive measures against threat aircraft or simulated missiles.	
Long Description	Fixed-wing aircrew and ship personnel perform measures designed to defend against attacking threat aircraft or missiles or reduce the effectiveness of such attack. This exercise involves full detection through engagement sequence. Aircraft operate at varying altitudes and speeds. This exercise includes air intercept control exercises where aircraft controllers on ships, in fixed-wing aircraft, or at land-based locations, use search radars to track and direct friendly aircraft to intercept the threat aircraft. This exercise also includes detect to engage exercises, where personnel on ships use search radars to detect, classify, and track enemy aircraft or missiles up to the point of engagement. No ordnance is fired during this exercise, however countermeasures, such as chaff and flares, may be used. Coast Guard aircraft may participate in this activity.	
Typical Components	**Platforms:** Aircraft Carrier, Fixed Wing – Adversary Aircraft, Fixed Wing - Command and Control Aircraft, Fixed Wing – Strike Aircraft, Surface Combatant, Unmanned Aerial Vehicle – Fixed Wing **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	No munitions are fired. Flares and chaff may be used. All flares and chaff are accounted for in flare exercise and chaff exercise. This activity occurs > 12 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.3.3 Gunnery Exercise Air-to-Air – Medium Caliber

Air Warfare		
Gunnery Exercise Air-to-Air - Medium-Caliber		
Short Description	Fixed-wing aircrews fire medium-caliber guns at air targets.	
Long Description	Fixed-wing aircrews maneuver aircraft in a gunnery pattern to achieve a weapons firing solution with integrated medium-caliber guns. Typically involves two or more fixed-wing aircraft and a target banner towed by a contract aircraft (e.g., Lear jet). The target banner is recovered after the exercise.	
Typical Components	**Platforms:** Fixed Wing – Strike Aircraft **Targets:** Air Targets - Other **Systems being Trained/Tested:** None **Munitions:** Projectile - Medium Caliber	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	None	
Parameters for Analysis	This activity is conducted at an altitude of 15,000 ft. and above, during the daytime, and beyond 12 NM from shore (FDM excepted). A towed air target is a banner target and will be recovered. Only non-explosive munitions used.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.3.4 Gunnery Exercise Surface-to-Air – Large Caliber

Air Warfare		
Gunnery Exercise Surface-to-Air - Large-Caliber		
Short Description	Surface ship crews fire large-caliber guns at air targets.	
Long Description	Surface ship crews defend against threat aircraft or missiles with large-caliber guns to disable or destroy the threat. An exercise involves one ship and a simulated threat aircraft or missile that is detected by the ship's radar. Large-caliber guns fire non-explosive projectiles at the threat before it reaches the ship. The target is towed by a contract air services jet or is an expendable unmanned aerial vehicle.	
Typical Components	**Platforms:** Surface Combatant **Targets:** Air Targets - Other **Systems being Trained/Tested:** None **Munitions:** Projectile - Large Caliber	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Weapon firing noise	
Parameters for Analysis	The target is a fiberglass finned target that is towed approximately 3 NM behind the towing aircraft. For Navy exercises all projectiles are assumed to be non-explosive. This activity would occur greater than 12 NM from land (FDM excepted).	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.3.5 Gunnery Exercise Surface-to-Air – Medium Caliber

Air Warfare		
Gunnery Exercise Surface-to-Air - Medium-Caliber		
Short Description	Surface ship crews fire medium-caliber guns at air targets.	
Long Description	Surface ship crews defend against threat aircraft or missiles with medium-caliber guns to disable or destroy the threat. An exercise involves one ship and a simulated threat aircraft or anti-ship missile that is detected by the ship's radar. Medium-caliber guns fire non-explosive projectiles to disable or destroy the threat before it reaches the ship. The target is towed by a contract air services jet or is an expendable unmanned aerial vehicle.	
Typical Components	**Platforms**: Surface Combatant **Targets**: Air Targets - Other **Systems being Trained/Tested**: None **Munitions**: Projectile - Medium Caliber	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	The target is a fiberglass finned target that is towed approximately 3 nautical miles behind the towing aircraft. The target is typically recovered but may be damaged, resulting in target fragments or loss of target. This activity would occur greater than 12 NM from land (FDM excepted).	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.3.6 Missile Exercise Air-to-Air

Air Warfare		
Missile Exercise Air-to-Air		
Short Description	Fixed-wing aircrews fire air-to-air missiles at air targets.	
Long Description	An exercise involves two or more fixed-wing aircraft and a target. Missiles are either explosive warheads or non-explosive practice munitions. The target is an unmanned aerial target drone, a tactical air-launched decoy, or a parachute suspended illumination flare. Target drones deploy parachutes and are recovered by small boat or rotary-wing aircraft; tactical air-launched decoys and illumination flares are expended and not recovered. These exercises typically occur at high altitudes.	
Typical Components	**Platforms:** Fixed Wing – Strike Aircraft **Targets:** Air Targets - Drone, Air Targets - Flare **Systems being Trained/Tested:** None **Munitions:** Air-to-Air Missiles	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	None	
Parameters for Analysis	Assumes that all missiles are explosive (missiles explode at medium altitudes), although non-explosive practice munitions may be used. All propellant and explosives are consumed. Tactical air-launched decoys and illumination flares are expended and not recovered. This activity would occur greater than 12 NM from land (FDM excepted).	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.3.7 Missile Exercise Surface-to-Air

Air Warfare		
Missile Exercise Surface-to-Air		
Short Description	Surface ship crews defend against threat missiles and aircraft with missiles.	
Long Description	Surface ship crews defend against threat missiles and aircraft with ship-launched surface-to-air missiles. The exercise involves an aerial target that simulates a threat aircraft, anti-ship missile, or land attack missile, which is detected by the ship's radar. Ship-launched surface-to-air missiles are fired to disable or destroy the threat. The target typically is either a sub-sonic remote-controlled drone or a supersonic target. Target drones deploy parachutes and are recovered by small boat or rotary-wing aircraft; when used, tactical air-launched decoys are not recovered. Supersonic targets are not recovered.	
Typical Components	**Platforms:** Surface Combatant **Targets:** Air Targets - Drone **Systems being Trained/Tested:** None **Munitions:** Surface-to-Air Missiles	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	Assumes that all surface-to-air missiles are high explosive. Missile explodes well above surface (at medium altitudes). All explosive and propellant are consumed. Targets typically not destroyed; unmanned drones are recovered when possible. This activity would occur greater than 12 NM from land (FDM excepted).	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.4 Amphibious Warfare Training

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. Amphibious Warfare training also includes training in the rapid movement of supplies and capabilities ashore, provide relief and logistics in times of disaster and crisis.

The descriptions and parameters for the analyses provided in the amphibious warfare data sheets only capture the at-sea (in-water vessels and air assets moving from ship-to-shore) and do not include landing or land-based activities. Land-based activities, and their associated land impacts, are evaluated in other environmental documents.

A.3.4.1 Amphibious Assault

Amphibious Warfare		
Amphibious Assault		
Short Description	Large unit forces move ashore from amphibious ships at sea for the immediate execution of inland objectives.	
Long Description	Large unit forces move ashore from amphibious ships at sea for the immediate execution of inland objectives by maneuvering amphibious vessels to position, launching, and recovering landing craft and aircraft, and forming landing waves. Amphibious assault is conducted for the purposes of prosecuting further combat operations, obtaining a site for an advanced naval or airbase, or denying the enemy use of an area. Unit-level training exercises involve one or more amphibious ships, and their associated watercraft and aircraft, to move personnel and equipment from ship to shore without the command and control and supporting elements involved in a full-scale exercise. The goal is to practice loading, unloading, and movement and to develop the timing required for a full-scale exercise. This activity could be conducted in support of bringing forces ashore in support of land-based USMC activities, such as a Marine Air Ground Task Force Exercise, which are analyzed in separate NEPA documents.	
Typical Components	**Platforms:** Amphibious Vehicles, Amphibious Warfare Vessels, Fixed Wing – Strike Aircraft, Fleet Support Vessel, Rotary-Wing Aircraft, Tiltrotor Aircraft **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	Typical exercise: 1-3 amphibious ships (e.g., LHA or LHD, LPD, LSD); 2-8 landing craft (landing craft, air cushion; landing craft, utility); 4-14 amphibious assault vehicles; up to 22 aircraft (e.g., MH-53, H-46/MV-22, AH-1, UH-1, AV-8); a Marine Expeditionary Unit (2,200 Marines). This analysis only captures the at-sea (in-water	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Mariana Islands Range Complex	CNMI Nearshore
	Tinian	Guam Nearshore
	Guam	

A.3.4.2 Amphibious Raid

Amphibious Warfare		
Amphibious Raid		
Short Description	Small unit forces move swiftly from ships at sea for a specific short-term mission. These are quick operations with as few personnel as possible.	
Long Description	Small unit forces swiftly move from amphibious vessels at sea into hostile territory for a specific mission, including a planned withdrawal. Raids are conducted to inflict loss or damage, secure information, create a diversion, confuse the enemy, or capture or evacuate individuals or material. Amphibious raid forces are kept as small as possible to maximize stealth and speed of the operation. An event may employ assault amphibian vehicle units, small boats, small unit live-fire and non-live-fire operations. Surveillance or reconnaissance unmanned surface and aerial vehicles may be used during this exercise. Coast Guard units may also participate. This activity could be conducted in support of bringing forces ashore in support of land-based USMC activities such as a Marine Air Ground Task Force Exercise, which are analyzed in separate NEPA documents.	
Typical Components	**Platforms:** Amphibious Vehicles, Amphibious Warfare Vessels, Rotary-Wing Aircraft, Small Boat, Tiltrotor Aircraft, Unmanned Aerial Vehicle - Rotary Wing, Unmanned Surface Vehicles **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Unmanned vehicles	
Parameters for Analysis	Weapons firing (if conducted) during this event is discussed in appropriate activity descriptions (e.g., surface-to-surface and air-to-surface small-caliber gunnery exercises). During the conduct of amphibious raids personnel may exit the watercraft in the surf zone and divers and combat swimmers will stand in the surf zone and walk onto the beach.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Mariana Islands Range Complex	CNMI Nearshore
	Tinian	Guam Nearshore
	Guam	
	Rota	

A.3.4.3 Amphibious Vehicle Maneuvers/Rehearsals

Amphibious Warfare		
Amphibious Vehicle Maneuvers/Rehearsals		
Short Description	Amphibious vehicles conduct in water training, maintenance and repairs including rehearsal of amphibious landings.	
Long Description	Amphibious vehicles maintained and operated in Inner Apra Harbor will conduct in-water training, in water repairs and in water maintenance. Splash down points will be designated concrete ramps. Ship borne amphibious vessels maneuver to position, flood well decks, and launch and recover landing craft including hovercraft, combat rubber raiding craft, armored amphibious craft, landing craft ship, and task force aircraft in assault landing rehearsals. Assault craft form landing waves and approach shore without landing. This activity could be conducted in support of bringing forces ashore in support of land-based USMC activities such as a Marine Air Ground Task Force Exercise, which are analyzed in separate NEPA documents.	
Typical Components	**Platforms:** Amphibious Vehicles, Amphibious Warfare Vessels, Fleet Support Vessel, Small Boat **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	Apra Harbor activities will range from 12 to 14 events per year. Mechanized amphibious vehicles will utilize concrete ramps of the Amphibious Vehicle Laydown Area in Apra Harbor to support vehicle training and maintenance.. During Rehearsals, amphibious vehicles train to launch from, and return to, amphibious ships. Amphibious vehicles approach surf zone but turn away before entering surf zone or landing zone. Typical participants: amphibious vessels (e.g., LHA or LHD, LPD, LSD), Landing Craft Air Cushion (LCAC), the Landing Craft Utility (LCU), the Amphibious Combat Vehicle (ACV), the Amphibious Assault Recovery Vehicle (AAV-R), and the Lighter Amphibious Resupply Cargo (LARC) vehicle. Small boats include the use of the Landing Craft Personnel Light (LCPL), the Improved Navy Lighterage System (INLS), the Rigid Hull Inflatable Boats (RHIBs), and the Combat Rubber Raiding Craft (CRRCs).	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area and Nearshore	MITT Study Area; Mariana Islands Range Complex; Apra Harbor

A.3.4.4 Naval Surface Fire Support Exercise – Land-Based Targets

Amphibious Warfare		
Naval Surface Fire Support Exercise - Land-Based Target		
Short Description	Surface ship crews fire large-caliber guns at land-based targets in support of forces ashore.	
Long Description	Surface ship crews use large-caliber guns to support forces ashore. One or more ships position themselves from three to six NM from the target area and a land-based spotter relays type and exact location of the target. After observing the fall of the shot, the spotter relays any adjustments needed to reach the target. Once the rounds are on target, the spotter requests a sufficient number to effectively destroy the target. This exercise occurs on land ranges where explosive and non-explosive practice munitions are authorized.	
Typical Components	**Platforms:** Surface Combatant **Targets:** Land Targets **Systems being Trained/Tested:** None **Munitions:** Projectile - Large Caliber	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Weapons firing noise	
Parameters for Analysis	Projectile impact is on land; however, potential nearshore in-water impacts are considered. Observed ricochets and misses that land in waters surrounding FDM occupied by corals are reported.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	FDM	FDM; R7201; R7201A

A.3.4.5 Non-Combat Amphibious Operation

Amphibious Warfare		
Non-Combat Amphibious Operation		
Short Description	Military units evacuate noncombatants from hostile or unsafe areas or provide Humanitarian Assistance in times of disaster.	
Long Description	Navy, Marine Corps, and Coast Guard forces train to move personnel and equipment from ship-to-shore and from shore-to-ship to facilitate non-combat military operations. These training events include Non-Combatant Evacuation Operation, Humanitarian Assistance Operations, and Disaster Relief Operations. Noncombatants are evacuated when their lives are endangered by war, civil unrest, or natural disaster. Helicopters, landing crafts, amphibious ships, and other forces could be expected to participate in this operation during day or night.	
Typical Components	**Platforms:** Amphibious Vehicles, Amphibious Warfare Vessels, Rotary-Wing Aircraft, Small Boat, Tiltrotor Aircraft, Unmanned Aerial Vehicle – Rotary Wing **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	Sea-, land-, and air-based activity. Includes previous operations identified as Humanitarian Assistance Operations	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Mariana Islands Range Complex	CNMI Nearshore
	Guam	Guam Nearshore
	Tinian	
	Rota	

A.3.4.6 Unmanned Aerial Vehicle – Intelligence, Surveillance, and Reconnaissance

Amphibious Warfare		
Unmanned Aerial Vehicle - Intelligence, Surveillance, and Reconnaissance		
Short Description	Military and Coast Guard units employ unmanned aerial vehicles to launch, operate, and gather intelligence for specified amphibious missions.	
Long Description	Unmanned aerial vehicles may be launched from ships, boats, submarines, or ground and are used to gather tactical or theater-level intelligence.	
Typical Components	**Platforms:** Unmanned Aerial Vehicle - Fixed Wing, Unmanned Aerial Vehicle - Rotary Wing **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	None	
Parameters for Analysis	Sea-, land-, and air-based activity. Unmanned Aerial vehicles are typically recovered; however, units may be damaged and lost. Small expendable units may also be used.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Mariana Islands Range Complex	MITT Study Area; Mariana Islands Range Complex

A.3.5 Anti-Submarine Warfare

Anti-submarine warfare involves helicopter and maritime patrol aircraft, ships, and submarines. These units operate alone or in combination to locate, track, and neutralize submarines. Controlling the undersea battlespace is a unique naval capability and a vital aspect of sea control. Undersea battlespace dominance requires proficiency in anti-submarine warfare. Every deploying strike group and individual surface combatant must possess this capability.

Various types of active and passive sonar are used by the Navy to determine water depth, and identify, track, and target submarines. Passive sonar "listens" for sound waves by using underwater microphones, called hydrophones, which receive, amplify, and process underwater sounds. No sound is introduced into the water when using passive sonar. Passive sonar can indicate the presence, character, and movement of submarines. However, passive sonar provides only a bearing (direction) to a sound-emitting source; it does not provide an accurate range (distance) to the source. Active sonar is needed to locate objects because active sonar provides both bearing ad range to the detected contact (such as an enemy submarine).

The Navy's anti-submarine warfare training plan, including the use of active sonar in at-sea training scenarios, includes multiple levels of training. Individual-level anti-submarine warfare training addresses basic skills such as detection and classification of contacts, distinguishing discrete acoustic signatures including those of ships, submarines, and marine life, and identifying the characteristics, functions, and effects of controlled jamming and evasion devices.

More advanced, integrated anti-submarine warfare training exercises involving active sonar are conducted in coordinated, at-sea operations during training events involving submarines, ships, aircraft, and helicopters. This training integrates the full anti-submarine warfare continuum form detecting and tracking a submarine to attacking a target using either exercise torpedoes or simulated weapons. Training events include detection and tracking exercises against "enemy" submarine contacts; torpedo employment exercises against the target; and exercising command and control tasks in a multi-dimensional battlespace.

A.3.5.1 Anti-Submarine Warfare Torpedo Exercise – Helicopter

Anti-Submarine Warfare		
Anti-Submarine Warfare Torpedo Exercise - Helicopter		
Short Description	Helicopter crews search for, track, and detect submarines. Recoverable air launched torpedoes are employed against submarine targets.	
Long Description	Helicopters using sonobuoys and dipping sonar search for, detect, classify, localize, 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 and with the intent to destroy the target. Sonobuoys (both passive and active) and dipping sonar (both passive and active) are typically employed during the exercise. The anti-submarine warfare target used for this exercise may be a MK-39 Expendable Mobile Anti-Submarine Warfare Training Target (EMATT), a MK-30 target, or a live submarine. This exercise may involve a single aircraft or occur during a coordinated larger exercise involving multiple aircraft and ships, including a major range event. Unmanned aerial systems may also be used. The exercise torpedo is recovered by a special recovery helicopter or small craft assets. Temporary range instrumentation (hydrophones) may be deployed in support of this activity. See Figure A-1.	
Typical Components	**Platforms:** Rotary-Wing Aircraft, Unmanned Surface Vehicle, Unmanned Aerial Vehicle – Rotary Wing, Unmanned Underwater Vehicle **Targets:** Sub-surface Targets - Maneuvering **Systems being Trained/Tested:** Sonar Systems - Dipping, Sonobuoys **Munitions:** Torpedoes - Exercise	
Active Sonar	MFM, MFH, HFH	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels Unmanned vehicles	
Parameters for Analysis	This activity occurs greater than 3 NM from land. Submarine may provide service as the target.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.5.2 Anti-Submarine Warfare Torpedo Exercise – Maritime Patrol Aircraft

Anti-Submarine Warfare		
Anti-Submarine Warfare Torpedo Exercise - Maritime Patrol Aircraft		
Short Description	Maritime patrol aircraft crews search for, track, and detect submarines. Recoverable air launched torpedoes are employed against submarine targets.	
Long Description	Fixed-wing maritime patrol aircraft employ sonobuoys to search for, detect, classify, localize, and track a simulated threat submarine with the goal of determining a firing solution that could be used to launch a torpedo and destroy the submarine. Sonobuoys (both passive and active) are typically employed by a maritime patrol aircraft operating at altitudes below 3,000 ft. Both sonobuoys and torpedoes (using the High-Altitude Anti-Submarine Warfare Weapon Capability kit) may be delivered at high altitudes to remain clear of high threat areas The anti-submarine warfare target used for this exercise may be a MK-39 Expendable Mobile Anti-Submarine Warfare Training Target, a MK-30 target, or a live submarine. This exercise may involve a single aircraft or be undertaken in the context of a coordinated larger exercise involving multiple aircraft and vessels, including a major range event. The exercise torpedo is recovered by helicopter or small boat. Temporary range instrumentation (hydrophones) may be deployed in support of this activity. See Figure A-1.	
Typical Components	**Platforms:** Fixed Wing – Patrol Aircraft **Targets:** Sub-surface Targets - Maneuvering **Systems being Trained/Tested:** Sonobuoys **Munitions:** Torpedoes - Exercise	
Active Sonar	MFM, HFH	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources	
Parameters for Analysis	Submarine may provide service as the target. If target is air-dropped, one parachute per target. This activity occurs greater than 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–234**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.5.3 Anti-Submarine Warfare Torpedo Exercise – Ship

Anti-Submarine Warfare		
Anti-Submarine Warfare Torpedo Exercise - Ship		
Short Description	Surface ship crews search for, track, and detect submarines. Exercise torpedoes are used during this exercise.	
Long Description	Surface ships search for, detect, and track threat submarines to determine a firing position to launch a torpedo and attack the submarine. A surface ship operates at slow speeds while employing hull-mounted or towed array sonar. Passive or active sonar is employed depending on the type of threat submarine, the tactical situation, and environmental conditions. The anti-submarine warfare target used for this exercise is a MK-39 Expendable Mobile Anti-Submarine Warfare Training Target, MK-30 Target, or live submarine. This exercise may involve a single ship or be undertaken in the context of a coordinated larger exercise involving multiple aircraft, ships, and submarines, including a major range event. The exercise torpedo is recovered by helicopter or small craft. Temporary range instrumentation (hydrophones) may be deployed in support of this activity. See Figure A-1.	
Typical Components	**Platforms:** Surface Combatant, Unmanned Surface Vehicle, Unmanned Underwater Vehicle **Targets:** Sub-surface Targets - Maneuvering **Systems being Trained/Tested:** Sonar Systems - Hull Mounted, Countermeasures **Munitions:** Torpedoes – Exercise	
Active Sonar	MF1, MF1C, HFH, Broadband (MF to HF)	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels Towed in-water devices	
Parameters for Analysis	Submarines may provide service as the target. Torpedoes are recovered. This activity occurs greater than 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.5.4 Anti-Submarine Warfare Torpedo Exercise – Submarine

Anti-Submarine Warfare		
Anti-Submarine Warfare Torpedo Exercise - Submarine		
Short Description	Submarine crews search for, track, and detect submarines. Exercise torpedoes are used during this exercise.	
Long Description	Submarine crews search for, detect, and track a threat submarine to develop firing position to launch a torpedo. A single submerged submarine operates at slow speeds and various depths while using its hull mounted or towed array sonar to track a threat submarine. Passive sonar is used almost exclusively. Non-explosive exercise torpedoes can be launched and active sonar can be used during this training exercise. This exercise may involve a single submarine or be undertaken in the context of a coordinated larger exercise involving multiple aircraft, ships, and submarines, including a major range event. The exercise torpedo is recovered by helicopter or small craft. The preferred range for this exercise is an instrumented underwater range, but it may be conducted in other range complexes depending on training requirements and available assets. Temporary range instrumentation (hydrophones) may be deployed in support of this activity. See Figure A-1.	
Typical Components	**Platforms:** Submarine **Targets:** Sub-surface Targets - Maneuvering **Systems being Trained/Tested:** Sonar Systems - Hull Mounted, Countermeasures **Munitions:** Torpedoes – Exercise	
Active Sonar	MFH, HFH, Broadband (LF to HF)	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels Towed in-water devices	
Parameters for Analysis	Guidance wire has a low tensile strength and breaks easily. Weights and flex tubing sink rapidly. This activity occurs greater than 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.5.5 Anti-Submarine Warfare Tracking Exercise – Helicopter

Anti-Submarine Warfare		
Anti-Submarine Warfare Tracking Exercise - Helicopter		
Short Description	Helicopter crews search for, track, and detect submarines.	
Long Description	Helicopters using sonobuoys and dipping sonar search for, detect, classify, localize, and track a simulated threat submarine with the goal of determining a firing solution that could be used to launch a torpedo and destroy the submarine. The anti-submarine warfare target used for this exercise may be a MK-39 Expendable Mobile Anti-Submarine Warfare Training Target, a MK-30 target, or a live submarine. This exercise may involve a single aircraft or occur during a coordinated larger exercise involving multiple aircraft and ships, including a major range event. Unmanned aerial systems, may also be used. Temporary range instrumentation (hydrophones) may be deployed in support of this activity. See Figure A-1.	
Typical Components	**Platforms:** Rotary-Wing Aircraft, Unmanned Aerial Vehicle – Rotary Wing, Unmanned Underwater Vehicle, Surface Combatant **Targets:** Sub-surface Targets - Maneuvering **Systems being Trained/Tested:** Sonar Systems - Dipping, Sonobuoys **Munitions:** None	
Active Sonar	MFM, MFH,	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Unmanned vehicles Manned surface vessels	
Parameters for Analysis	Submarines may provide service as the target. This activity occurs greater than 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area Transit Corridor	MITT Study Area; Mariana Islands Range Complex MITT Transit Lane

A.3.5.6 Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft

Anti-Submarine Warfare		
Anti-Submarine Warfare Tracking Exercise - Maritime Patrol Aircraft		
Short Description	Maritime patrol aircraft crews search for, track, and detect submarines.	
Long Description	Fixed-wing maritime patrol aircraft employ sonobuoys to search for, detect, classify, localize, and track a simulated threat submarine with the goal of determining a firing solution that could be used to launch a torpedo and destroy the submarine. Sonobuoys may be released at high altitudes. The anti-submarine warfare target used for this exercise may be a MK-39 Expendable Mobile Anti-Submarine Warfare Training Target, a MK-30 target, or a live submarine. This exercise may involve a single aircraft or be undertaken in the context of a coordinated larger exercise involving multiple aircraft and vessels, including a major range event. Temporary range instrumentation (hydrophones) may be deployed in support of this activity.	
Typical Components	**Platforms:** Fixed Wing – Patrol Aircraft, Unmanned Surface Vehicle, Unmanned Underwater Vehicle **Targets:** Sub-surface Targets - Maneuvering **Systems being Trained/Tested:** Sonobuoys **Munitions:** None	
Active Sonar	MFM	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Unmanned vehicles	
Parameters for Analysis	Submarine may provide service as the target. If target is air-dropped, one parachute per target. This activity occurs greater than 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.5.7 Anti-Submarine Warfare Tracking Exercise – Ship

Anti-Submarine Warfare		
Anti-Submarine Warfare Tracking Exercise - Ship		
Short Description	Surface ship crews search for, track, and detect submarines. Exercise torpedoes may be used during this event.	
Long Description	Surface ships search for, detect, and track threat submarines to determine a firing position to launch a torpedo and attack the submarine. A surface ship operates at slow speeds while employing sonobuoys, hull-mounted sonars, or towed array sonar. Passive or active sonar is employed depending on the type of threat submarine, the tactical situation, and environmental conditions. The target for this exercise is either a MK-39 Expendable Mobile Anti-Submarine Warfare Training Target, MK-30 Recoverable Training Target, or live submarine. This exercise may involve a single ship or be undertaken in the context of a coordinated larger exercise involving multiple aircraft, ships, and submarines, including a major range event. Temporary range instrumentation (hydrophones) may be deployed in support of this activity.	
Typical Components	**Platforms:** Surface Combatant **Targets:** Sub-surface Targets - Maneuvering **Systems being Trained/Tested:** Sonar Systems - Hull Mounted, Countermeasures **Munitions:** None	
Active Sonar	MF1, MF1C, Broadband (MF to HF)	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels	
Parameters for Analysis	A submarine may provide service as the target. This activity occurs greater than 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.5.8 Anti-Submarine Warfare Tracking Exercise – Submarine

Anti-Submarine Warfare		
Anti-Submarine Warfare Tracking Exercise - Submarine		
Short Description	Submarine crews search for, track, and detect submarines.	
Long Description	Submarine crews search for, detect, and track a threat submarine to develop firing position to launch a torpedo. A single submerged submarine operates at slow speeds and various depths while using its hull mounted sonar to track a threat submarine. Passive sonar is used almost exclusively. The target for this exercise is either an MK 39 Expendable Mobile Anti-Submarine Warfare Training Target, MK 30 recoverable training target, or live submarine. This exercise may involve a single submarine or be undertaken in the context of a coordinated larger exercise involving multiple aircraft, ships, and submarines, including a major range event. Temporary range instrumentation (hydrophones) may be deployed in support of this activity.	
Typical Components	**Platforms:** Submarine **Targets:** Sub-surface Targets - Maneuvering **Systems being Trained/Tested:** Sonar Systems - Hull Mounted, Navigation Systems **Munitions:** None	
Active Sonar	MFH, HFH, Broadband (LF to HF)	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels	
Parameters for Analysis	This activity occurs greater than 3 NM from land. For biological resource analysis, vessel noise and vessel strike are only analyzed for the periods while the submarines are surfaced, typically brief in nature. Applicable Activity-based Mitigations for Marine Species related to vessel movement are only considered during the period of surfacing as well.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area Transit Corridor	MITT Study Area; Mariana Islands Range Complex MITT Transit Lane

A.3.6 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.

A.3.6.1 Counter Targeting Chaff Exercise – Aircraft

Electronic Warfare		
Counter Targeting Chaff Exercise - Aircraft		
Short Description	Fixed-winged aircraft and helicopter aircrews deploy chaff to disrupt threat targeting and missile guidance radars.	
Long Description	Fixed-winged aircraft and helicopter aircrews deploy chaff to disrupt threat targeting and missile guidance radars. Fixed-winged aircraft and helicopter aircrews detect electronic targeting signals from threat radars or missiles, dispense chaff, and immediately maneuver to defeat the threat. The chaff cloud deceives the inbound missile and the aircraft clears away from the threat. Chaff is a radar reflector material made of thin, narrow, metallic strips cut in various lengths to elicit frequency responses, which deceive enemy radars. Chaff is employed to create a target that will lure enemy radar and weapons system away from the actual friendly platform.	
Typical Components	**Platforms:** Fixed Wing – Strike Aircraft, Rotary-Wing Aircraft **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	None	
Parameters for Analysis	Chaff is usually expended while conducting other training activities, such as air combat maneuvering. Potential effects are analyzed under this activity. This activity occurs >12 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.6.2 Counter Targeting Chaff Exercise – Ship

Electronic Warfare		
Counter Targeting Chaff Exercise - Ship		
Short Description	Surface ship crews deploy chaff to disrupt threat targeting and missile guidance radars.	
Long Description	Surface ship and Coast Guard cutter crews deploy chaff to disrupt threat targeting and missile guidance radars to defend against an attack. Surface ship crews detect electronic targeting signals from threat radars or missiles, dispense chaff, and immediately maneuver to defeat the threat. The chaff cloud deceives the inbound missile and the vessel clears away from the threat. The typical exercise duration is approximately 1.5 hours. Chaff is a radar reflector material made of thin, narrow, metallic strips cut in various lengths to elicit frequency responses, which deceive enemy radars. Chaff is employed create a target that will lure enemy radar and weapons system away from the actual friendly platform. Ships may also train with advanced countermeasure systems, such as the MK 53 Decoy Launching System (Nulka).	
Typical Components	**Platforms:** Surface Combatant **Targets:** None **Systems being Trained/Tested:** None **Munitions:** MK 53 Nulka	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	Stressors to human resources were not analyzed for this activity since it occurs greater than 12 NM from shore. This training activity is conducted by Navy and USCG.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.6.3 Counter Targeting Flare Exercise

Electronic Warfare		
Counter Targeting Flare Exercise		
Short Description	Fixed-winged aircraft and helicopter aircrews deploy flares to disrupt threat infrared missile guidance systems.	
Long Description	Fixed-winged aircraft and helicopter aircrews deploy flares to disrupt threat infrared missile guidance systems. Aircraft detect electronic targeting signals from threat radars or missiles or a threat missile plume when launched and dispense flares and immediately maneuver to defeat the threat. This exercise trains aircraft personnel in the use of defensive flares designed to confuse infrared sensors or infrared homing missiles, thereby causing the sensor or missile to lock onto the flares instead of the real aircraft. Typically, an aircraft will expend five flares in an exercise while operating above 3,000 ft. Flare exercises are often conducted with chaff exercises, rather than as a stand-alone exercise.	
Typical Components	**Platforms:** Fixed Wing – Strike Aircraft, Rotary Wing Aircraft **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	None	
Parameters for Analysis	Approximately five flares per aircraft are expended per exercise. All combustible material in flares is assumed to be consumed before contact of the casing with the water. This activity typically occurs greater than 12 NM from land. However, rotary-wing events may occur closer to land (up to 3 NM when crew-served EW threat emitters [MANPADS] are employed).	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.6.4 Electronic Warfare Operations

Electronic Warfare		
Electronic Warfare Operations		
Short Description	Aircraft and surface ship crews control portions of the electromagnetic spectrum used by enemy systems to degrade or deny the enemy's ability to take defensive actions.	
Long Description	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. Electronic Warfare Operations can be active or passive, offensive, or defensive. Fixed-wing aircraft employ active jamming and deception against enemy search radars to mask the friendly inbound strike aircraft mission. Surface ships detect and evaluate enemy electronic signals from enemy aircraft or missile radars, evaluate courses of action concerning the use of passive or active countermeasures, then use ship maneuvers and either chaff, flares, active electronic countermeasures, or a combination of them to defeat the threat.	
Typical Components	**Platforms:** Fixed Wing – Adversary Aircraft, Rotary-Wing Aircraft, Surface Combatant **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	All chaff and flares involved in this exercise are covered under chaff exercises and flare exercises, respectively.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.7 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.

Expeditionary warfare training activities include underwater construction team training, dive and salvage operations, and insertion/extraction via air, surface, and subsurface platforms.

A.3.7.1 Dive and Salvage Operations

Expeditionary Warfare		
Dive and Salvage Operations (New Activity)		
Short Description	Navy divers perform dive operations and salvage training.	
Long Description	Navy and USCG divers will conduct a variety of salvage training to include de-beaching operations, underwater repairs to ships, underwater survey operations, and other underwater training as required.	
Typical Components	**Platforms:** Support Craft **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	Tools utilized to support this activity, and the in-water sound from their use, is de minimis for this activity. The practice salvage platform, utilized during de-beaching operations, can be sunk and then refloated and removed from the training area. This activity could include opportunistic training as requested by CNMI or Guam governments. Additional analysis may be conducted when specific details are known.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
		CNMI Nearshore
		Guam Nearshore
		Mariana Islands Range Complex

A.3.7.2 Personnel Insertion/Extraction – Air

Expeditionary Warfare		
Personnel Insertion/Extraction - Air		
Short Description	Personnel are inserted into and extracted from an objective area by fixed-wing aircraft or helicopters.	
Long Description	Personnel are inserted into a water objective via fixed-wing aircraft using parachutes or by helicopters via ropes or jumping into the water. They will conduct an infiltration to an objective (e.g., harbor, beach, moored vessel) and conduct a variety of tasks. The insertion/extraction activities are confined to in-water training. Upon completion of training objectives, personnel are extracted by helicopters or small boats.	
Typical Components	**Platforms:** Fixed Wing – Adversary Aircraft, Fixed Wing - Cargo and Transport Aircraft, Rotary-Wing Aircraft, **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	This activity analysis captures only the overwater portion and does not include any portion of the activity conducted on land, as the activity may be analyzed in other environmental planning. Activities are typically conducted in nearshore water. USCG may also conduct this training.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Mariana Islands Range Complex	MITT Study Area; Mariana Islands Range Complex
	Guam	
	Rota	
	Saipan	

A.3.7.3 Personnel Insertion/Extraction – Surface and Subsurface

Expeditionary Warfare		
Personnel Insertion/Extraction – Surface and Subsurface		
Short Description	Personnel are inserted into and extracted from an objective area by small boats or subsurface platforms.	
Long Description	Utilizing both small surface and subsurface platforms, personnel are inserted in the water. They will conduct an infiltration to an objective (e.g., harbor, beach, moored vessel) and conduct a variety of tasks. The insertion/extraction activities are confined to in-water training.	
Typical Components	**Platforms:** Small Boat, Submersible vessel **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	Exercises are typically conducted in waters near land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Mariana Islands Range Complex	MITT Study Area; Mariana Islands Range Complex
	Guam	
	Rota	
	Saipan	

A.3.7.4 Personnel Insertion/Extraction – Swimmer/Diver

Expeditionary Warfare		
Personnel Insertion/Extraction - Swimmer/Diver		
Short Description	Divers and swimmer infiltrate harbors, beaches, or moored vessels and conduct a variety of tasks.	
Long Description	Divers and swimmer infiltrate harbors, beaches, or moored vessels and conduct a variety of tasks. Activity may include Navy personnel learning advanced self-contained underwater breathing apparatus (SCUBA) diving to include tactics, techniques, and procedures and emergency procedures. Small boats are used for safety.	
Typical Components	**Platforms:** Small Boat **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	None	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Mariana Islands Range Complex; Guam; Tinian; Rota; Saipan	MITT Study Area; Mariana Islands Range Complex
	Guam	
	Tinian	
	Rota	
	Saipan	

A.3.7.5 Underwater Construction Team Training

Expeditionary Warfare		
Underwater Construction Team Training - New Activity		
Short Description	Navy and Coast Guard divers conduct underwater repair and construction.	
Long Description	Navy and Coast Guard divers will perform cutting, welding, assembly, and installation of deep-water structures, mooring systems, underwater instrumentation, clearing of hazards, and other training as needed.	
Typical Components	**Platforms:** Small Boat, Unmanned Bottom Crawler **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Unmanned vehicles	
Parameters for Analysis	This activity is conducted by the Navy and USCG.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
		CNMI Nearshore
		Guam Nearshore
		Mariana Islands Range Complex

A.3.7.6 Port Damage Repair (No Dredging/No Pile Driving)

Expeditionary Warfare		
Port Damage Repair (No Dredging/No Pile Driving) - New Activity		
Short Description	Navy Expeditionary forces train to repair critical port facilities.	
Long Description	Navy Expeditionary forces support Fleet mission through expedient repair of critical port facilities. Training includes diving operations, salvage operations, and repairs to piers, quay walls, and other waterfront infrastructure. Training activity normally lasts five days.	
Typical Components	**Platforms:** Small Boat, Support Craft, Fixed Structure, Unmanned Bottom Crawler **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Unmanned vehicles	
Parameters for Analysis	Tools utilized during this activity, and the potential noise derived from their in-water use, are categorized as de minimis. This activity could include opportunistic training as requested by CNMI or Guam governments. Additional analysis may be conducted when specific details are known.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2030**
		Guam Nearshore
		CNMI Nearshore

A.3.8 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 fee 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 activities 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 attacking underwater explosives to or near the mine or using remotely operating vehicles to destroy the mine.

A.3.8.1 Mine Countermeasures – Mine Detection

Mine Warfare		
Mine Countermeasures – Mine Detection		
Short Description	Helicopter aircrews and Unmanned Surface Vehicles (USVs) detect mines using towed or laser mine detection systems.	
Long Description	Helicopter aircrews use an airborne devices to detect, locate, and classify potential mines. Towed devices, operated by USVs, employ active acoustic sources, such as high-frequency and side scanning sonar. These devices are similar in function to systems used to map the seafloor or locate submerged structures/items. Airborne devices utilize laser systems to locate mines located below the surface.	
Typical Components	**Platforms:** Rotary-Wing Aircraft, Unmanned Surface Vehicle, Unmanned Underwater Vehicle **Targets:** Mine Targets **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Unmanned vehicles	
Parameters for Analysis	Sonar mine detection systems towed from surface vessels. Airborne laser systems used to detect mine shapes. Laser systems are similar to commercial Light Detection and Ranging (LIDAR) systems. The in-air energy stressor was used in analysis of potential impacts on human resources. Mine shapes may be deployed via ship and will be recovered.	
Location	**Phase II Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Mariana Littorals	MITT Study Area; Mariana Islands Rane Complex
	Mariana Island Range Complex	Guam Nearshore
	Inner and Outer Apra Harbor	CNMI Nearshore

A.3.8.2 Mine Countermeasures – Towed Mine Neutralization

Mine Warfare		
Mine Countermeasures – Towed Mine Neutralization		
Short Description	USVs and Unmanned Underwater Vehicles tow systems through the water that are designed to disable or trigger mines.	
Long Description	USVs and Unmanned Underwater Vehicles use towed devices to trigger mines that are designed to detonate when they detect ships/submarines by engine/propeller sounds or magnetic (steel construction) signature. Towed devices can also employ cable cutters to detach floating moored mines. Training may be conducted with non-explosive training mine shapes.	
Typical Components	**Platforms:** Rotary-Wing Aircraft, Unmanned Surface Vehicle, Unmanned Underwater Vehicle **Targets:** Mine Targets **Systems being Trained/Tested:** Towed Mine Neutralization Systems **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Towed in-water devices Unmanned vehicles	
Parameters for Analysis	Mechanical sweeping (cable cutting), acoustic and magnetic influence sweeping devices are towed from helicopters and surface vessels. Cable cutters utilize an insignificant charge (similar to a shotgun shell). Acoustic sweeps generate ship-type noise via a mechanical system. Towing systems though minefields (or without mines, to train to deploy, tow, and recover) may involve instrumented mines. Mine shapes are recovered.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex
		Guam Nearshore
		CNMI Nearshore
		Apra Harbor

A.3.8.3 Airborne Mine Laying

Mine Warfare		
Airborne Mine Laying		
Short Description	Fixed-wing aircraft drop non-explosive mine shapes.	
Long Description	Fixed-winged aircraft lay offensive or defensive mines for a tactical advantage for friendly forces. Fixed-winged aircraft lay a precise minefield pattern for specific tactical situations. The aircrew typically makes multiple passes in the same flight pattern and drop one or more training shapes per pass. Training shapes are non-explosive.	
Typical Components	**Platforms:** Fixed Wing Aircraft **Targets:** None **Systems being Trained/Tested:** None **Munitions:** Mines	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Non-explosive aerial deployed mines	
Parameters for Analysis	Mine laying is similar to non-explosive bombing activities. Mine laying will typically take place in waters less than 100 ft. in depth. Events may employ guided mine shapes released from high altitudes and distance. Assume 12 mine shapes are used per activity. Nearshore/shallow water events will be planned to minimize/avoid coral impacts and ensure public safety.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Mariana Islands Range Complex Warning Areas	MITT Study Area; Mariana Islands Range Complex

A.3.8.4 Civilian Port Defense – Homeland Security Anti-Terrorism/Force Protection Exercises

Mine Warfare		
Civilian Port Defense – Homeland Security Anti-Terrorism/Force Protection Exercises		
Short Description	Maritime security personnel train to protect civilian ports and harbors against enemy efforts to interfere with access to those ports.	
Long Description	Naval forces (including USCG) provide mine warfare capabilities to support Department of Homeland Security sponsored exercises. The three pillars of mine warfare, airborne (helicopter), surface (surface ships), and undersea (divers, marine mammals, and unmanned vehicles) mine countermeasures will be brought to bear in order to ensure strategic U.S. ports remain free of mine threats. Various mine warfare sensors, which utilize active acoustics, will be employed in the detection, classification, and neutralization of mines. Along with traditional mine warfare techniques, such as helicopter towed mine countermeasures, new technologies (unmanned vehicles) will be utilized. Marine mammal systems may be used during this exercise. Exercise locations and scenarios will vary according to Department of Homeland Security strategic goals and evolving world events. Coast Guard cutters, small boats, and aircraft may participate in this activity.	
Typical Components	**Platforms:** Rotary-Wing Aircraft, Small Boat, Support Craft, Unmanned Underwater Vehicle **Targets:** Mine Targets **Systems being Trained/Tested:** Acoustic Communications, Electromagnetic Systems, Sonar Systems – Mine Warfare, Unmanned Vehicle Systems **Munitions:** Explosive mine neutralizers	
Active Sonar	HFH, HFM, MFH	
In-Water Explosives*	E4	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels Towed in-water devices Unmanned vehicles Explosive mine neutralization (with divers) Explosive mine countermeasures and neutralization (no divers)	
Parameters for Analysis	Non-permanent mine shapes will be laid in various places on the bottom and will be retrieved. Shapes are varied, from about 1 m circular to about 2.5 m long by 1 m wide. They will be recovered using normal assets, with diver involvement. Explosives may be used if required for scheduled mine neutralization activities. Explosives will only be used in designated Mine Training areas. This training activity is conducted by the Navy and USCG.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Mariana littorals	Inner Apra Harbor

Mine Warfare		
Civilian Port Defense – Homeland Security Anti-Terrorism/Force Protection Exercises		
	Mariana Islands Range Complex	MITT Study Area; Mariana Islands Range Complex
	Inner and Outer Apra Harbor	Outer Apra Harbor
		Guam Nearshore
		CNMI Nearshore

A.3.8.5 Limpet Mine Neutralization System

Mine Warfare		
Limpet Mine Neutralization System		
Short Description	Navy Explosive Ordnance Disposal divers place a small charge on a simulated underwater mine.	
Long Description	A metal sheet containing a non-explosive limpet mine is lowered into the water, sometimes from the side of a small vessel, such as an LCM-8 craft. Navy Explosive Ordnance Divers place a single shock wave generator of Limpet Mine Neutralizing Systems on the mine that is located mid-water column, within water depths of 10 to 20 feet. A bag is placed over the mine to catch falling debris.	
Typical Components	**Platforms:** Small Boat, Unmanned Underwater Vehicle **Targets:** Metal Plates **Systems being Trained/Tested:** Demolition Devices **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Unmanned vehicles	
Parameters for Analysis	*De minimis* small explosive charges would be used during this activity and not quantitatively analyzed and therefore are not included under munitions.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Mariana littorals	Agat Bay Mine Neutralization Site
	Inner and Outer Apra Harbor	Inner Apra Harbor

A.3.8.6 Mine Neutralization – Explosive Ordnance Disposal

Mine Warfare		
Mine Neutralization Explosive Ordnance Disposal		
Short Description	Personnel disable threat mines using explosive charges.	
Long Description	Navy divers, typically explosive ordnance disposal personnel, disable threat mines with explosive charges to create a safe channel for friendly vessels to transit or placing or detonating limpet mines on steel structures. Personnel detect, identify, evaluate, and neutralize mines in the water with an explosive device and may involve detonation of one or more explosive charges ranging up to 10 or 20 pounds of TNT equivalent, depending on location. These operations are normally conducted during daylight hours for safety reasons. Time-delay fuses may be used for these activities. Personnel also identify and place limpet mine charges on a steel structure in the water and detonate an explosive charge. These operations are normally conducted during daylight hours for safety reasons.	
Typical Components	**Platforms:** Small Boat, Unmanned Surface Vehicle, Unmanned Underwater Vehicle **Targets:** Mine Targets **Systems being Trained/Tested:** Nones **Munitions:** Demolition Devices	
Active Sonar	No	
In-Water Explosives	E5, E6	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Unmanned vehicles Explosive mine neutralization (with divers)	
Parameters for Analysis	Time-delayed fuses may be used (up to 10 minutes) for charges up to 20 lb. net explosive weight (NEW) in some locations. Charges are placed anywhere in water column, including bottom. Agat Bay underwater detonation site has a maximum charge size of 20 lb. net explosive weight (NEW). Piti and Outer Apra Harbor underwater detonation sites have a maximum charge size of 10 lb. NEW.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Agat Bay Mine Neutralization Site	Agat Bay Mine Neutralization Site
	Outer Apra Harbor UNDET Site	Outer Apra Harbor UNDET Site
	Piti Floating Mine Neutralization Site	Piti Floating Mine Neutralization Site

A.3.8.7 Surface Ship Object Detection

Mine Warfare		
Surface Ship Object Detection		
Short Description	Ship crews detect and avoid mines while navigating restricted areas or channels using active sonar.	
Long Description	Surface ship crews detect and avoid mines or other underwater hazardous objects while navigating restricted areas or channels using active sonar. Activities could be embedded within major training exercises.	
Typical Components	**Platforms:** Surface Combatant **Targets:** None **Systems being Trained/Tested:** Sonar Systems - Hull Mounted **Munitions:** None	
Active Sonar	MF1K	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels	
Parameters for Analysis	Existing placed mine shapes/targets of opportunity to be used. There is the potential for temporary placement of mine shapes. Potential locations for this activity include Mariana Nearshore locations and Apra Harbor.	
Location	**Phase III Requirement 202-2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.8.8 Underwater Demolition Qualification and Certification

Mine Warfare		
Underwater Demolition Qualification and Certification		
Short Description	Navy divers conduct various levels of training and certification in placing underwater demolition charges.	
Long Description	Demolition requalification and training provides teams with experience in underwater detonations by conducting detonations on metal plates near the shoreline	
Typical Components	**Platforms:** Small Boat, Unmanned Underwater Vehicle **Targets:** Metal Plates **Systems being Trained/Tested:** None **Munitions:** Demolition Devices	
Active Sonar	No	
In-Water Explosives	E5, E6	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Unmanned vehicles Explosive mine neutralization (with divers)	
Parameters for Analysis	Agat Bay underwater detonation site has a maximum charge size of 20 lb. net explosive weight (NEW). Piti and Outer Apra Harbor underwater detonation sites have a maximum charge size of 10 lb. NEW.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Agat Bay Mine Neutralization Site	Agat Bay Mine Neutralization Site
	Outer Apra Harbor UNDET Site	Outer Apra Harbor UNDET Site
	Piti Underwater Detonation Site	Piti Underwater Detonation Site

A.3.8.9 Underwater Mine Countermeasure Raise, Tow, Beach, and Exploitation

Mine Warfare		
Underwater Mine Countermeasure Raise, Tow, and Beach, and Exploitation		
Short Description	Personnel locate mines, perform mine neutralization, raise, and tow mines to the beach, and conduct exploitation operations for intelligence gathering.	
Long Description	Navy divers, typically explosive ordnance disposal personnel, locate mines using unmanned underwater vehicle, marine mammals, or other diver search techniques. Mines are then neutralized or prevented from working as they are intended. Explosive ordnance disposal personnel ensure the neutralization measures are effective, and the shapes are safe to bring to the beach. A lift balloon is attached to the line to raise the shape to the surface, and then a small boat slowly tows the shape to the beach. The final step, exploitation, is intelligence gathering, identifying the mine and how it works, and then disassembling it or disposing of it.	
Typical Components	**Platforms:** Rotary-Wing Aircraft, Small Boat, Unmanned Surface Vehicle, Unmanned Underwater Vehicle **Targets:** Mine Targets **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Unmanned vehicles	
Parameters for Analysis	Mine shapes are recovered and brought ashore on Reserve Craft Beach, as part of the activity.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
		Inner Apra Harbor
		Outer Apra Harbor

A.3.9 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.

A.3.9.1 Bombing Exercise Air-to-Ground

Strike Warfare		
Bombing Exercise Air-to-Ground		
Short Description	Bombing exercise involves training of strike fighter aircraft delivery of ordnance against land targets in day or night conditions.	
Long Description	Bombing exercise involves training of strike fighter aircraft delivery of ordnance against land targets in day or night conditions. The bombing exercise may involve simulated close air support training in direct support of and near forces on the ground, such as Navy or Marine forces engaged in training activities on land and may include the use of targeting laser.	
Typical Components	**Platforms:** Fixed Wing – Strike Aircraft **Targets:** None **Systems being Trained/Tested:** None **Munitions:** Bombs	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** None	
Parameters for Analysis	Bombs are released in accordance with range standard operating procedures. Land targets only. Observed ricochets and misses that land in waters surrounding FDM occupied by corals are reported.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	FDM	FDM; R7201; R7201A

A.3.9.2 Gunnery Exercise Air-to-Ground

Strike Warfare		
Gunnery Exercise Air-to-Ground		
Short Description	Fixed wing aircraft and helicopter crews use guns to attack ground targets, day or night, with the goal of destroying or disabling enemy vehicles, structures, or personnel.	
Long Description	Fixed-wing aircraft and helicopter crews use guns to attack ground targets, day or night, with the goal of destroying or disabling enemy vehicles, structures, or personnel. This activity could be conducted by strike fighters firing medium caliber projectiles, aerial gunships firing medium and large caliber projectiles, or helicopters firing medium and small caliber projectiles. This activity may include the use of targeting laser.	
Typical Components	**Platforms:** Fixed Wing – Other Aircraft, Fixed Wing – Strike Aircraft, Rotary-Wing Aircraft **Targets:** None **Systems being Trained/Tested:** None **Munitions:** Projectile - Small Caliber, Projectile - Medium Caliber, Projectile - Large Caliber	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** None	
Parameters for Analysis	Land based targets only.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	FDM	FDM; R7201; R7201A

A.3.9.3 Missile Exercise Air-to-Ground

Strike Warfare		
Missile Exercise Air-to-Ground		
Short Description	Missiles or rockets are launched against a land target.	
Long Description	Fixed-wing aircraft, helicopter, ship or submarine crews use missiles to attack ground targets, day or night, with the goal of destroying or disabling enemy vehicles, structures, or personnel.	
Typical Components	**Platforms:** Fixed Wing – Strike Aircraft, Rotary-Wing Aircraft, Unmanned Aerial Vehicle - Fixed Wing **Targets:** None **Systems being Trained/Tested:** None **Munitions:** Air-to-Surface Missiles, Rockets	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** None	
Parameters for Analysis	Land based targets only.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	FDM	FDM; R7201; R2701A

A.3.10 Surface Warfare

Surface warfare is a type of naval warfare in which aircraft, surface ships, and submarines employ weapons and sensors in operations directed against enemy surface ships or small boats. Aircraft-to-surface Surface Warfare is conducted by long-range attacks using air-launched cruise missiles, precision guided munitions, or aircraft guns. Surface warfare also is conducted by warships employing torpedoes, naval guns, and surface-to-surface missiles. Submarines attack surface ships using torpedoes or submarine-launched, anti-ship cruise missiles. Training in surface warfare includes surface-to-surface gunnery and missile exercises, air-to-surface gunnery and missile exercises, and submarine missile or torpedo launch events. Gunnery and missile training generally involves expenditure of ordnance against a towed target. A sinking exercise is a specialized training event that provides an opportunity for ship, submarine, and aircraft crews to use multiple weapons systems to deliver high-explosive ordnance on a deactivated vessel, which is deliberately sunk.

Surface warfare also encompasses maritime security, that is, the interception of a suspect surface ship by a Navy ship for the purpose of boarding-party inspection or the seizure of the suspect ship. Training in these tasks is conducted in visit, board, search and seizure activities.

A.3.10.1 Bombing Exercise

Surface Warfare		
Bombing Exercise		
Short Description	Fixed-wing aircrews deliver bombs against surface targets.	
Long Description	Fixed-wing aircraft conduct bombing exercises against stationary floating targets (e.g., MK-58 smoke buoy), towed targets, or maneuvering targets. An aircraft clears the area, deploys a smoke buoy, and then delivers high-explosive or non-explosive practice bombs on the target. Activities for strike fighters typically involve a flight of two aircraft delivering unguided or guided munitions that may be either high-explosive or non-explosive. The following munitions may be employed by strike fighter aircraft in the course of a bombing exercise: Unguided munitions including non-explosive subscale bombs (MK-76 and BDU-45), and explosive and non-explosive general-purpose bombs (MK-80 series). Precision-guided munitions include laser-guided bombs (explosive, non-explosive), laser-guided training rounds (non-explosive), Joint Direct Attack Munitions (explosive, non-explosive).	
Typical Components	**Platforms:** Fixed Wing – Strike Aircraft **Targets:** Surface Targets - Floating, Surface Targets - Maneuvering **Systems being Trained/Tested:** None **Munitions:** Bombs	
Active Sonar	No	
In-Water Explosives	E9, E10, E12	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Aerial-deployed mines and non-explosive bombs Explosive bombs	
Parameters for Analysis	Explosive bombs are assumed to explode just below the surface. This activity would occur at least 50 NM from land (FDM excepted). Approximately 90 percent of non-explosive bombs are the sub-scale bombs such as the MK-76 and BDU-48.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.10.2 Fast Attack Craft and Fast Inshore Attack Craft

Surface Warfare		
Fast Attack Craft and Fast Inshore Attack Craft		
Short Description	Navy ships and helicopters defend against small boat attacks.	
Long Description	Navy ships and helicopters detect, coordinate, and defend against multiple high speed small boats employing swarm tactics. Ships must coordinate defenses to achieve proper targeting of attack craft. Activities conducted in the open ocean are called Fast Attack Craft, while those in littoral waters are called Fast Inshore Attack Craft.	
Typical Components	**Platforms:** Amphibious Warfare Vessels, Surface Combatant, Rotary-wing Aircraft, Unmanned Aerial Vehicles, Unmanned Surface Vehicles **Targets:** Surface Targets - Maneuvering **Systems being Trained/Tested:** None **Munitions:** Projectile - Small Caliber, Projectile - Medium Caliber, Projectile - Large Caliber	
Active Sonar	No	
In-Water Explosives	E5	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Unmanned vehicles Explosive gunnery Non-explosive gunnery Weapon firing noise	
Parameters for Analysis	This activity occurs > 3 NM from land. Large caliber gunnery event will occur beyond 12 NM	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
		MITT Study Area; Mariana Islands Range Complex

A.3.10.3 Gunnery Exercise Air-to-Surface – Medium Caliber

Surface Warfare		
Gunnery Exercise Air-to-Surface Medium-Caliber		
Short Description	Fixed-wing and helicopter aircrews fire medium-caliber guns at surface targets.	
Long Description	Fixed-wing and helicopter aircrews engage surface targets with medium-caliber guns. Targets simulate enemy ships, boats, swimmers, and floating/near- surface mines. Fighter aircraft descend on a target firing high-explosive or non-explosive practice munitions medium-caliber projectiles. Helicopters will fly a racetrack pattern around an at-sea target. Aircrew will engage the target with medium-caliber weapons. Targets range from a smoke float, or an empty steel drum, to high-speed remote-controlled boats and jet-skis.	
Typical Components	**Platforms:** Fixed Wing – Strike Aircraft, Rotary-Wing Aircraft **Targets:** Surface Targets - Floating, Surface Targets - Maneuvering **Systems being Trained/Tested:** None **Munitions:** Projectile - Medium Caliber	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Non-explosive gunnery Towed in-water devices	
Parameters for Analysis	Most medium-caliber air-to-surface gunnery exercises will be with non-explosive training projectiles. High-explosive rounds will supplement when non-explosive training projectiles are not available. Fixed-wing projectile casings remain with aircraft and rotary-wing projectile casings are expended into the water. High-explosive projectiles used during this activity would be *de minimis*. This activity occurs > 12 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area SUA > 12 NM from land	MITT Study Area; Mariana Islands Range Complex
	Transit Corridor	

A.3.10.4 Gunnery Exercise Air-to-Surface – Small Caliber

Surface Warfare		
Gunnery Exercise Air-to-Surface Small-Caliber		
Short Description	Helicopter and tiltrotor aircrews, use small-caliber guns to engage surface targets.	
Long Description	Navy, Marine Corps, and Coast Guard helicopters and tiltrotor aircraft, fly a racetrack pattern around an at-sea target. Targets simulate enemy ships, boats, and floating/near-surface mines. Each gunner will engage the target with small-caliber weapons. Targets range from a smoke float, an empty steel drum, to high-speed remote-controlled boats and jet-skis.	
Typical Components	**Platforms:** Rotary-Wing Aircraft **Targets:** Surface Targets - Floating, Surface Targets - Maneuvering **Systems being Trained/Tested:** None **Munitions:** Projectile - Small Caliber	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Non-explosive gunnery	
Parameters for Analysis	This activity occurs > 12 NM from land	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area SUA > 12 NM from land	MITT Study Area; Mariana Islands Range Complex

A.3.10.5 Gunnery Exercise Surface-to-Surface Boat – Medium Caliber

Surface Warfare		
Gunnery Exercise Surface-to-Surface Boat Medium-Caliber		
Short Description	Small boat crews fire medium-caliber guns at surface targets.	
Long Description	Navy and Coast Guard small boat crews fire medium-caliber guns at surface targets. Boat crews may use high or low speeds to approach and engage targets simulating other boats, floating mines, or nearshore land targets with medium-caliber (up to and including 40 mm) weapons. A commonly used target is an empty steel drum. A number of different types of boats are used depending on the unit using the boat and their mission. Boats are most used to protect ships in harbors and high value units, such as aircraft carriers, nuclear submarines, and liquid natural gas tankers, while entering and leaving ports, as well as to conduct riverine operations and various naval special warfare operations. The boats used by these units include small unit river craft, combat rubber raiding craft, rigid-hull inflatable boats, patrol craft, and many other versions of these types of boats. These boats use inboard or outboard diesel or gasoline engines with either propeller or water jet propulsion.	
Typical Components	**Platforms:** Small Boat **Targets:** Surface Targets - Floating **Systems being Trained/Tested:** None **Munitions:** Grenades	
Active Sonar	No	
In-Water Explosives	E1	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Explosive gunnery Non-explosive gunnery Towed in-water devices	
Parameters for Analysis	One target used per activity, typically a stationary target such as a 50–liter steel drum. Explosive rounds would be fired greater than 12 NM from land. Non-explosive rounds would be fired greater than 3 NM from land. This training activity is conducted by Navy and USCG.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area > 12 NM from land (explosive)	MITT Study Area; Mariana Islands Range Complex
	MITT Study Area > 3 NM from land (non-explosive)	

A.3.10.6 Gunnery Exercise Surface-to-Surface Boat – Small Caliber

Surface Warfare		
Gunnery Exercise Surface-to-Surface Boat Small-Caliber		
Short Description	Small boat crews fire small-caliber guns at surface targets.	
Long Description	Navy and Coast Guard small boat crews fire small-caliber guns at surface targets. Boat crews may use high or low speeds to approach and engage targets simulating other boats, swimmers, floating mines, or nearshore land targets with small-caliber (up to and including 0.50 caliber) weapons. A commonly used target is an empty steel drum. Several different types of boats are used depending on the unit using the boat and their mission. Boats are most used to protect ships in harbors and high value units, such as aircraft carriers, nuclear submarines, and liquid natural gas tankers, while entering and leaving ports, as well as to conduct riverine operations, and various naval special warfare operations. The boats used by these units include small unit river craft, combat rubber raiding craft, rigid-hull inflatable boats, patrol craft, and many other versions of these types of boats. These boats use inboard or outboard, diesel or gasoline engines with either propeller or water jet propulsion.	
Typical Components	**Platforms:** Small Boat **Targets:** Surface Targets - Floating, Surface Targets - Towed **Systems being Trained/Tested:** None **Munitions:** Projectile - Small Caliber	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Non-explosive gunnery Towed in-water devices	
Parameters for Analysis	Activities will occur relatively nearshore due to short range of boats and safety concerns. Activities mostly occur within 3 NM of the shoreline but can occur further from shore. This training activity is conducted by Navy and USCG. This activity occurs > 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex
	Transit Corridor	

A.3.10.7 Gunnery Exercise Surface-to-Surface Ship – Large Caliber

Surface Warfare	
Gunnery Exercise Surface-to-Surface Ship Large-Caliber	
Short Description	Surface ship crews fire large-caliber guns at surface targets.
Long Description	Navy and Coast Guard gun crews engage surface targets at sea with their main battery large-caliber (typically 57 mm, 76 mm, and 5-inch) guns. Targets include the QST-35 seaborne powered target, high speed maneuverable surface target, or a specially configured remote-controlled watercraft. Some targets are expended during the activity and are not recovered. The activity proceeds with the target boat approaching from about 10–NM distance. The target is tracked by radar and when within a predetermined range, it is engaged first with large caliber "warning shots." As threats get closer all weapons may be used to disable the threat. This activity may involve a single firing ship or be undertaken in the context of a coordinated larger exercise involving multiple ships, including a major training exercise. Large-caliber guns will also be fired during weapon certification events and in conjunction with weapon maintenance. During all activities, either high-explosive or non-explosive rounds may be used. High-explosive rounds can either be fused for detonation on impact (with water surface or targets), or for proximity to the target (in air detonation).
Typical Components	**Platforms:** Patrol Combatant, Surface Combatant **Targets:** Surface Targets - Floating, Surface Targets - Maneuvering **Systems being Trained/Tested:** None **Munitions:** Projectile - Large Caliber
Active Sonar	No
In-Water Explosives	E3, E5
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Explosive gunnery Non-explosive gunnery Towed in-water devices Weapon firing noise
Parameters for Analysis	For analytical purposes assume all high-explosive rounds are fused to detonate upon impact with the water surface or target. After impacting the water, the high-explosive rounds are expected to detonate within 3 ft. of the surface. Non-explosive rounds, and fragments from the high-explosive rounds will sink to the bottom of the ocean. Assume each projectile will be up to 5 in. in diameter and 30 in. in length, and each firing will also expend an empty propellent cartridge.

Surface Warfare		
Gunnery Exercise Surface-to-Surface Ship Large-Caliber		
	This activity would occur greater than 12 NM from land (FDM excepted). This training activity is conducted by Navy and USCG.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area SUA > 12 NM from land	MITT Study Area; Mariana Islands Range Complex
	Transit Corridor	MITT Transit Lane

A.3.10.8 Gunnery Exercise Surface-to-Surface Ship – Medium Caliber

Surface Warfare		
Gunnery Exercise Surface-to-Surface Ship Medium-Caliber		
Short Description	Surface ship crews fire medium-caliber guns at surface targets.	
Long Description	Navy and Coast Guard crews fire medium-caliber guns at surface targets. Ships use medium-caliber weapons to practice defensive marksmanship, typically against a stationary floating target (a 10 ft. diameter red balloon [i.e., Killer Tomato]) and high-speed mobile targets. Some targets are expended during the activity and are not recovered. Shipboard protection systems (Close-In Weapon System) utilizing medium-caliber projectiles would train against high-speed mobile targets.	
Typical Components	**Platforms:** Amphibious Warfare Vessels, Patrol Combatant, Surface Combatant **Targets:** Surface Targets - Floating, Surface Targets - Maneuvering **Systems being Trained/Tested:** None **Munitions:** Projectile - Medium Caliber	
Active Sonar	No	
In-Water Explosives	E1	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Non-explosive gunnery Explosive gunnery Towed in-water devices	
Parameters for Analysis	One target is used per activity Approximately 35 percent are high-speed maneuvering targets, which are recovered. Approximately 15 percent of targets are other stationary targets such as a steel drum that are not recovered. The number or rounds per activity varies depending on munitions used. This activity would occur greater than 12 NM from land (FDM excepted). This training activity is conducted by Navy and USCG.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area SUA > 12 NM from land	MITT Study Area; Mariana Islands Range Complex
	Transit Corridor	

A.3.10.9 Gunnery Exercise Surface-to-Surface Ship – Small Caliber

Surface Warfare		
Gunnery Exercise Surface-to-Surface Ship Small-Caliber		
Short Description	Surface ship crews fire small-caliber guns at surface targets.	
Long Description	Navy and Coast Guard ship and boat crews fire small-caliber guns at surface targets. Ships use small-caliber weapons to practice defensive marksmanship, typically against stationary floating targets. The target may be a 10 ft. diameter red balloon (Killer Tomato), a 50-gallon steel drum, or another available target, such as a cardboard box. Some targets are expended during the activity and are not recovered. Ship crew qualifications conducted at sea employ stationary targets on deck. Small-caliber projectiles fired during these activities will be expended in the water. Shipboard protection systems utilizing small-caliber projectiles will train against high-speed mobile targets.	
Typical Components	**Platforms:** Patrol Combatant, Surface Combatant **Targets:** Surface Targets - Floating **Systems being Trained/Tested:** None **Munitions:** Projectile - Small Caliber	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Non-explosive gunnery Towed in-water devices	
Parameters for Analysis	This activity would occur greater than 12 NM from land (FDM excepted). This training activity is conducted by Navy and USCG.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area SUA > 12 NM from land	MITT Study Area; Mariana Islands Range Complex
	Transit Corridor	

A.3.10.10 Laser Targeting – Aircraft

Surface Warfare		
Laser Targeting - Aircraft		
Short Description	Fixed-wing and helicopter aircrews illuminate enemy targets with lasers.	
Long Description	Fixed-winged and helicopter aircrew illuminate enemy targets with lasers for engagement by aircraft with laser guided bombs or missiles. This activity may be conducted alone or in conjunction with other activities utilizing precision guided munitions, such as surface missiles and guided rockets. Activities where weapons are fired are addressed in the appropriate activity (e.g., air-to-surface missile exercise). Lower powered lasers, like those utilized by the Navy and USCG, may also be used as non-lethal deterrents during maritime security operations (force protection).	
Typical Components	**Platforms:** Fixed Wing – Strike Aircraft, Patrol Combatant, Rotary-Wing Aircraft **Targets:** Air Targets - Drone, Land Targets, Surface Targets - Floating, Surface Targets - Maneuvering, Surface Targets - Towed **Systems being Trained/Tested:** Fixed-wing and helicopter lasers **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Towed in-water devices	
Parameters for Analysis	Laser targeting for missile/rocket guidance will occur in areas where these activities also occur. Use of lasers as force protection non-lethal deterrents will primarily occur proximate to Navy homeports. This training activity is conducted by the Navy and USCG. All activities involving lasers require careful planning to ensure public safety. Laser targeting activities typically occur in Special Use Airspace.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area SUA > 12 NM from land	MITT Study Area; Mariana Islands Range Complex

A.3.10.11 Laser Targeting – Ship

Surface Warfare		
Laser Targeting - Ship		
Short Description	Surface ship crews illuminate air and surface targets with high-energy laser systems.	
Long Description	Ship crews employ high-power energy laser systems that are used to create critical failures in airborne and surface targets. System directs a directed energy beam that can penetrate thin layers of metal at short distances (less than 1 nautical mile) that can render air and surface targets inoperative. Laser systems can also be used in a low power setting as non-lethal deterrent during maritime security operations (force protection). The low power capability would not be used against manned platforms during training.	
Typical Components	**Platforms:** Surface Combatant **Targets:** Air Targets - Drone, Surface Targets - Maneuvering **Systems being Trained/Tested:** Shipboard laser systems **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Towed in-water devices	
Parameters for Analysis	Laser targeting for missile/rocket guidance will occur in areas where these activities also occur. Use of lasers as force protection non-lethal deterrents will primarily occur proximate to Navy homeports. All activities involving lasers require careful planning to ensure public safety. Laser targeting activities typically occur in Special Use Airspace.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area SUA > 12 NM from land	MITT Study Area; Mariana Islands Range Complex

A.3.10.12 Maritime Security Operations

Surface Warfare	
Maritime Security Operations	
Short Description	Helicopter, surface ship, and small boat crews conduct a suite of maritime security operations at sea, to include visit, board, search, and seizure; maritime interdiction operations; maritime interdiction operations; maritime infrastructure protection and harbor defense; ship force protection; anti-piracy operations; and drug interdiction by the Coast Guard.
Long Description	Navy and Coast Guard helicopter and surface ship crews conduct a suite of maritime security operations. These activities involve training of boarding parties delivered by helicopters and surface ships to surface vessels for the purpose of simulating vessel search and seizure operations. Various training scenarios are employed and may include small arms with non-explosive blanks and surveillance or reconnaissance unmanned surface and aerial vehicles. Vessel Visit, Board, Search, and Seizure: Military personnel from ships and aircraft board suspect vessels, potentially under hostile conditions. Maritime Interdiction Operations: Ships and aircraft train in pursuing, intercepting, and ultimately detaining suspect vessels. Maritime Infrastructure Protection and Harbor Defense: Naval personnel train to defend oil platforms, similar at sea structures, harbors, piers, and other infrastructure. Warning Shot/Disabling Fire: Naval personnel train in the use of weapons to force fleeing or threatening small boats (typically operating at high speeds) to come to a stop. Ship Force Protection: Ship crews train in tracking multiple approaching, circling small craft, assessing threat potential, and communicating amongst crewmates and other vessels to ensure ships are protected against attack. Anti-Piracy Training: Naval personnel train in deterring and interrupting piracy activity. Training includes large vessels (pirate “mother ships”), and multiple small, maneuverable, and fast craft. Drug Interdiction: Coast Guard helicopter and surface ship crews train in the intercepting, boarding, and searching of suspected drug carrying vessels.
Typical Components	**Platforms:** Patrol Combatant, Rotary-Wing Aircraft, Small Boat, Surface Combatant **Targets:** None **Systems being Trained/Tested:** None **Munitions:** Grenades
Active Sonar	No
In-Water Explosives	E2
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):**

Surface Warfare		
Maritime Security Operations		
	Manned surface vessels Explosive gunnery Non-explosive gunnery	
Parameters for Analysis	Maritime Security Operations is a broad term used to describe activities intended to train naval forces in the skills necessary to protect naval vessels from small boat attack, counter piracy and drug operations (maritime interdiction operations and visit, board, search, and seizure), and protect key infrastructure (e.g. oil platforms). These activities need to remain broad as naval forces need to be able to tailor training activities to respond to emergent threats. Activities typically do not involve live fire of weapons. All activities involve vessel movement, sometimes at high rates of speed (naval vessels maneuvering to overtake suspect vessel and/or small boats [targets] closing in and maneuvering around naval vessels), and some event involve helicopters and boarding parties. Firing of weapons during offshore activities is accounted for in gunnery exercises, surface-to-surface activities. Inshore activities include firing small caliber blank ammunition. These activities may occur in the nearshore areas throughout the Study Area. This training activity is conducted by Navy and USCG. Activities involving explosives should occur > 12 NM.	
Location	**Phase III Requirement 202-2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	Inner Apra Harbor
	Mariana Islands Range Complex	MITT Study Area; Mariana Islands Range Complex
	Mariana Littorals	Outer Apra Harbor

A.3.10.13 Missile Exercise – Surface-to-Surface

Surface Warfare		
Missile Exercise - Surface-to-Surface		
Short Description	Surface ship crews defend against surface threats (ships or small boats) and engage them with missiles.	
Long Description	Surface ships launch missiles at surface maritime targets with the goal of destroying or disabling enemy ships or boats. After detecting and confirming a surface threat, the ship will fire a precision guided surface missile. Events with destroyers and cruisers will involve long range (over the horizon) surface missiles. Events with littoral combat ships certify ship's crew to defend against "close-in" surface threats and will use shorter range surface missiles. These activities are live fire, meaning that a missile is fired down range. Surface missiles could be equipped with either high-explosive or non-explosive warheads.	
Typical Components	**Platforms:** Surface Combatant **Targets:** Surface Targets - Maneuvering **Systems being Trained/Tested:** **Munitions:** Air-to-Surface Missiles	
Active Sonar	No	
In-Water Explosives	E9	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Explosive missiles and rockets Non-explosive missiles and rockets	
Parameters for Analysis	Assume one missile and one target used per activity. While missile could explode above the water's surface after contacting target, analysis assumes all warheads explode at or just below the surface. Targets are usually recovered but could be lost due to damage. This activity would occur greater than 50 NM from land (FDM excepted).	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area > 50 NM from land	MITT Study Area; Mariana Islands Range Complex

A.3.10.14 Missile Exercise Air-to-Surface – Rocket

Surface Warfare		
Missile Exercise Air-to-Surface - Rocket		
Short Description	Helicopter aircrews fire both precision-guided and unguided rockets at surface targets.	
Long Description	Helicopters designate an at-sea surface target with a laser or optics for precision-guided high explosive or non-explosive practice munitions rockets.	
Typical Components	**Platforms:** Rotary-Wing Aircraft, Unmanned Aerial Vehicles – Rotary Wing **Targets:** Surface Targets - Floating, Surface Targets - Maneuvering **Systems being Trained/Tested:** None **Munitions:** Rockets	
Active Sonar	No	
In-Water Explosives	E3	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Explosive missiles and rockets Non-explosive missiles and rockets	
Parameters for Analysis	Assume all explosive rockets detonate in the water. Rockets may be used in conjunction with force protection events. The in-air low energy laser stressor was used in analysis of potential impacts on human resources. Targets are usually recovered but could be lost due to damage. This activity would occur greater than 12 NM from land (FDM excepted).	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area SUA > 12 NM from land	MITT Study Area; Mariana Islands Range Complex

A.3.10.15 Missile Exercise Air-to-Surface

Surface Warfare		
Missile Exercise Air-to-Surface		
Short Description	Fixed-wing and helicopter aircrews fire air-to-surface missiles at surface targets.	
Long Description	Fighter, maritime patrol aircraft, and helicopter aircrews fire precision-guided missiles against surface targets. Aircraft involved may be unmanned. Fixed-wing aircraft (fighters or maritime patrol aircraft) approach an at-sea surface target from high altitude and launch high-explosive precision guided missiles. Helicopters designate at-sea surface targets with a laser or optics for a precision guided high-explosive or non-explosive practice munitions missile. Helicopter launched missiles typically pass through the target's "sail," and, if explosive, detonate at or just below, the water's surface.	
Typical Components	**Platforms:** Fixed Wing – Patrol Aircraft, Fixed Wing – Strike Aircraft, Rotary-Wing Aircraft, Unmanned Aerial Vehicle – Rotary Wing **Targets:** Surface Targets - Floating, Surface Targets - Maneuvering, Surface Targets - Towed **Systems being Trained/Tested:** None **Munitions:** Air-to-Surface Missiles	
Active Sonar	No	
In-Water Explosives	E6, E7, E9, E10	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Explosive missiles and rockets Non-explosive missiles and rockets Towed in-water devices	
Parameters for Analysis	Assume one missile and one target are used per activity. While missiles could explode above the water's surface after contacting targets, analysis assumes that all warheads explode at or just below the water's surface. Targets are usually recovered but could be lost due to damage. This activity occurs greater than 12 NM from land (FDM excepted).	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area SUA > 12 NM from land	MITT Study Area; Mariana Islands Range Complex

A.3.10.16 Sinking Exercise

Surface Warfare	
Sinking Exercise	
Short Description	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.
Long Description	Joint Ship personnel and aircrews deliver high-explosive ordnance on a seaborne target, (large, deactivated vessel), which is deliberately sunk using multiple weapon systems. A sinking exercise is typically a joint activity conducted by aircraft, surface vessels, and submarines to train in live ordnance delivery on a full-size ship target. The target is typically a decommissioned ship made environmentally safe for sinking according to U.S. Environmental Protection Agency standards. The location is greater than 50 nautical miles from shore and in water depths greater than 6,000 feet (ft.). Ship, aircraft, and submarine crews attack with coordinated tactics and deliver a variety of inert and high-explosive ordnance. Coast Guard cutters and Air Force aircraft may participate in this activity. Typically, the activity lasts for 4 to 8 hours and possibly over 1 to 2 days, however it is unpredictable and ultimately ends when the target ship sinks.
Typical Components	**Platforms:** Fixed Wing – Strike Aircraft, Fixed Wing – Other, Submarine, Surface Combatant, Unmanned Aerial Vehicle – Fixed Wing, Unmanned Surface Vehicle, Unmanned Underwater Vehicle **Targets:** Surface Targets - Floating **Systems being Trained/Tested:** None **Munitions:** Bombs, Projectile - Large Caliber, Projectile - Medium Caliber, Torpedoes - HE, Air-to-Surface Missiles
Active Sonar	HFH
In-Water Explosives	E5, E8, E9, E11, E12
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels Unmanned vehicles SINKEX
Parameters for Analysis	Activities occur greater than 50 NM from shore and in water depths greater than 6,000 ft. during daylight hours only. The participants and assets typically include: • 1 full-size target ship hulk • 1-5 CG, DDG, or LCS ships • 1-10 F/A-18, or maritime patrol aircraft • 1 or 2 MH-60 helicopters • 1 E-2 aircraft for Command and Control • 1 submarine • 1-3 range clearance aircraft • 1-2 Harpoon surface-to-surface or air-to-surface missiles • 2-4 Maverick or Hellfire air-to-surface missiles

<table>
<tr><td colspan="3">Surface Warfare</td></tr>
<tr><td colspan="3">Sinking Exercise</td></tr>
<tr><td></td><td colspan="2">• 2-12 MK-80 series general purpose bombs
• 200 rounds large-caliber projectiles
• 1-2 MK-48 heavyweight submarine-launched torpedoes
• 2,000–10,000 projectiles .50-caliber and 7.62 millimeter
• Assume 2 guidance wires expended per event
Acoustic effects modeling assumed only a percentage of munitions missed target and exploded in water. Precision guided munitions are assumed to impact target well above waterline and are not modeled (or reported) as in-water explosions.

This activity occurs >50 NM from land and >1,000 fathoms depth</td></tr>
<tr><td rowspan="2">Location</td><td>Phase III Requirement 2020–2027</td><td>Phase IV Requirement 2027–2034</td></tr>
<tr><td>MITT Study Area</td><td>MITT Study Area; Mariana Islands Range Complex</td></tr>
</table>

A.3.10.17 Small Boat Attack

Surface Warfare		
Small Boat Attack		
Short Description	Afloat units defend against small boat or personal watercraft attack.	
Long Description	For this activity, one or two small boats or personal watercraft conduct simulated attack activities on units afloat, training ship crews how to respond to small boat attack in harbors, restricted channels, and nearshore areas using non-lethal means or armament appropriate to the threat and location. Coast Guard small boats and aircraft may participate in this activity.	
Typical Components	**Platforms:** Patrol Combatant, Small Boats **Targets:** Surface Targets - Maneuvering **Systems being Trained/Tested:** None **Munitions:** Projectile – Small Caliber	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Non-explosive gunnery	
Parameters for Analysis	This training activity is conducted by the Navy and USCG. Events employing live fire will occur > 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex
		Outer Apra Harbor

A.3.10.18 Surface Warfare Torpedo Exercise – Submarine

Surface Warfare		
Surface Warfare Torpedo Exercise - Submarine		
Short Description	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.	
Long Description	Submarine crews search for, detect, and track a surface ship(s) simulating threat surface ship(s) with the goal of determining a firing solution that could be used to launch torpedoes with the intent to simulate destroying the targets. A single submerged submarine operates at various speeds and depths while using its hull mounted and towed array passive and active sonars and potentially UAVs to track the threat target. Passive sonar is used extensively with active sonar used less frequently. Submarine launched exercise torpedoes are fired at the target surface ship(s) and surface ship targets and/or threat supporting fixed and/or rotary wing aircraft may fire light weight torpedoes at the submarine. All activity participants may employ countermeasures and decoys. This activity may involve a single submarine or be undertaken in the context of a coordinated larger exercise involving multiple aircraft, ships, and submarines, including a major range event. The exercise torpedoes are recovered by helicopter or small craft. The preferred range for this activity is an instrumented underwater range, but it may be conducted off an instrumented range.	
Typical Components	**Platforms:** Submarine, Unmanned Aerial Vehicles – Rotary Wing **Targets:** Surface Targets - Maneuvering **Systems being Trained/Tested:** None **Munitions:** Torpedoes - Exercise	
Active Sonar	HFH	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels Towed in-water devices	
Parameters for Analysis	This activity occurs > 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area > 3 NM from land	MITT Study Area; Mariana Islands Range Complex

A.3.11 Other Training Activities

Other training activities includes training that falls outside the Primary Mission Areas.

A.3.11.1 Direct Action (Tactical Air Control Party)

Other Training Activities		
Direct Action (Tactical Air Control Party)		
Short Description	Military personnel train for controlling of combat support aircraft; providing airspace de-confliction and terminal control for Close Air Support.	
Long Description	Tactical Air Control personnel, once at Farallon de Medinilla, participate in tactical air control training in conjunction with an Air-to-Ground bombing or missile exercise. They may also employ small arms, grenades, mortars, and crew served weapons in direct action against targets on the island.	
Typical Components	**Platforms:** Fixed-Wing Aircraft, Rotary-Wing Aircraft **Targets:** None **Systems being Trained/Tested:** None **Munitions:** Small arms, grenades, mortars	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	None	
Parameters for Analysis	May involve overnight camping on FDM.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	FDM	FDM; R7201; R7201A

A.3.11.2 Maritime Environmental Response

Other Training Activities		
Maritime Environmental Response – New Activity		
Short Description	Train units to response to maritime environmental incidents.	
Long Description	USCG conducts spill and hazmat response that occur after ships run aground or oil wells are compromised. Training may include deployment of oil booms.	
Typical Components	**Platforms:** Patrol Combatant, Small Boats **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis		
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
		MITT Study Area

A.3.11.3 Precision Anchoring

Other Training Activities		
Precision Anchoring		
Short Description	Surface ship crews release and retrieve anchors in designated locations.	
Long Description	Navy and Coast Guard ship crews choose the best available anchoring sites. The ship uses all means available to determine its position when anchor is dropped to demonstrate calculating and plotting the anchor's position within 100 yards of center of planned anchorage.	
Typical Components	**Platforms:** All Navy and Coast Guard Ships and Boats **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	This training activity is conducted by Navy and USCG.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Apra Harbor	MIRC Anchorages
	Mariana Islands anchorages	

A.3.11.4 Search and Rescue

Other Training Activities		
Search and Rescue		
Short Description	Helicopter and ship crews rescue military personnel at sea.	
Long Description	Navy and Coast Guard helicopter, ship, and submarine crews practice the skills required to recover personnel lost at sea. Helicopters locate survivors and deploy rescue swimmer and rescue basket. Survivors are winched up to the hovering helicopter. Surface ships would conduct man overboard drills and deploy a dummy figure in the water. Ship crews would launch a small boat, direct the recovery of the dummy, and recover the small boat. Submarine crews would maneuver the submarine to effect recovery of personnel.	
Typical Components	**Platforms:** All Navy Ships and Boats, Rotary-Wing and Fixed-Wing Aircrafts **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	These events may occur in the nearshore areas throughout the Study Area. This training activity is conducted by Navy and USCG.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.3.11.5 Submarine Navigation

Other Training Activities		
Submarine Navigation		
Short Description	Submarine crews operate sonar for navigation and detection while transiting into and out of port during reduced visibility.	
Long Description	Submarine crews train to operate sonar for navigation. The ability to navigate using sonar is critical for detection while transiting into and out of port during periods of reduced visibility. During this activity the submarine will be surfaced.	
Typical Components	**Platforms:** Submarine **Targets:** None **Systems being Trained/Tested:** Sonar Systems - Hull Mounted **Munitions:** None	
Active Sonar	MFH, HFH	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources	
Parameters for Analysis	None	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Apra Harbor and Mariana Littorals	MITT Study Area; Mariana Islands Range Complex

A.3.11.6 Submarine Sonar Maintenance

Other Training Activities		
Submarine Sonar Maintenance and Systems Checks		
Short Description	Maintenance of submarine sonar and other system checks are conducted pierside or at sea.	
Long Description	A submarine performs periodic maintenance on the submarine sonar systems while in port or at sea. Submarines conduct maintenance to their sonar systems in shallow water near their homeport, however, sonar maintenance could occur anywhere as the system's performance may warrant.	
Typical Components	**Platforms:** Submarine **Targets:** None **Systems being Trained/Tested:** Sonar Systems - Hull Mounted **Munitions:** None	
Active Sonar	MFH	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources	
Parameters for Analysis	None	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	Inner Apra Harbor
	Inner Apra Harbor	MITT Study Area; Mariana Islands Range Complex
	Transit Corridor	MITT Transit Lane

A.3.11.7 Surface Ship Sonar Maintenance

Other Training Activities		
Surface Ship Sonar Maintenance and Systems Checks		
Short Description	Maintenance of surface ship sonar and other system checks are conducted pierside or at sea.	
Long Description	This scenario consists of surface ships performing periodic maintenance to the sonar and other ship systems while in port or at sea. This maintenance takes up to 4 hours. Surface ships operate active sonar systems for maintenance while in shallow water near their homeport, however, sonar maintenance could occur anywhere as the system's performance may warrant.	
Typical Components	**Platforms:** Surface Combatant **Targets:** None **Systems being Trained/Tested:** Sonar Systems - Hull Mounted **Munitions:** None	
Active Sonar	MF1, MF1K	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels	
Parameters for Analysis	None	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	Inner Apra Harbor
	Inner Apra Harbor	MITT Study Area; Mariana Islands Range Complex
	Transit Corridor	MITT Transit Lane

A.3.11.8 Underwater Survey

Other Training Activities		
Underwater Survey		
Short Description	Navy divers train in survey of underwater conditions and features in preparation for insertion, extraction, or intelligence, surveillance, and reconnaissance activities.	
Long Description	A survey of underwater terrain conditions nearshore and a report of findings to provide precise analysis for amphibious landings. 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.	
Typical Components	**Platforms:** Small Boat, Unmanned Bottom Crawler **Targets:** None **Systems being Trained/Tested:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Unmanned vehicles	
Parameters for Analysis	Hand-held (or similar) *de minimis* sonar sources may be used. During the conduct of underwater survey activities personnel may stand in the surf zone and walk onto the beach.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex
	Apra Harbor and Mariana Littorals	

A.3.11.9 Unmanned Aerial System Training and Certification

Other Training Activities		
Unmanned Aerial System Training and Certification		
Short Description	Surface ships and submarines launch unmanned aerial systems to conduct training and certification.	
Long Description	Navy and Coast Guard forces deploy unmanned aerial systems (UASs) from surface ships and ashore locations to conduct training and certification. These UASs are typically recovered, with flight times lasting from 1-8 hours. Personnel use radio frequency communications to control and communicate with the unmanned aerial system during its flight. For submarine launched UASs, a negatively buoyant capsule is deployed underwater and descends to a programmed depth. The capsule then drops a weight, inflates a flotation collar, rises to the surface, and launches an unmanned aerial system. Submarine launched UASs are not typically recovered.	
Typical Components	**Platforms:** Unmanned Aerial Vehicle - Fixed Wing **Targets:** None **Systems being Trained/Tested:** Surface Ship and Submarine Launched UASs **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels Unmanned vehicles	
Parameters for Analysis	This training activity is conducted by Navy, USMC, and USCG.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Mariana Islands Range Complex	MITT Study Area; Mariana Islands Range Complex
	MITT Study Area	

A.3.11.10 Unmanned Underwater Vehicle Training

Other Training Activities		
Unmanned Underwater Vehicle Training - Certification and Development Exercises		
Short Description	Unmanned underwater vehicle certification involves training with unmanned platforms to ensure 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.	
Long Description	Unmanned underwater vehicle certification and tactical development involves the training with unmanned platforms on which various payloads are attached and used for different purposes. Unmanned underwater vehicles may be deployed by surface ships and Coast Guard cutters, small boats, submarines, aircraft, and target support vessels. Payload certification and development training assesses various systems that can be incorporated onto unmanned platforms for mine warfare, bottom mapping, and other missions. Training can range from basic remote control and autonomous navigation tests to deployment and activation of onboard systems which may include hydrodynamic instruments, launchers, and recovery capabilities.	
Typical Components	**Platforms:** Small Boat, Unmanned Underwater Vehicle **Targets:** Mine Targets **Systems being Trained/Tested:** Unmanned Vehicle Systems, Sonar Systems - Other, Safety and Navigation, Pinger, Acoustic Communications **Munitions:** None	
Active Sonar	HFM, VHFH, Broadband (MF to HF)	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels Unmanned vehicles	
Parameters for Analysis	These events may occur in littorals throughout the Study Area. This training activity is conducted by Navy and USCG.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Mariana Islands Range Complex	MITT Study Area; Mariana Islands Range Complex
	Apra Harbor	
	Mariana Littorals	

A.3.11.11 Waterborne Training

Other Training Activities		
Waterborne Training – New Activity		
Short Description	Personnel launch, operate, and recover a variety of small boats to achieve certifications such as coxswain, crewman, and safety observer.	
Long Description	Waterborne Training includes qualification and certification as safety observer, safety swimmer, coxswain, and crewman utilizing a variety of Navy and Coast Guard small crafts. These craft include, but are not limited, to rigid hull inflatables, aluminum chambered boats, patrol boats, stand-up paddleboards, kayaks, and jet skis. Small boat crews train to launch and recover, moor to buoys, anchor, and operate a variety of missions in shallow waters.	
Typical Components	**Platforms:** Small Boat **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	This training activity is conducted by Navy and USCG.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
		MITT Study Area; Mariana Islands Range Complex
		CNMI Nearshore
		Guam Nearshore

A.4 Testing Activities

A.4.1 Naval Air Systems Command Testing Activities

Naval Air Systems Command (NAVAIR) activities will generally fall under fleet primary mission areas, such as the testing of airborne mine warfare and anti-submarine warfare weapons and systems. NAVAIR activities include, but are not limited to, the testing of new aircraft platforms, weapons, and systems that will ultimately be integrated into fleet training activities. In addition to testing new platforms, weapons, and systems, In addition to testing new platforms, weapons, and systems, NAVAIR also conducts follow-on testing and evaluation of updated systems in support of fleet operational units in the MITT Study Area. In general, the potential environmental effects from most NAVAIR testing events are similar to the associated fleet training events.

While many of these systems tested by NAVAIR will ultimately be used by the fleet, testing activities involving the same or similar systems may be conducted in different locations and manners that when conducted by the fleet. Because of these differences, the results of the analysis for testing activities may differ from the results for training activities.

A.4.1.1 Air Warfare

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, 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.

A.4.1.1.1 Air Combat Maneuvers Test

Air Warfare		
Air Combat Maneuvers Test		
Short Description	Aircrews engage in flight maneuvers designed to gain a tactical advantage during combat.	
Long Description	Air combat maneuver is the general term used to describe an air-to-air test event involving two or more aircraft, each engaged in continuous proactive and reactive changes in aircraft attitude, altitude, and airspeed. No weapons are fired during air combat maneuver activities.	
Typical Components	**Platforms:** Fixed-Wing Aircraft **Targets:** None **Systems being Trained/Tested:** Aircraft systems **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	None	
Parameters for Analysis	This activity occurs > 12 NM from land (FDM excepted). Air Combat Maneuver Test was not called out in the previous MITT analyses, but the components of the testing were aligned with the training activity "Air Combat Maneuvers."	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area, Mariana Islands Range Complex	MITT Study Area; Mariana Islands Range Complex

A.4.1.1.2 Intelligence, Surveillance, and Reconnaissance Test

Air Warfare		
Intelligence, Surveillance, and Reconnaissance Test		
Short Description	Aircrews use all available sensors to collect data on threat vessels.	
Long Description	An air warfare intelligence, surveillance, and reconnaissance (ISR) test involves evaluating communications capabilities of aircraft, including unmanned aerial systems that can carry cameras, sensors, communications equipment, or other payloads. New systems are tested at sea to ensure proper communications between aircraft and ships. ISR aircraft systems act as eyes in the sky, relaying raw imagery back to military personnel on the ground or to ships at-sea. The data is processed, analyzed, and shared with U.S. Navy or other U.S. military aircraft or vessels. New ISR technology systems provide combat identification (friend or foe) and are used for aircraft and ship-based communications.	
Typical Components	**Platforms:** Fixed-Wing Aircraft, Rotary-Wing Aircraft **Targets:** Air Targets – Drone. **Systems being Trained/Tested:** Aircraft intelligence, surveillance, and reconnaissance systems **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	None	
Parameters for Analysis	This activity occurs > 3 NM from land (FDM excepted).	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.4.1.2 Anti-Submarine Warfare

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 rotary-wing aircraft. 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.

A.4.1.2.1 Anti-Submarine Warfare Torpedo Test (Aircraft)

Anti-Submarine Warfare		
Anti-Submarine Warfare Torpedo Test (Aircraft)		
Short Description	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.	
Long Description	The Anti-Submarine Warfare Torpedo Test (Aircraft) 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. The focus of the anti-submarine warfare torpedo test is the operation of non-explosive torpedoes, but other anti-submarine warfare systems are often used during the test. Targets simulate a submarine threat and are deployed at varying depths and speeds. If available, tests may be conducted using an actual submarine as the target. This activity can be conducted in shallow or deep waters and aircraft can originate from a land base or from a surface ship. The torpedo test culminates with the release of an exercise torpedo against the target and is intended to evaluate the targeting, release, and tracking process of deploying torpedoes from aircraft. All exercise torpedoes used in testing are either running or non-running and are non-explosive. Eighty-five percent of torpedoes are recovered. A parachute assembly used for aircraft-launched torpedoes is jettisoned and sinks. Ballast (typically lead weights) may be released from the torpedoes to allow for recovery, leaving the ballast to sink to the bottom.	
Typical Components	**Platforms:** Fixed-Wing Aircraft; Rotary-Wing Aircraft **Targets:** Sub-surface Targets - Maneuvering **Systems being Trained/Tested:** Sonobuoys **Munitions:** Torpedoes - Exercise	
Active Sonar	MFM, HFH	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources	
Parameters for Analysis	Assume one torpedo accessory package (e.g., ballast) per torpedo. Assume one target per torpedo. This activity occurs > 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area > 3 NM from land	MITT Study Area; Mariana Islands Range Complex

A.4.1.2.2 Anti-Submarine Warfare Tracking Test (Fixed-Wing)

Anti-Submarine Warfare		
Anti-Submarine Warfare Tracking Test (Fixed-Wing)		
Short Description	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.	
Long Description	An Anti-Submarine Warfare Tracking Test (Fixed-Wing) evaluates the sensors and systems used to detect and track submarines and to ensure that platform systems used to deploy the tracking systems perform to specifications and meet operational requirements. Targets may also be employed during an anti-submarine warfare scenario. If available, tests may be conducted using an actual submarine as the target. This activity would be conducted in deep (typically beyond 100 feet) waters. Some anti-submarine warfare fixed-wing aircraft tracking tests could be conducted as part of a coordinated event with fleet training activities.	
Typical Components	**Platforms:** Fixed-Wing Aircraft **Targets:** Sub-surface Targets - Maneuvering **Systems being Trained/Tested:** Sonobuoys **Munitions:** None	
Active Sonar	LFM, LFH, MFM	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources	
Parameters for Analysis	This activity occurs > 3 NM from land. Submarine may provide service as the target.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area > 3 NM from land	MITT Study Area; Mariana Islands Range Complex

A.4.1.2.3 Anti-Submarine Warfare Tracking Test (Rotary-Wing)

Anti-Submarine Warfare		
Anti-Submarine Warfare Tracking Test (Rotary Wing)		
Short Description	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.	
Long Description	An Anti-Submarine Warfare Tracking Test — Rotary Wing evaluates the sensors and systems used to detect and track submarines and to ensure that platform systems used to deploy the tracking systems perform to specifications. Targets may also be employed during an anti-submarine warfare tracking test event. If available, tests may be conducted using an actual submarine as the target. This activity would be conducted in shallow or deep waters and could initiate from a land base or from a surface ship. Some anti-submarine rotary-wing tracking tests could be conducted as part of an anti-submarine tracking coordinated event with fleet training activities.	
Typical Components	**Platforms:** Rotary-Wing Aircraft **Targets:** Sub-surface Targets - Maneuvering **Systems being Trained/Tested:** Sonar Systems - Dipping, Sonobuoys **Munitions:** None	
Active Sonar	MFM, MFH	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources	
Parameters for Analysis	Submarine may provide service as the target. This activity occurs > 3 NM from land. Anti-Submarine Warfare Tracking Test (Rotary-Wing) was not previously identified as an activity, but the components of the activity (e.g., sound sources and platform) were analyzed in the previous MITT analyses as part of other similar activities and are not new to the Study Area.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area; Mariana Islands Range Complex	MITT Study Area; Mariana Islands Range Complex

A.4.1.3 Surface Warfare

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. Testing events 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.

Training may occur in conjunction with weapons testing to provide Fleet operators unique opportunities to train with combat weapon systems and personnel in scripted warfare environments. For example, Fleet training could occur while testing a weapon system, in which Sailors would experience (be trained in) the use of the system being tested.

A.4.1.3.1 Air-to-Surface Missile Test

Surface Warfare		
Air-to-Surface Missile Test		
Short Description	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 Description	An air-to-surface missile 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. Air-to-surface missile tests can include high explosive, non-explosive, or non-firing (captive air training missile) weapons. Laser targeting systems may also be used. Both stationary and mobile targets would be utilized during testing.	
Typical Components	**Platforms:** Fixed-Wing Aircraft, Rotary-Wing Aircraft **Targets:** Surface Targets - Floating, Surface Targets - Maneuvering **Systems being Trained/Tested:** Missile Delivery Systems **Munitions:** Air-to-Surface Missiles	
Active Sonar	No	
In-Water Explosives	E6, E9	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Explosive missiles and rockets Non-explosive missiles and rockets	
Parameters for Analysis	This activity occurs > 12 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area > 50 NM from land	MITT Study Area; Mariana Islands Range Complex

A.4.2 Naval Sea Systems Command Testing Activities

Naval Sea Systems Command's testing activities will generally align with the primary mission areas used by the fleet. Naval Sea Systems Command testing activities include, but are not limited to, new ship construction, life cycle support, and other weapons system development and testing.

While many of these systems tested by Naval Sea Systems Command will ultimately be used by the fleet, testing activities involving the same or similar systems may be conducted in different locations and manners that when conducted by the fleet. Because of these differences, the results of the analysis for testing activities may differ from the results for training activities

A.4.2.1 Anti-Submarine Warfare

Testing of anti-submarine warfare systems is conducted to develop new technologies and assess weapon performance and operability wit 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.

A.4.2.1.1 At-Sea Sonar Testing

Anti-Submarine Warfare		
At-Sea Sonar Testing		
Short Description	At-sea testing to ensure systems are fully functional in an open ocean environment.	
Long Description	At-sea sonar testing is required to calibrate or document the functionality of sonar and torpedo systems while the ship or submarine is in an open ocean environment. At-sea sonar testing is conducted to verify that the ship meets design acoustic specifications, define the underwater characteristics of the ship, determine effects of systems and equipment on the ships acoustic characteristics, and provide technical background necessary to initiate development of design improvements to reduce noise. Tests also consist of electronic support measurement, photonics, and sonar sensor accuracy testing. In some instances, a submarine's passive detection capability is tested when a second submarine utilizes its active sonar or is equipped with a noise augmentation system in order to replicate acoustic or electromagnetic signatures of other vessel types or classes.	
Typical Components	**Platforms:** Submarine **Targets:** None **Systems being Trained/Tested:** Sonar Systems - Hull Mounted **Munitions:** None	
Active Sonar	MFH	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources	
Parameters for Analysis	This activity occurs > 3 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.4.2.1.2 Pierside Sonar Testing

Anti-Submarine Warfare		
Pierside Sonar Testing – New Activity		
Short Description	Pierside testing to ensure systems are fully functional in a controlled pierside environment prior to at-sea test activities and complete any required troubleshooting.	
Long Description	Ships and submarines would activate mid- and high-frequency tactical sonars, underwater communications systems, and navigational devices to ensure they are fully functional prior to at-sea test events. Event duration varies; with average durations of three weeks with active sonar used intermittently over two days during the total event duration. This also includes pierside sonar testing during surface combatant sea trials.	
Typical Components	**Platforms:** Submarine and Surface Combatant **Targets:** None **Systems being Trained/Tested:** Sonar Systems - Hull Mounted, Acoustic Communications **Munitions:** None	
Active Sonar	MFH, HFM, HFH	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources	
Parameters for Analysis	Event duration is 3 weeks with active sonar used intermittently. The facility platform may be a dock or other structure.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
		Inner Apra Harbor

A.4.2.2 Mine Warfare

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 and countermeasure and neutralization systems 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. Most 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.

A.4.2.2.1 Mine Countermeasure and Neutralization Testing

Mine Warfare		
Mine Countermeasure and Neutralization Testing		
Short Description	Air, surface, and subsurface vessels neutralize threat mines and mine-like objects.	
Long Description	Mine countermeasure-neutralization and mine system testing are required to ensure systems can effectively neutralize threat (live or inert) mines that will otherwise restrict passage through an area and to ensure U.S. Navy mines remain effective against enemy ships. These systems may be deployed with a variety of ships, aircraft, submarines, or unmanned autonomous vehicles. Mines are neutralized by cutting mooring cables of buoyant mines, producing acoustic energy that fires acoustic-influence mines, employing radar or laser fields, producing electrical energy to replicate the magnetic signatures of surface ships in order to detonate threat mines, detonating mines using remotely operated vehicles, and using explosive charges to destroy threat mines. This activity could involve aerial placed non-explosive mine training targets.	
Typical Components	**Platforms:** Amphibious Warfare Vessel, Mine Warfare Vessel, Rotary-Wing Aircraft, Surface Combatant, Unmanned Aerial Vehicle - Rotary Wing, Unmanned Underwater Vehicle **Targets:** Mine Targets **Systems being Trained/Tested:** Electromagnetic Systems, Mine Warfare Devices, Sonar Systems - Mine Warfare, Sonar Systems - Other, Sonobuoys, Lasers **Munitions:** AMNS Neutralizers	
Active Sonar	MFM, HFH	
In-Water Explosives	E4	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Non-explosive aerial deployed mines and bombs Manned surface vessels Explosive mine countermeasures and neutralization (no divers) Unmanned vehicles	
Parameters for Analysis	Aerial deployed mines and laser use can only occur in authorized areas.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	Agat Bay Mine Neutralization	Agat Bay Mine Neutralization
	Helicopter Laser Hazard Area	Helicopter Laser Hazard Area
	Piti Floating Mine Neutralization	Piti Floating Mine Neutralization

A.4.2.3 Unmanned Systems

A.4.2.3.1 Unmanned Aerial System Testing

Unmanned Systems		
Unmanned Aerial System Testing – New Activity		
Short Description	Unmanned aerial systems are launched from a platform (e.g., fixed platform or submerged submarine) to test the capability to extend the surveillance and communications range of unmanned underwater vehicles, manned and unmanned surface vehicles, and submarines.	
Long Description	Unmanned aerial systems are reusable, uncrewed vehicles capable of controlled, sustained, level flight. Anticipated scenarios of unmanned aerial system testing include both unmanned aerial system launcher testing and using unmanned aerial systems to extend the surveillance and communications range of distributed sensors, unmanned underwater vehicles, manned and unmanned surface vehicles, and submarines.	
Typical Components	**Platforms:** Submarine, Support Craft, Unmanned Aerial Vehicle - Fixed Wing, Unmanned Aerial Vehicle - Rotary Wing **Targets:** None **Systems being Trained/Tested:** Unmanned aerial systems **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	None	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
		MITT Study Area; Mariana Islands Range Complex

A.4.2.3.2 Unmanned Surface Vehicle Testing

Unmanned Systems		
Unmanned Surface Vehicle System Testing – New Activity		
Short Description	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.	
Long Description	USVs can include remotely operated craft (e.g., semi-submersible, plane hull, semi-plane hull) and test vehicles. During testing, they can operate autonomously, semi-autonomously, or non-autonomously. Non-autonomous or remotely controlled vehicles may be tethered like remotely operated vehicles (ROVs) or remotely controlled via radio link. USVs may have multiple test objectives or payloads (such as cameras, sonar, or explosives) onboard so that numerous tests can be executed during a single testing activity. USVs may be used in conjunction with unmanned underwater vehicles and unmanned aerial systems to meet test objectives. USV launch and retrieval methods are highly variable because of the differences in vehicle type and size. USV test vehicle launch methods include lowering onto the water from a support craft or pier, deploying from another craft, or launching from a boat ramp. The vehicle will propel itself through the water to complete the test objectives, which could include deployment or recovery of a payload, sonar or other sensor use, or completion of a propulsion test. Occurs year-round, daytime only.	
Typical Components	**Platforms:** Mine Warfare Vessel, Small Boat, Unmanned Surface Vehicle **Targets:** Surface Targets - Floating **Systems being Trained/Tested:** Unmanned surface vehicles **Munitions:** Explosive payload	
Active Sonar	No	
In-Water Explosives	E9	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Explosive payloads Manned surface vessels Unmanned vehicles	
Parameters for Analysis	Activities involving explosives will occur > 12 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
		MITT Study Area; Mariana Islands Range Complex

A.4.2.4 Vessel Evaluation

A.4.2.4.1 In-Port Maintenance Testing

Vessel Evaluation		
In-Port Maintenance Testing – New Activity		
Short Description	Each ship system is tested to ensure they are functioning in a technically acceptable manner and operationally ready to support maintenance capabilities, including Combat System testing.	
Long Description	Testing includes general system maintenance capabilities (e.g., verifying that submarine tenders can perform resupply and replenishment capabilities). For Combat Systems, the ship's test plans and procedures, Maintenance Repair/Requirement Cards, and computerized planned maintenance system are used in establishing testing standards.	
Typical Components	**Platforms:** Submarine, Support Craft **Targets:** None **Systems being Trained/Tested:** None **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	None	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
		Guam Nearshore
		CNMI Nearshore

A.4.2.4.2 Submarine Sea Trials – Weapons System Testing

Vessel Evaluation		
Submarine Sea Trials - Weapons System Testing		
Short Description	Submarine weapons and sonar systems are tested at-sea to meet the integrated combat system certification requirements.	
Long Description	Submarine weapons and sonar systems are tested at-sea to meet the integrated combat system certification requirements. This test involves subjecting the integrated combat system through rigorous testing.	
Typical Components	**Platforms:** Fixed Wing – Patrol Aircraft, Submarine **Targets:** Surface Targets - Floating **Systems being Trained/Tested:** Sonobuoys **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	This activity is conducted as part of Training's Sinking Exercise. The associated active sonar and explosives use was analyzed under Sinking Exercise. Submarines will not be conducting test constantly for the duration of the allotted time. This activity occurs > 50 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
		MITT Study Area; Mariana Islands Range Complex

A.4.2.4.3 Undersea Warfare Testing

Vessel Evaluation		
Undersea Warfare Testing		
Short Description	Ships demonstrate capability of countermeasure systems and underwater surveillance, weapons engagement and communications systems. This tests a ship's ability to detect, track, and engage undersea targets. Testing also includes assessing equipment vulnerability and ordnance lethality.	
Long Description	Undersea warfare events may be comprised of tracking and firing events or tests of hull-mounted sonar system capabilities to detect and avoid torpedo-like targets. Tracking and firing events ensure the operability of the undersea warfare suite and its interface with the rotary-wing helicopter. Tests include demonstrating the ability of the ship to search, detect, and track a target and conduct attacks with exercise torpedoes. Detection and avoidance events may use surface craft and underwater platforms to test the capability of mid- and high-frequency acoustic sources. Subsurface moving targets, rocket and air-dropped weapons, sonobuoys, towed arrays, and sub-surface torpedo-like devices may be used. Approximately 1 week of in-port training may precede the event. Undersea warfare events also include equipment testing to assess equipment vulnerability to ordnance, which will use explosive demolition charges.	
Typical Components	**Platforms**: Rotary-Wing, Submarine, Support Craft, Surface Combatant, Unmanned Surface Vehicle, Unmanned Underwater Vehicle **Targets**: Sub-surface Targets - Maneuvering, Sub-surface Targets - Stationary **Systems being Trained/Tested**: Countermeasures, Safety and Navigation, Sonar Systems - Dipping, Sonar Systems - Hull Mounted, Sonobuoys **Munitions:** Demolition Devices, Torpedoes - Exercise	
Active Sonar	MFM, MFH, HFH, Broadband (MF to HF)	
In-Water Explosives	E7	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Active acoustic sources Manned surface vessels Explosive payloads	
Parameters for Analysis	This activity occurs > 3 NM from land. Activities involving explosives will occur > 12 NM from land.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area	MITT Study Area; Mariana Islands Range Complex

A.4.2.4.4 Vessel Signature Evaluation

Vessel Evaluation		
Vessel Signature Evaluation		
Short Description	Surface ship, submarine, and/or auxiliary system signature assessments. This may include electronic, radar, acoustic, infrared, or magnetic signatures.	
Long Description	Radar cross signature testing of surface ships and submarines is accomplished on new ships and periodically throughout a ship's life cycle to measure how detectable the ship is to radar. Signature testing of all surface ships and submarines verifies that each vessel's signature is within specifications and may include the use of helicopter-deployed instrumentation, ship-mounted safety and navigation systems, fathometers, tracking devices, radar systems, underwater communications equipment, and passive acoustic sonobuoys.	
Typical Components	**Platforms:** Surface Combatant **Targets:** None **Systems being Trained/Tested:** Sonobuoys **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vessels	
Parameters for Analysis	None	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
		MITT Study Area; Mariana Islands Range Complex

A.4.3 Office of Naval Research

The Office of Naval Research'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. The Office of Naval Research 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. The Office of Naval Research 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.

A.4.3.1 Acoustic and Oceanographic Science and Technology

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.

A.4.3.1.1 Acoustic and Oceanographic Research

Acoustic and Oceanographic Science and Technology		
Acoustic and Oceanographic Research		
Short Description	Research of oceanographic processes using active transmissions, typically high-frequency (38 kilohertz and above) oceanographic measurement devices, deployed from ships, unmanned vehicles, and on moored platforms.	
Long Description	Office of Naval Research performs research on oceanographic processes in U.S. territorial waters and international waters using passive measurement devices and active acoustic systems such as Acoustic Doppler Current Profilers and echosounders. Measurement systems may be deployed by ship, unmanned underwater vehicles, or on standard oceanographic moorings. Moorings may be left in place for more than one year.	
Typical Components	**Platforms:** Moored Platform, Support Craft, Unmanned Aerial Vehicle - Rotary Wing, Unmanned Underwater Vehicle **Targets:** None **Systems being Trained/Tested:** Fathometer, Sonar Systems - Other **Munitions:** None	
Active Sonar	No	
In-Water Explosives	No	
Applicable Activity-based Mitigations for Marine Species	**Mitigation is required for the following stressors as described in Section 4.6 (Activity-Based Mitigation):** Manned surface vehicles Unmanned vehicles	
Parameters for Analysis	Approximately 12 non-recoverable bottom moorings may be used. Any acoustic sources used would be *de minimis*.	
Location	**Phase III Requirement 2020–2027**	**Phase IV Requirement 2027–2034**
	MITT Study Area; Mariana Islands Range Complex	MITT Study Area; Mariana Islands Range Complex

A.5 Range Modernization and Sustainment

This section provides additional information about Modernization and Sustainment activities proposed in this Draft SEIS/OEIS. Examples of Modernization (upgrading or expanding) range and testing/training areas, systems, and associated components include expanding special use airspace and installing permanent in-water structures, such as cables and platforms. Sustainment activities include maintenance and repair of and around existing and upgraded structures within the Study Area.

A.5.1 Installation and Maintenance of Subsurface Targets and Instrumentation

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). MCM targets are non-explosive and emulate real world threats with a variety of sizes and shapes including spheres, cylinders, clamshells, and truncated cones. The Installation and Maintenance of Subsurface Targets and Instrumentation activity can occur anywhere within the Study Area.

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 (Figure A-1). When training or testing is completed in the temporary range, or when onboard batteries run out, the instrumentation is recovered and where feasible, anchors are either removed along with the mine shapes or not recovered.

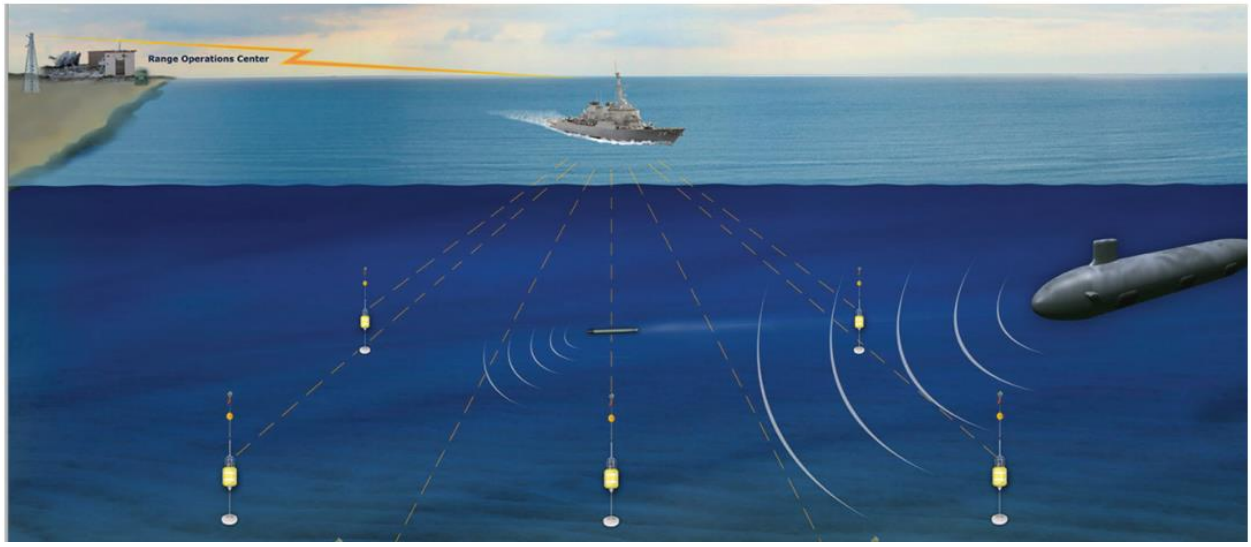

Figure A-1: Temporary Training Area/Range
(Source: Graphic from L3Harris)

A.6 Proposed Training Activities by Service

Training activities broken down by each Action Proponent (military service) are presented in Tables A-2 through A-5.

Table A-2: Navy and USMC Proposed Training Activities

Activity Name	2015 EIS/OEIS	2020 SEIS/OEIS	2026 Draft SEIS/OEIS		Location
	Annual # of Activities	Annual # of Activities	Annual # of Activities		
	Alt 1[1]	Alt 2[2]	Alt 1	Alt 2	
Major Training Exercises – Large Integrated Anti-Submarine Warfare Training					
Joint Multi-Strike Group Exercise	1	1	1	1	MITT Study Area >3 NM from land
Joint Expeditionary Exercise	1	1	0	0	MIRC; MITT Study Area
Small Integrated Anti-Submarine Warfare Training					
Surface Warfare Advanced Tactical Training[3]	0	3	1	1	MIRC; MITT Study Area > 3 NM from land
Small Integrated Anti-Submarine Warfare Training – NUWTAC/Multi-Sail[3]	0	3	7	7	MIRC; MITT Study Area > 3 NM from land
Medium Coordinated Anti-Submarine Warfare Training					
Medium Coordinated Anti-Submarine Warfare Training[3]	0	3	5	5	MIRC; MITT Study Area > 3 NM from land
Small Coordinated Anti-Submarine Warfare Training					
Independent Deployer Certification Exercise/Tailored Surface Warfare Training[3]	0	3	5	5	MIRC; MITT Study Area > 3 NM from land
Air Warfare					
Air Combat Maneuver[4]	4,800	4,100	2,480–2,960	2,960	MITT Study Area >12 NM from land; SUA
Air Defense Exercise	100	100	630–1,110	1,110	MITT Study Area >12 NM from land; SUA
Gunnery Exercise Air-to-Air Medium Caliber	24	24	20–24	24	MITT Study Area >12 NM from land; SUA
Gunnery Exercise Surface-to-Air Large Caliber	5	9	14	14	MITT Study Area SUA > 12 NM from land
Gunnery Exercise Surface-to-Air Medium Caliber	12	19	23	23	MITT Study Area SUA > 12 NM from land
Missile Exercise Air-to-Air	12	12	10–12	12	MITT Study Area SUA > 12 NM from land

Activity Name	2015 EIS/OEIS	2020 SEIS/OEIS	2026 Draft SEIS/OEIS		Location
	Annual # of Activities	Annual # of Activities	Annual # of Activities		
	Alt 1[1]	Alt 2[2]	Alt 1	Alt 2	
Missile Exercise Surface-to-Air	15	27	6–8	8	MITT Study Area SUA > 12 NM from land
Amphibious Warfare					
Amphibious Assault	6	6	5–10	10	CNMI Nearshore; Guam Nearshore
Amphibious Raid	6	6	5–10	10	CNMI Nearshore; Guam Nearshore
Amphibious Vehicle Maneuvers/Rehearsals	12	12	13–28	28	MITT Study Area; Guam Nearshore; CNMI Nearshore; Apra Harbor
Naval Surface Fire Support – Land Based Target	10	15	5	5	FDM
Non-Combat Amphibious Operation[5]	10	10	5–15	15	CNMI Nearshore; Guam Nearshore
Unmanned Aerial Vehicle – Intelligence, Surveillance, and Reconnaissance	100	100	220–420	420	MIRC; MITT Study Area; SUA
Marine Air Ground Task Force Exercise (Amphibious) – Battalion	4	4	0	0	MITT Study Area to nearshore; MIRC; Tinian; Guam; Rota; Saipan; FDM
Special Purpose Marine Air Ground Task Force Exercise	2	2	0	0	Study Area to nearshore; MIRC; Tinian; Guam; Rota; Saipan
Anti-Submarine Warfare					
Anti-Submarine Warfare Torpedo Exercise – Helicopter	4	6	1	1	MITT Study Area > 3 NM from land
Anti-Submarine Warfare Torpedo Exercise – Maritime Patrol Aircraft	4	6	1–2	2	MITT Study Area > 3 NM from land
Anti-Submarine Warfare Torpedo Exercise – Ship	3	6	6–8	8	MITT Study Area > 3 NM from land
Anti-Submarine Warfare Torpedo Exercise – Submarine	10	4	1–2	2	MITT Study Area > 3 NM from land
Anti-Submarine Warfare Tracking Exercise – Helicopter	12	10	16	16	MITT Study Area > 3 NM from land; Transit Corridor
Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft	34	36	45–60	60	MITT Study Area > 3 NM from land

Activity Name	2015 EIS/OEIS	2020 SEIS/OEIS	2026 Draft SEIS/OEIS		Location
	Annual # of Activities	Annual # of Activities	Annual # of Activities		
	Alt 1[1]	Alt 2[2]	Alt 1	Alt 2	
Anti-Submarine Warfare Tracking Exercise – Ship	132	91	90	90	MITT Study Area > 3 NM from land
Anti-Submarine Warfare Tracking Exercise – Submarine	12	4	14	14	MITT Study Area > 3 NM from land; Transit Corridor
Electronic Warfare					
Counter Targeting Chaff Exercise – Ship	40	60	10	10	MITT Study Area > 12 NM from land
Counter Targeting Chaff Exercise – Aircraft	1,600	600	120–130	130	MITT Study Area > 12 NM from land
Counter Targeting Flare Exercise	1,600	600	120–130	130	MITT Study Area > 12 NM from land
Electronic Warfare Operations	320	362	555–1,060	1,060	MITT Study Area
Expeditionary Warfare					
Dive and Salvage Operations	0	0	250	250	CNMI Nearshore; Guam Nearshore
Personnel Insertion/Extraction – Air[6]	80	58	217	217	CNMI Nearshore; Guam Nearshore
Personnel Insertion/Extraction – Surface and Subsurface[6]	80	136	86–91	91	CNMI Nearshore; Guam Nearshore
Personnel Insertion/Extraction – Swimmer/Diver[6]	80	106	52	52	CNMI Nearshore; Guam Nearshore
Underwater Construction Team Training	0	0	50	50	CNMI Nearshore; Guam Nearshore
Port Damage Repair (No Dredging/No Pile Driving)	0	0	50	50	CNMI Nearshore; Guam Nearshore
Mine Warfare					
Mine Countermeasures – Laser Mine Detection	4	4	8	8	CNMI Nearshore; Guam Nearshore
Mine Countermeasures – Towed Mine Neutralization	4	4	8	8	CNMI Nearshore; Guam Nearshore
Airborne Mine Laying	0	0	0	0	MIRC Warning Areas; MITT Study Area
Civilian Port Defense – Homeland Security Anti-Terrorism/Force Protection Exercises	1	1	1	1	CNMI Nearshore; Guam Nearshore
Limpet Mine Neutralization System	40	60	60	60	Apra Harbor; Agat Bay Mine Neutralization Site
Mine Neutralization Explosive Ordnance Disposal	20	20	20	20	Agat Bay Mine Neutralization Site; Outer Apra Harbor

Activity Name	2015 EIS/OEIS	2020 SEIS/OEIS	2026 Draft SEIS/OEIS		Location
	Annual # of Activities	Annual # of Activities	Annual # of Activities		
	Alt 1[1]	Alt 2[2]	Alt 1	Alt 2	
					UNDET Site; Piti UNDET Site
Surface Ship Object Detection	0	6	20–30	30	CNMI Nearshore; Guam Nearshore
Underwater Demolition Qualification and Certification	30	45	45	45	Agat Bay Mine Neutralization Site; Outer Apra Harbor UNDET Site: Piti UNDET Site
Underwater Mine Countermeasure – Raise, Tow, Beach, and Exploitation Operations	0	0	24	24	Apra Harbor
Strike Warfare					
Bombing Exercise Air-to-Ground	1,100	1,100	710–790	790	FDM
Gunnery Exercise Air-to-Ground	74	74	75–80	80	FDM
Missile Exercise Air-to-Ground	55	45	110-130	130	FDM
Surface Warfare					
Bombing Exercise Air-to-Surface	30	30	31	31	MITT Study Area > 50 NM from land
Fast Attack Craft and Fast Inshore Attack Craft[7]	18	27	22–33	33	MITT Study Area > 3 NM from land
Gunnery Exercise Air-to-Surface Medium Caliber	295	120	122	122	MITT Study Area SUA > 12 NM from land
Gunnery Exercise Air-to-Surface Small Caliber	242	321	344–412	412	MITT Study Area SUA > 3 NM from land
Gunnery Exercise Surface-to-Surface Boat Medium Caliber	10	14	0	0	MITT Study Area SUA > 12 NM from land
Gunnery Exercise Surface-to-Surface Boat Small Caliber	37	37	15–32	32	MITT Study Area SUA > 3 NM from land; Transit Corridor
Gunnery Exercise Surface-to-Surface Ship Large Caliber	140	255	180-257	257	MITT Study Area SUA > 12 NM from land; Transit Corridor
Gunnery Exercise Surface-to-Surface Ship Medium Caliber[8]	47	117	104-150	150	MITT Study Area SUA > 12 NM from land

Activity Name	2015 EIS/OEIS	2020 SEIS/OEIS	2026 Draft SEIS/OEIS		Location
	Annual # of Activities	Annual # of Activities	Annual # of Activities		
	Alt 1[1]	Alt 2[2]	Alt 1	Alt 2	
Gunnery Exercise Surface-to-Surface Ship Small Caliber[8]	47	113	165–220	220	MITT Study Area SUA > 12 NM from land
Laser Targeting – Aircraft[9]	400	400	110	110	MITT Study Area SUA
Laser Targeting – Ship[9]	600	600	1–5	5	MITT Study Area SUA
Maritime Security Operations	20	40	64	64	MITT Study Area > 12 NM from land; MIRC
Missile Exercise Air-to-Surface	20	10	22–25	25	MITT Study Area SUA > 12 NM from land
Missile Exercise Air-to-Surface – Rocket	3	111	27–31	31	MITT Study Area SUA > 12 NM from land
Missile Exercise Surface-to-Surface	12	28	8–9	9	MITT Study Area > 50 NM from land
Sinking Exercise	2	1	1–2	2	MITT Study Area > 50 NM from land
Small Boat Attack	18	27	0	0	MITT Study Area > 3 NM from land
Torpedo Exercise (Submarine-to-Surface)	5	0	1–5	5	MITT Study Area > 3 NM from land
Other Training Activities					
Direct Action (Tactical Air Control Party)	18	18	18	18	FDM
Precision Anchoring	18	18	20	20	Apra Harbor; Mariana Islands anchorages
Search and Rescue at Sea	20	44	30	30	MITT Study Area
Submarine Navigation	8	8	50	50	MITT Study Area; MIRC
Submarine Sonar Maintenance	48	86	92	92	MITT Study Area > 3 NM from land; Inner Apra Harbor; Transit Corridor
Surface Ship Sonar Maintenance	42	44	51	51	MITT Study Area > 3 NM from land; Inner Apra Harbor; Transit Corridor

Activity Name	2015 EIS/OEIS	2020 SEIS/OEIS	2026 Draft SEIS/OEIS		Location
	Annual # of Activities	Annual # of Activities	Annual # of Activities		
	Alt 1[1]	Alt 2[2]	Alt 1	Alt 2	
Underwater Survey	16	32	76	76	MITT Study Area; Guam Nearshore; CNMI Nearshore
Unmanned Aerial Vehicle Training and Certification	500	451	16	16	MITT Study Area; Guam Nearshore; CNMI Nearshore; MIRC SUA
Unmanned Underwater Vehicle Training	0	64	60	60	MIRC; Guam Nearshore; CNMI Nearshore; MITT Study Area
Maritime Environmental Response	0	0	0	0	MITT Study Area
Waterborne Training	0	0	0	0	MIRC; MITT Study Area; Guam Nearshore; CNMI Nearshore

[1]The Department of the Navy selected Alternative 1, the Preferred Alternative, in the Record of Decision signed 28 August 2015. Activities only occur at-sea and on FDM.

[2]The Department of the Navy selected Alternative 2, the Preferred Alternative, in the Record of Decision signed 29 July 2020 and only occur at-sea and on FDM.

[3]Includes Air Intercept Control activities from 2020 SEIS/OEIS.

[4]Surface Warfare Advanced Tactical Training, Small Integrated Anti-Submarine Warfare Training, Medium Coordinated Anti-Submarine Training, and Independent Deployer Certification Exercise/Tailored Surface Warfare Training were not called out in the 2020 SEIS/OEIS, but the components of the exercises were covered under Combined Small Coordinated ASW Exercise (e.g., Multi-Sail/GUAMEX/SWATT).

[5]Includes Humanitarian Assistance Operations.

[6]Personnel Insertion/Extraction – Air, Surface and Subsurface, and Swimmer/Diver were not called out in the 2020 SEIS/OEIS, but the components of the activities were covered under Personnel Insertion/Extraction.

[7]Fast Attack Craft and Fast Inshore Attack Craft was not called out in the 2020 SEIS/OEIS, but the components of the activity were covered under Small Boat Attack.

[8]Gunnery Exercise Surface-to-Surface Ship Medium Caliber and Gunnery Exercise Surface-to-Surface Ship Small Caliber were not called out in the 2020 SEIS/OEIS, but the components of the activities were covered under Gunnery Exercise Surface-to-Surface Ship Small and Medium Caliber.

[9]Laser Targeting – Aircraft and Laser Targeting – Ship was not called out in the 2020 SEIS/OEIS, but the components of the activities were covered under Laser Targeting at Sea.

Notes: SEIS/OEIS = Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement, MIRC = Mariana Islands Range Complex, FDM = Farallon de Medinilla, NM = nautical mile(s), NUWTAC = Navy Undersea Warfare Training Assessment Course, SUA = Special Use Airspace, UNDET = Underwater Detonation, W = Warning Area

Table A-3: USCG Proposed Training Activities

Activity Name	2015 EIS/OEIS	2020 SEIS/OEIS	2026 Draft SEIS/OEIS		Location
	Annual # of Activities	Annual # of Activities	Annual # of Activities		
	Alt 1[1]	Alt 2[2]	Alt 1	Alt 2	
Surface Warfare					
Gunnery Exercise Air-to-Surface Small Caliber	0	0	5–6	6	MITT Study Area SUA > 3 NM from land
Gunnery Exercise Surface-to-Surface Boat Medium Caliber	0	6	4	4	MITT Study Area SUA > 12 NM from land
Gunnery Exercise Surface-to-Surface Boat Small Caliber	3	6	4–8	8	MITT Study Area SUA > 3 NM from land; Transit Corridor
Gunnery Exercise Surface-to-Surface Ship Large Caliber	0	0	8-10	10	MITT Study Area SUA > 12 NM from land; Transit Corridor
Gunnery Exercise Surface-to-Surface Ship Medium Caliber	3	4	4-6	6	MITT Study Area SUA > 12 NM from land
Gunnery Exercise Surface-to-Surface Ship Small Caliber	3	4	8–10	10	MITT Study Area SUA > 12 NM from land
Laser Targeting – Ship	0	0	10–20	20	MITT Study Area SUA
Maritime Security Operations	20	0	53–75	75	MITT Study Area > 12 NM from land; MIRC
Small Boat Attack	0	0	6–8	8	MITT Study Area > 3 NM from land
Other Training Activities					
Search and Rescue at Sea	20	1	50–52	52	MITT Study Area
Unmanned Aerial Vehicle Training and Certification	0	0	10–12	12	MITT Study Area; Guam Nearshore; CNMI Nearshore; MIRC SUA
Unmanned Underwater Vehicle Training	0	0	5–10	10	MIRC; Guam Nearshore; CNMI Nearshore; MITT Study Area
Maritime Environmental Response	0	0	1–2	2	MITT Study Area
Waterborne Training	0	0	50–75	75	MIRC; MITT Study Area; Guam Nearshore; CNMI Nearshore

[1]The Department of the Navy selected Alternative 1, the Preferred Alternative, in the Record of Decision signed 28 August 2015. Activities only occur at-sea and on FDM.

[2]The Department of the Navy selected Alternative 2, the Preferred Alternative, in the Record of Decision signed 29 July 2020.

Notes: SEIS/OEIS = Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement, MIRC = Mariana Islands Range Complex, NM = nautical mile(s), SUA = Special Use Airspace, W = Warning Area

Table A-4: USAF Proposed Training Activities

Activity Name	2015 EIS/OEIS	2020 SEIS/OEIS	2026 Draft SEIS/OEIS		Location
	Annual # of Activities	Annual # of Activities	Annual # of Activities		
	Alt 1[1]	Alt 2[2]	Alt 1	Alt 2	
Air Warfare					
Air Combat Maneuver[3]	4,800	4,800	4,800	4,800	MITT Study Area >12 NM from land; SUA
Air Defense Exercise	0	0	12	12	MITT Study Area >12 NM from land; SUA
Gunnery Exercise Air-to-Air Medium Caliber	12	12	12–24	24	MITT Study Area >12 NM from land; SUA
Missile Exercise Air-to-Air	6	6	6	6	MITT Study Area SUA > 12 NM from land
Amphibious Warfare					
Unmanned Aerial Vehicle – Intelligence, Surveillance, and Reconnaissance	0	0	12	12	MIRC; MITT Study Area; SUA
Electronic Warfare					
Counter Targeting Chaff Exercise – Aircraft	1,600	1,600	1,600	1,600	MITT Study Area >12 NM from land
Counter Targeting Flare Exercise	1,600	1,600	1,600	1,600	MITT Study Area >12 NM from land
Electronic Warfare Operations	160	160	100	100	MITT Study Area
Mine Warfare					
Airborne Mine Laying	4	4	4	4	MIRC Warning Areas; MITT Study Area
Strike Warfare					
Bombing Exercise Air-to-Ground	1,200	1,200	1,200	1,200	FDM
Gunnery Exercise Air-to-Ground	22	22	100	100	FDM
Missile Exercise Air-to-Ground	30	30	15	15	FDM
Surface Warfare					

Activity Name	2015 EIS/OEIS	2020 SEIS/OEIS	2026 Draft SEIS/OEIS		Location
	Annual # of Activities	Annual # of Activities	Annual # of Activities		
	Alt 1[1]	Alt 2[2]	Alt 1	Alt 2	
Bombing Exercise Air-to-Surface	7	7	8	8	MITT Study Area >50 NM from land
Laser Targeting – Aircraft	200	200	200	200	MITT Study Area SUA
Missile Exercise Air-to-Surface	0	0	9	9	MITT Study Area SUA > 12 NM from land
Other Training Activities					
Unmanned Aerial Vehicle Training and Certification	500	500	500	500	MITT Study Area; Guam Nearshore; CNMI Nearshore; MIRC SUA

[1]The Department of the Navy selected Alternative 1, the Preferred Alternative, in the Record of Decision signed 28 August 2015. Activities only occur at-sea and on FDM.
[2]The Department of the Navy selected Alternative 2, the Preferred Alternative, in the Record of Decision signed 29 July 2020.
[3]Includes Air Intercept Control activities from 2020 SEIS/OEIS.
Notes: SEIS/OEIS = Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement, MIRC = Mariana Islands Range Complex, FDM = Farallon de Medinilla, NM = nautical mile(s), SUA = Special Use Airspace, W = Warning Area

Table A-5: U.S. Army Proposed Training Activities

Activity Name	2015 EIS/OEIS	2020 SEIS/OEIS	2026 Draft SEIS/OEIS		Location
	Annual # of Activities	Annual # of Activities	Annual # of Activities		
	Alt 1[1]	Alt 2[2]	Alt 1	Alt 2	
Surface Warfare					
Gunnery Exercise Air-to-Surface Small Caliber	0	321	8	8	MITT Study Area SUA > 3 NM from land
Gunnery Exercise Surface-to-Surface Boat Small Caliber	0	43	1–4	4	MITT Study Area SUA > 3 NM from land; Transit Corridor
Missile Exercise Air-to-Surface	0	10	8–16	16	MITT Study Area SUA > 12 NM from land
Missile Exercise Air-to-Surface – Rocket	0	111	8–16	16	MITT Study Area SUA > 12 NM from land

[1]The Department of the Navy selected Alternative 1, the Preferred Alternative, in the Record of Decision signed 28 August 2015. Activities only occur at-sea and on FDM.

[2]The Department of the Navy selected Alternative 2, the Preferred Alternative, in the Record of Decision signed 29 July 2020.

Notes: SEIS/OEIS = Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement, MIRC = Mariana Islands Range Complex; NM = nautical mile(s), SUA = Special Use Airspace, W = Warning Area

A.7 Territorial Limits

The following figures (Figures A-2 through A-5) outline the 3 nautical mile (NM) and 12 NM territorial limits from the shore within the MITT Study Area. For purposes of this document, waters within the 3 NM line are considered “nearshore.”

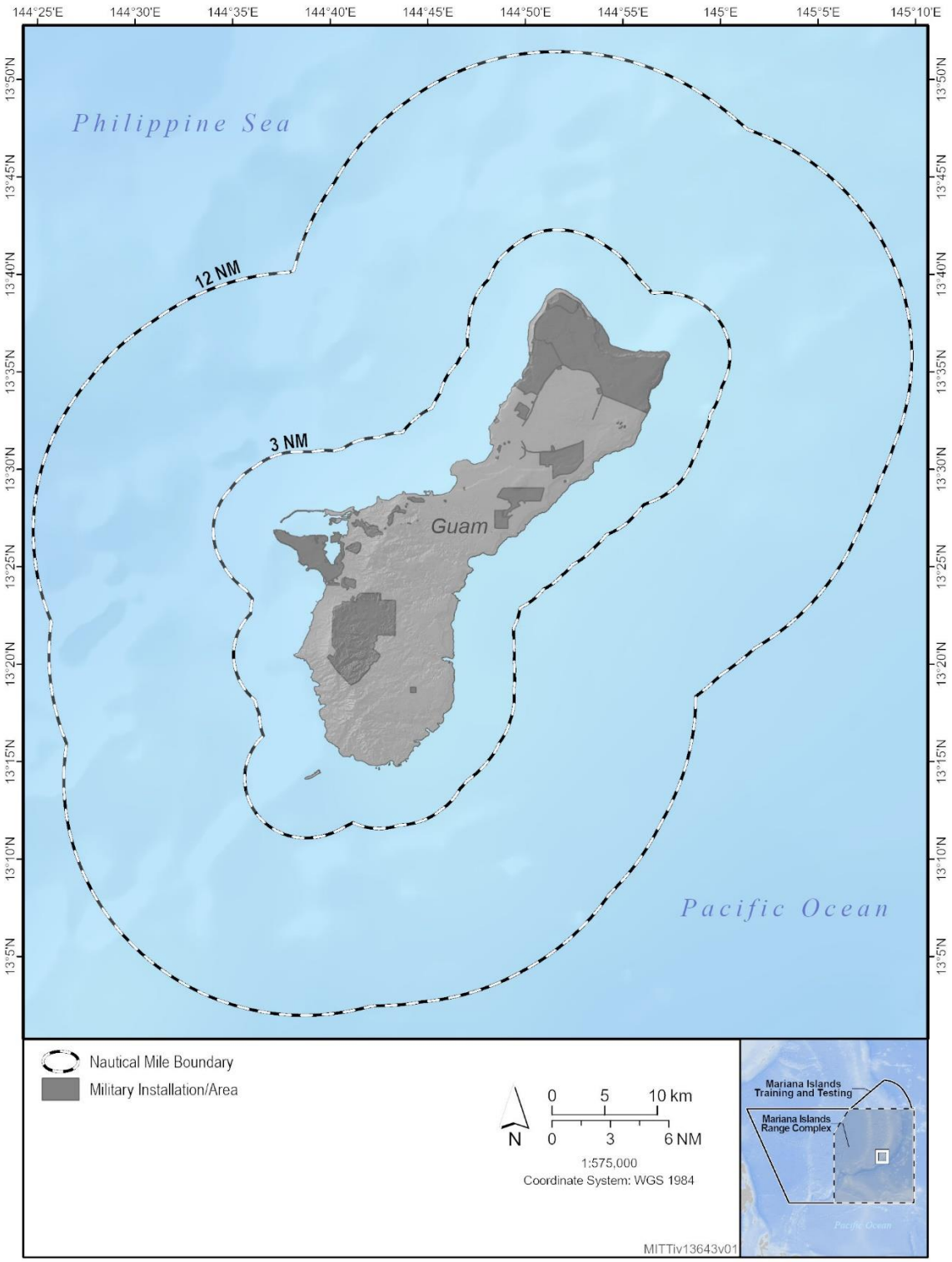

Figure A-2: 3 NM and 12 NM Territorial Limits of Guam

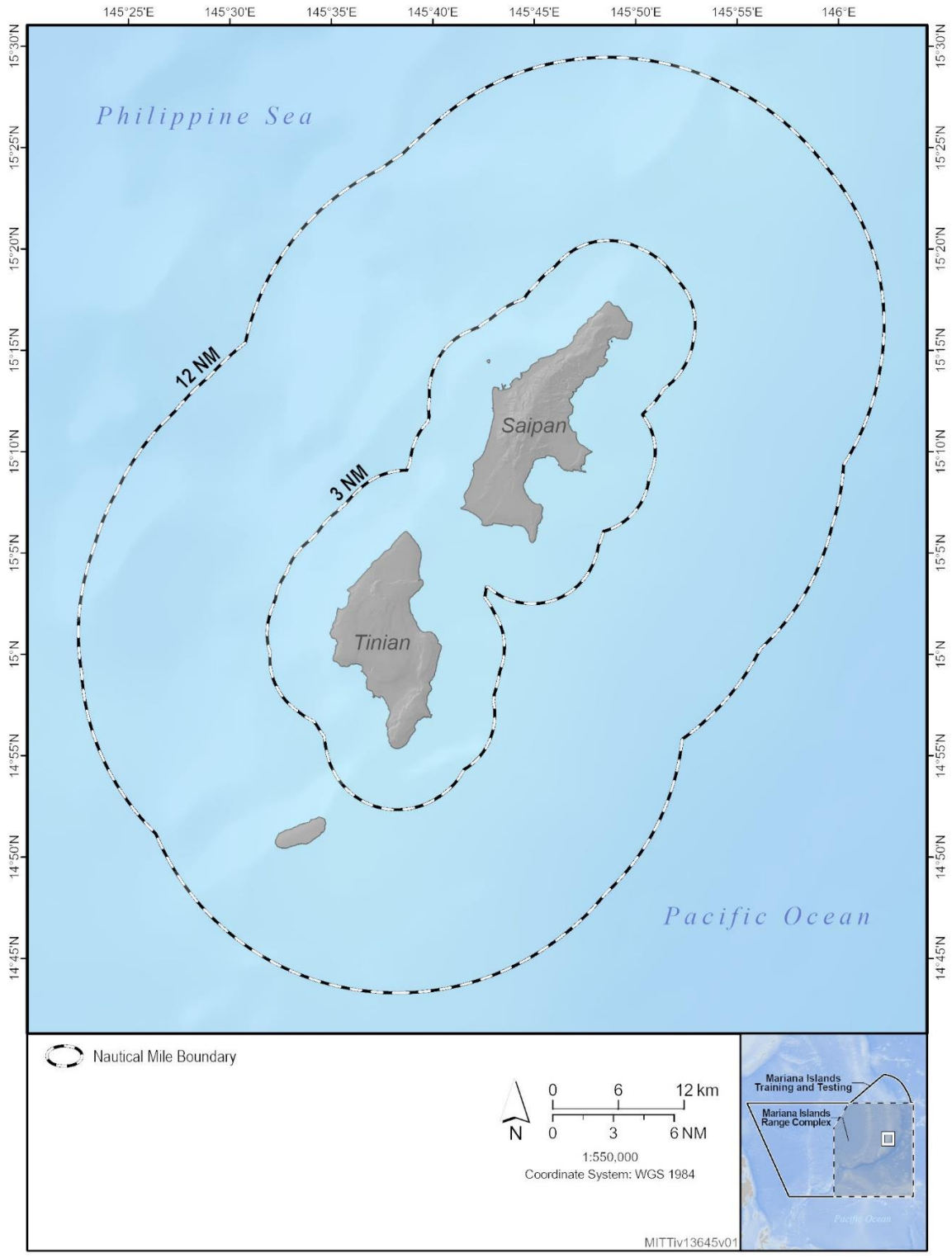

Figure A-3: 3 NM and 12 NM Territorial Limits of Tinian and Saipan

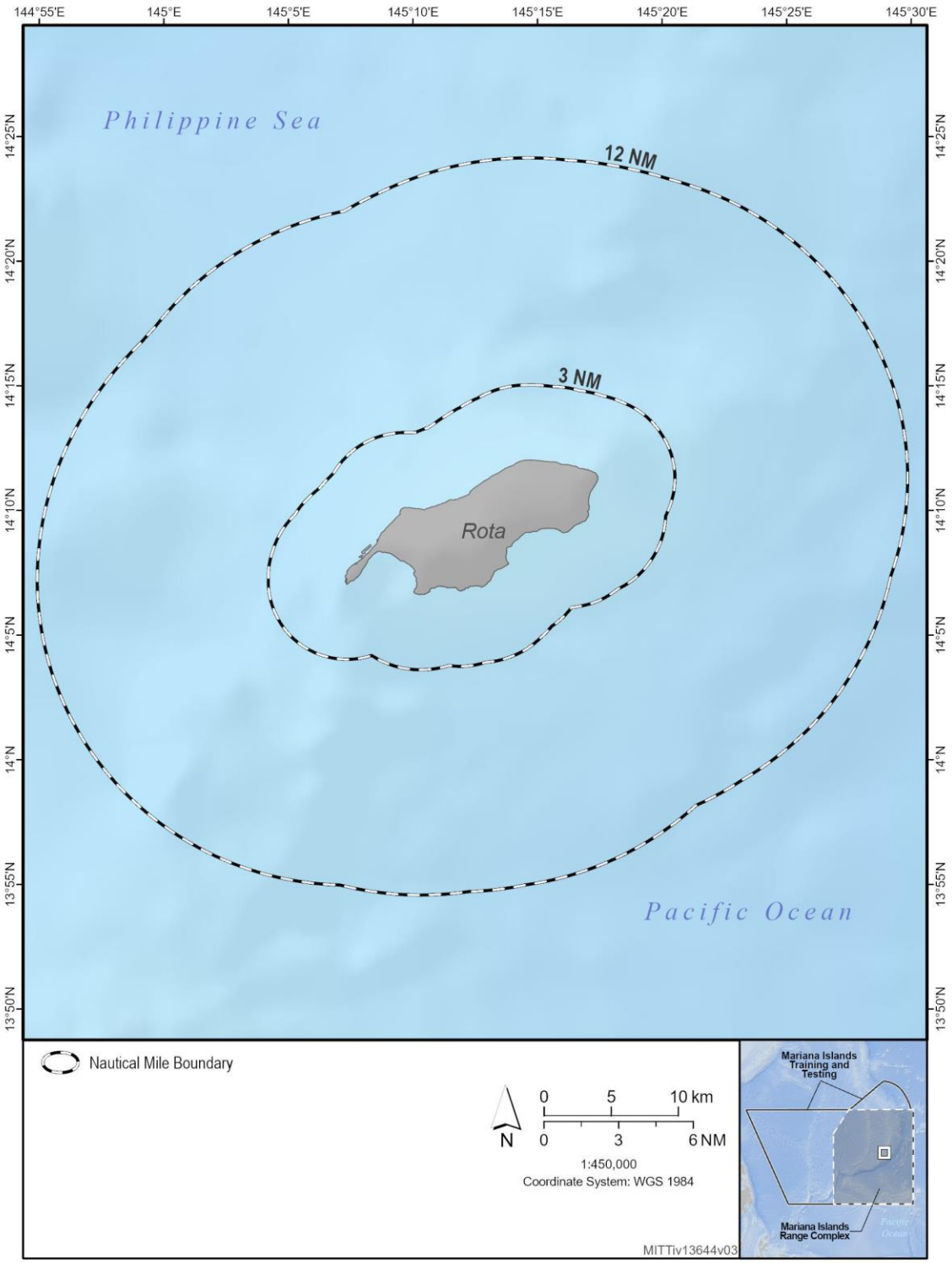

Figure A-4: 3 NM and 12 NM Territorial Limits of Rota

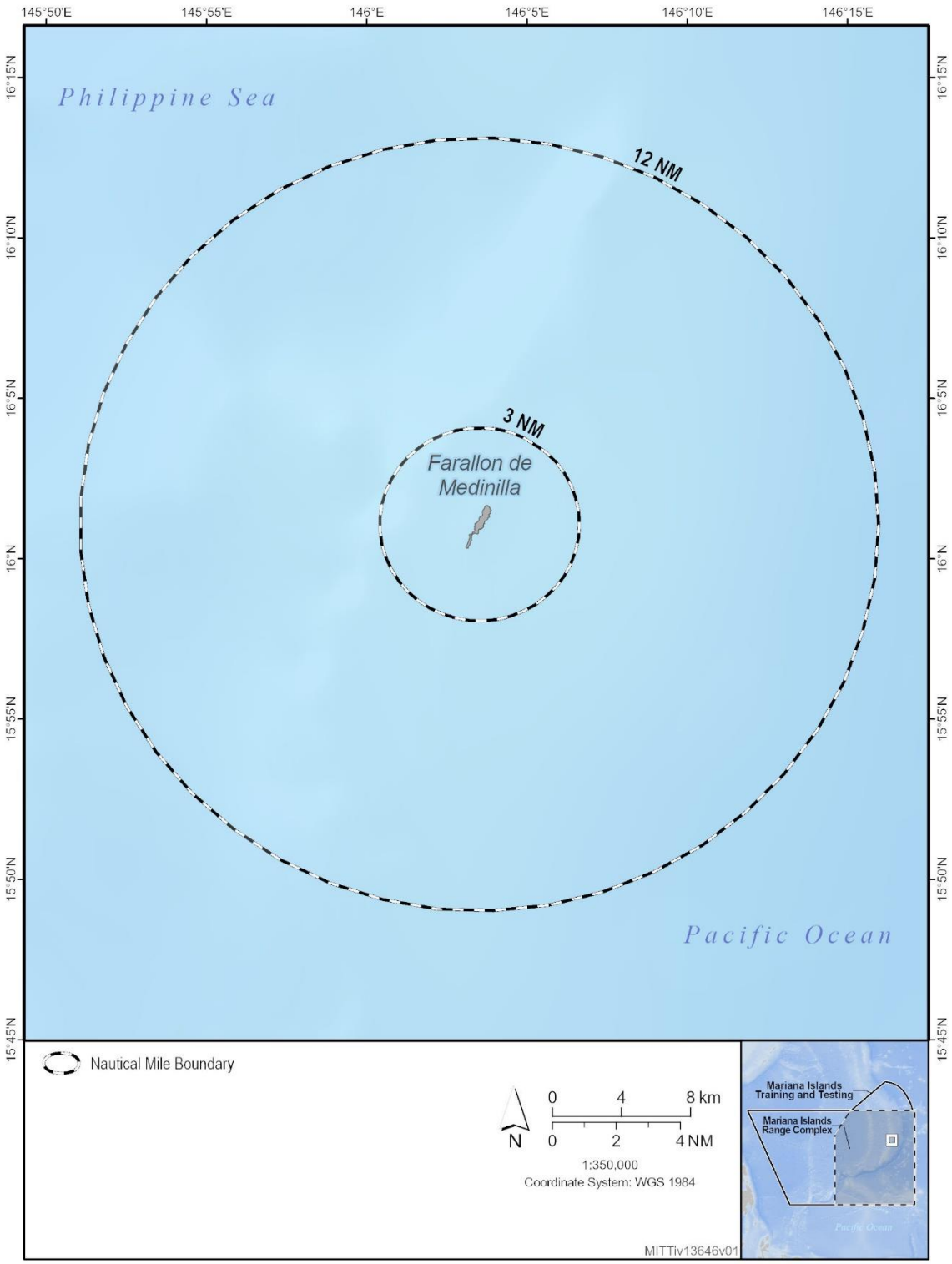

Figure A-5: 3 NM and 12 NM Hazardous Area Limits of Farallon de Medinilla