Executive Summary

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

The United States (U.S.) Department of the Navy (Navy) prepared this Environmental Impact Statement (EIS)/Overseas EIS (OEIS) to assess the potential environmental impacts associated with two categories of military readiness activities: training and testing. The Mariana Islands Training and Testing (MITT) Study Area is composed of the established ranges (at-sea ranges and land based training areas on Guam and the Commonwealth of the Northern Mariana Islands), operating areas, and special use airspace in the region of the Mariana Islands that are part of the Mariana Islands Range Complex (MIRC) and its surrounding seas, and includes a transit corridor[1] (Figure ES.2-1). The transit corridor is outside the geographic boundaries of the MIRC and is a direct route across the high seas for Navy assets in transit between the MIRC and the Hawaii Range Complex (HRC). The Proposed Action also includes pierside sonar maintenance and testing alongside Navy piers located in Inner Apra Harbor. The Navy prepared this EIS/OEIS to comply with the National Environmental Policy Act (NEPA) and Executive Order (EO) 12114.

Major conflicts, terrorism, lawlessness, and natural disasters all have the potential to threaten national security of the United States. National security, prosperity, and vital interests are increasingly tied to other nations because of the close relationships between the United States and other national economies. The Navy carries out training and testing activities to be able to protect the United States against its enemies, as well as to protect and defend the rights of the United States and its allies to move freely on the oceans. Training and testing activities that prepare the Navy and the other services[2] to fulfill their mission to protect and defend the United States and its allies potentially impact the environment. These activities may trigger legal requirements identified in many U.S. federal environmental laws, regulations, and executive orders.

After thoroughly reviewing its environmental compliance requirements for training and exercises at sea, the Navy instituted a policy in the year 2000 designed to comprehensively address these requirements. That policy—the Navy's At-Sea Policy—resulted, in part, in a series of comprehensive analyses of training and testing activities on U.S. at-sea range complexes and operating areas. These analyses served as the basis for the National Marine Fisheries Service (NMFS) to issue Marine Mammal Protection Act (MMPA) incidental take authorizations because of the potential effects of some training and testing activities on species protected by federal law. These analyses also served as the basis for NMFS and the U.S. Fish and Wildlife Service (USFWS) to issue Biological Opinions (BOs) and incidental take statements pursuant to the ESA. The initial analyses for the Study Area considered in this document resulted in incidental take authorizations and incidental take statements, which begin to expire in 2015. The present EIS/OEIS updates these analyses and supports incidental take authorizations. This EIS/OEIS also furthers compliance with the Navy's policy for comprehensive analysis by analyzing the potential

[1] Vessel transit corridors are the routes typically used by Navy assets to traverse from one area to another. The route depicted in Figure ES.2-1 is a direct route between the MIRC and the HRC. The depicted transit corridor is notional and may not represent actual routes used. Actual routes navigated are based on a number of factors including, but not limited to, weather, training, and operational requirements; however, the corridor represents the environment potentially impacted by the Proposed Action.

[2] Training and testing activities may include foreign allies and partners. Foreign allies and partners may train along U.S. military forces to ensure seamless interoperability.

environmental impacts of training and testing activities in additional areas (areas not analyzed in previous documents) where training and testing activities have historically occurred.

ES.2 Purpose of and Need for Proposed Military Readiness Training and Testing Activities

The purpose of the Proposed Action is to conduct training and testing activities to ensure that the Navy and other Services meet their mission, which is to maintain, train, and equip combat-ready military forces capable of winning wars, deterring aggression, and maintaining freedom of the seas. This mission is achieved in part by conducting training and testing within the Study Area.

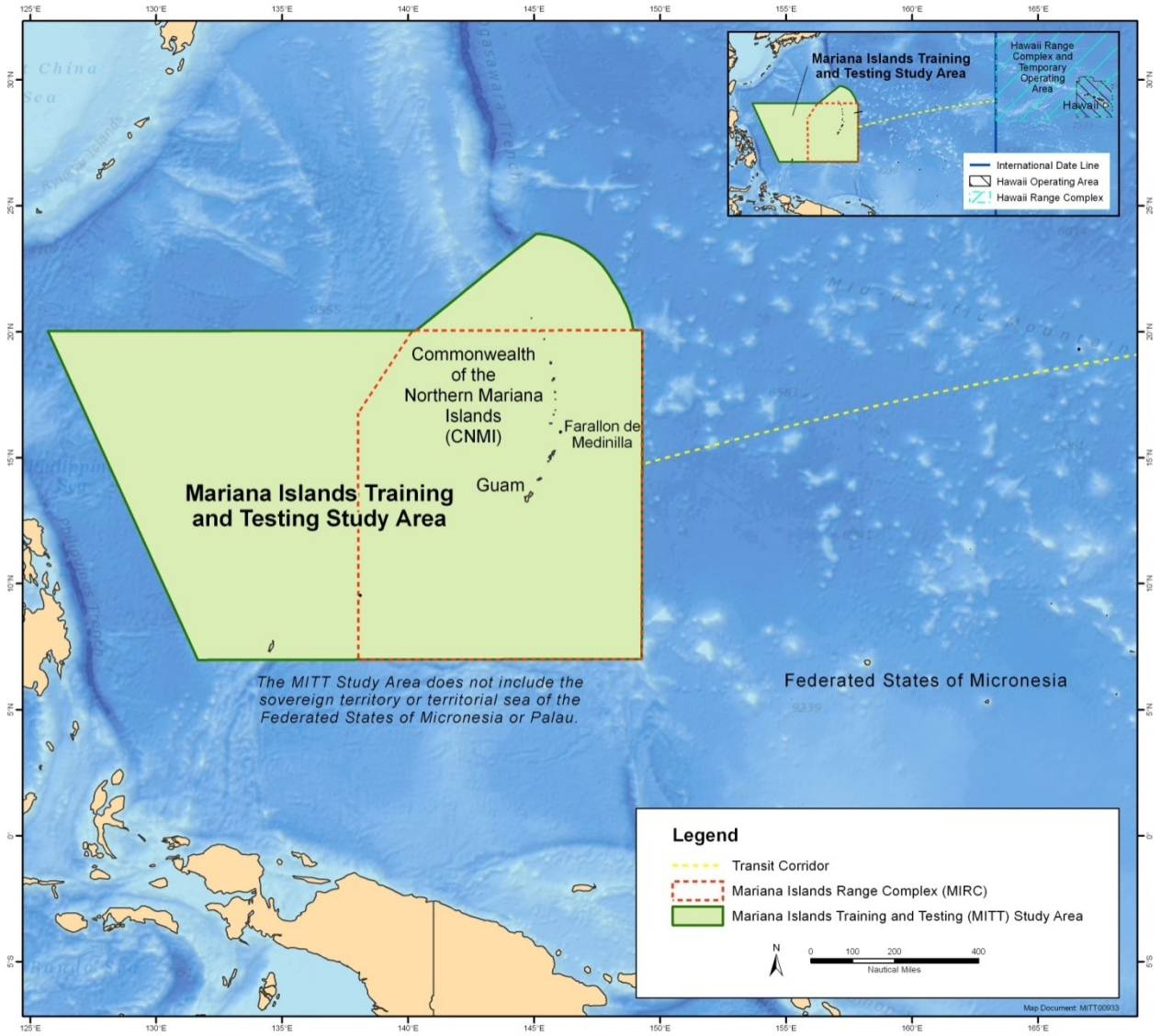

Figure ES.2-1: Mariana Islands Training and Testing Study Area

ES.3 SCOPE AND CONTENT OF THE ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT

In this EIS/OEIS, the Navy assessed military readiness training and testing activities that could potentially impact human and natural resources, especially marine mammals, sea turtles, and other marine resources in the MITT Study Area. The range of alternatives includes a No Action Alternative and other reasonable courses of action. In this EIS/OEIS, the Navy analyzed direct, indirect, cumulative, short-term, long-term, irreversible, and irretrievable impacts. The Navy is the lead agency for the Proposed Action and is responsible for the scope and content of this EIS/OEIS. The NMFS is a cooperating agency because of its expertise and regulatory authority over marine resources. The U.S. Air Force is a cooperating agency because of their expertise and scheduling authority over portions of the Study Area airspace. The U.S. Coast Guard is a cooperating agency because of its expertise, its federal regulatory authority, and its maritime law enforcement mission in the Study Area. Additionally, this document will serve as NMFS' NEPA documentation for the rule-making process under the MMPA.

In accordance with the Council on Environmental Quality (CEQ) Regulations, 40 Code of Federal Regulations (C.F.R.) §1505.2, the Navy will issue a Record of Decision (ROD). The ROD will be based on factors analyzed in this EIS/OEIS, including military training and testing objectives, best available science and modeling data, potential environmental impacts, and public interest.

ES.3.1 NATIONAL ENVIRONMENTAL POLICY ACT

Federal agencies are required under NEPA to examine the environmental impacts of their proposed actions within the United States and its territories. An EIS is a detailed public document that provides an unbiased assessment of the potential effects, and potentially significant effects, that a major federal action might have on the natural and human environment. The Navy undertakes environmental planning for major Navy actions occurring throughout the world in accordance with applicable laws, regulations, and executive orders. Presidential Proclamation 5928, issued 27 December 1988, extended the exercise of U.S. sovereignty and jurisdiction under international law to 12 nautical miles (nm); however, the proclamation expressly provides that it does not extend or otherwise alter existing federal law or any associated jurisdiction, rights, legal interests, or obligations. Thus, as a matter of policy, the Navy analyzes environmental effects and actions within 12 nm under NEPA (an EIS).

ES.3.2 EXECUTIVE ORDER 12114

This OEIS has been prepared in accordance with EO 12114 (44 Federal Register 1957) and Navy implementing regulations in 32 C.F.R. Part 187, *Environmental Effects Abroad of Major Department of Defense Actions*. An OEIS is required when a proposed action and alternatives have the potential to significantly harm the environment of the global commons. The global commons are defined as geographical areas outside the jurisdiction of any nation and include the oceans outside of the territorial limits (more than 12 nm from the coast) and Antarctica but do not include contiguous zones and fisheries zones of foreign nations (32 C.F.R. §187.3). The EIS and OEIS have been combined into one document, as permitted under NEPA and EO 12114, to reduce duplication.

ES.3.3 MARINE MAMMAL PROTECTION ACT

The MMPA of 1972 (16 United States Code [U.S.C.] §1361 et seq.) established, with limited exceptions, a moratorium on the "taking" of marine mammals in waters or on lands under U.S. jurisdiction. The act further regulates "takes" of marine mammals in the global commons (that is, the high seas) by vessels or persons under U.S. jurisdiction. The term "take," as defined in Section 3 (16 U.S.C. §1362 [13]) of the MMPA, means "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine

mammal." "Harassment" was further defined in the 1994 amendments to the MMPA, which provided two levels of harassment: Level A (potential injury) and Level B (potential behavioral disturbance).

The MMPA directs the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if NMFS finds that the taking will have a negligible impact on the species or stock(s), and will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant). The authorization must set forth the permissible methods of taking, other means of attaining the least practicable adverse impact on the species or stock and its habitat, and requirements pertaining to the mitigation, monitoring, and reporting of such taking.

The National Defense Authorization Act of Fiscal Year 2004 (Public Law 108-136) amended the definition of harassment and removed the "small numbers" provision as applied to military readiness activities or scientific research activities conducted by or on behalf of the federal government, consistent with Section 104(c)(3) (16 U.S.C. §1374 [c][3]). The Fiscal Year 2004 National Defense Authorization Act adopted the definition of "military readiness activity" as set forth in the FY 2003 National Defense Authorization Act (Public Law 107-314). A "military readiness activity" is defined as "all training and operations of the Armed Forces that relate to combat" and "the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use." As the Proposed Action involves conducting military readiness activities, the relevant definition of harassment is any act that

- injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild ("Level A harassment") or
- disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering to a point where such behavioral patterns are abandoned or significantly altered ("Level B harassment") [16 U.S.C. §1362(18)(B)(i) and (ii)].

ES.3.4 ENDANGERED SPECIES ACT

The ESA of 1973 (16 U.S.C. §1531 et seq.) established protection over and conservation of threatened and endangered species and the ecosystems upon which they depend. An "endangered" species is a species in danger of extinction throughout all or a significant portion of its range. A "threatened" species is one that is likely to become endangered within the near future throughout all or in a significant portion of its range. The USFWS and NMFS jointly administer the ESA and are also responsible for the listing of species (designating a species as either threatened or endangered). The ESA allows the designation of geographic areas as critical habitat for threatened or endangered species. Section 7(a)(2) requires each federal agency to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species. When a federal agency's action "may affect" a listed species, that agency is required to consult with NMFS or USFWS, depending on the jurisdiction (50 C.F.R. 402.14[a]). Under the terms of Section 7(b)(4) and Section 7(o)(2) of the ESA, taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the act provided that such taking complies with the terms and conditions of an Incidental Take Statement. The ESA applies to marine mammals, sea turtles, marine birds, marine invertebrates, fish, and plants evaluated in this EIS/OEIS.

ES.3.5 MIGRATORY BIRD TREATY ACT

Bird species in the Study Area include those listed under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755 as amended). A migratory bird is any species or family of birds that live or reproduce in or migrate across international borders at some point during their annual life cycle. The MBTA established federal responsibilities for the protection of nearly all species of birds, eggs, and nests. In 2006, the USFWS and Department of Defense signed a Memorandum of Understanding to promote conservation of migratory birds (U.S. Department of Defense and U.S. Fish and Wildlife Service 2006). There are over 1,000 species of birds protected under the MBTA, with over 100 species known or believed to occur in the Study Area. These bird species include seabirds, shorebirds, and various species of birds that inhabit terrestrial habitats.

Congress determined that allowing incidental take of migratory birds as a result of military readiness activities is consistent with MBTA. The Final Rule was published in the *Federal Register* on 28 February 2007 (Federal Register Volume 72, No. 29, 28 February 2007) and may be found at 50 C.F.R. Part 21.15. Congress defined military readiness activities as all training and operations of the Armed Forces that relate to combat and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for the proper operation and suitability for combat use. Specifically, 50 C.F.R. Part 21.15 specifies a requirement to confer with the USFWS when the military readiness activities in question will have a significant adverse effect on a population of migratory bird species. An activity has a significant adverse effect if, over a reasonable period of time, it diminishes the capacity of a population of migratory bird species to maintain genetic diversity, to reproduce, and to function effectively in its native ecosystem.

ES.3.6 OTHER ENVIRONMENTAL REQUIREMENTS CONSIDERED

The Navy must comply with all applicable federal environmental laws, regulations, and EOs, including, but not limited to, those listed below. Further information on Navy compliance with these and other environmental laws, regulations, and EOs can be found in Chapters 3 (Affected Environment and Environmental Consequences) and 6 (Additional Regulatory Considerations).

- Abandoned Shipwreck Act
- Antiquities Act
- Clean Air Act
- Clean Water Act
- Coastal Zone Management Act
- Magnuson-Stevens Fishery Conservation and Management Act
- National Historic Preservation Act
- National Marine Sanctuaries Act
- Rivers and Harbors Act
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*
- EO 12962, *Recreational Fisheries*
- EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*
- EO 13089, *Coral Reef Protection*
- EO 13112, *Invasive Species*
- EO 13158, *Marine Protected Areas*
- EO 13547, *Stewardship of the Ocean, Our Coasts, and the Great Lakes*

ES.4 PUBLIC INVOLVEMENT

NEPA of 1969 requires federal agencies to examine the environmental effects of their proposed actions within U.S. territories. An EIS is a detailed public document that provides an assessment of the potential effects that a major federal action might have on the human environment. The Navy undertakes environmental planning for major Navy actions occurring throughout the world in accordance with applicable laws, regulations, and executive orders.

The first step in the NEPA process for an EIS is to prepare a Notice of Intent to develop an EIS. The Navy published a Notice of Intent in the *Federal Register* on 8 September 2011 and several newspapers beginning on 16 September 2011. In addition, Notice of Intent/Notice of Scoping Meeting letters were distributed on 17 September 2011 to 129 federal, state, and local elected officials and government agencies. Postcards announcing the Notice of Intent and providing the scoping meeting dates, locations, and times were mailed to 475 organizations and individuals. The Notice of Intent provided an overview of the Proposed Action and the scope of the EIS, and initiated the scoping process.

ES.4.1 SCOPING PROCESS

Scoping is an early and open process for developing the "scope" of issues to be addressed in an EIS and for identifying significant issues related to a proposed action. During scoping, the public helps define and prioritize issues through public meetings and written comments.

Five scoping meetings were held on 22, 23, 26, 27, and 29 September 2011, in the villages of Mangilao, Guam; Santa Rita, Guam; Susupe, Saipan; San Jose Village, Tinian; and Sinapalo Village, Rota, respectively. At each scoping meeting, staffers at the welcome station greeted guests and encouraged them to sign in to be added to the project mailing list to receive future notifications. In total, 229 people signed in at the welcome table. The meetings were held in an open house format, presenting informational posters and written information, with Navy staff and project experts available to answer participants' questions. Additionally, a digital voice recorder was available to record participants' oral comments. The interaction during the information sessions was productive and helpful to the Navy.

ES.4.2 SCOPING COMMENTS

Scoping participants submitted comments in five ways:

- Oral statements at the public meetings (as recorded by the digital voice recorder)
- Written comments at the public meetings
- Written letters (received any time during the public comment period)
- Electronic mail (received any time during the public comment period)
- Comments submitted directly on the project website (received any time during the public comment period)

In total, the Navy received comments from 34 individuals and groups. Because many of the comments addressed more than one issue, 134 total comments resulted. The summary in Table ES.4-1 provides an overview of comments and is organized by area of concern.

Table ES.4-1: Public Scoping Comment Summary

Area of Concern	Count	Percent of Total
Other	21	16
Proposed Action/Alternatives	9	7
Terrestrial/Birds	10	7
Regional Economy	9	7
Fish/Marine Habitat	8	6
Mitigation	8	6
Cumulative	8	6
Study Area	7	5
Marine Mammals/Sea Turtles	7	5
Marine Mammal Monitoring	5	4
Water Quality	5	4
Cultural Resources	5	4
Commercial/Recreational Fishing	6	4
Public Health and Safety	6	4
SONAR/Underwater Explosions	6	4
Land Use	5	4
Reefs	3	2
Marianas Trench National Monument/Piti Marine Preserve Area	3	2
Air Quality	1	1
Noise	2	1
TOTAL	**134**	**99**

ES.4.3 DRAFT ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT

The Draft EIS/OEIS was prepared to assess potential impacts of the Proposed Action and alternatives on the environment. A Notice of Availability was published in the *Federal Register* (13 September 2013) and notices were placed in local and regional newspapers announcing the availability of the Draft EIS/OEIS. The Draft EIS/OEIS was circulated for review and comment, and public meetings were held.

ES.4.4 FINAL ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT/RECORD OF DECISION

This Final EIS/OEIS addresses all public comments received on the Draft EIS. Responses to public comments may include correction of data, clarifications of and modifications to analytical approaches, and inclusion of new or additional data or analyses. In addition, conservation measures resulting from the Navy's Section 7 ESA consultation with the USFWS and Essential Fish Habitat consultation with NMFS have been added.

The Navy will issue a ROD no earlier than 30 days after this Final EIS/OEIS is made available to the public. The ROD will include any changes to mitigation or reporting requirements as a result of consultations.

ES.5 PROPOSED ACTION AND ALTERNATIVES

The Navy proposes to conduct military readiness training and testing activities throughout the MITT Study Area, primarily in established operating and military warning areas of the Study Area. In order to achieve and maintain Fleet readiness, the Navy proposes to:

- Reassess the environmental analyses of military training and testing activities contained in the *2010 Mariana Islands Range Complex Environmental Impact Statement/Overseas Environmental Impact Statement* (U.S. Department of the Navy 2010). This reassessment supports reauthorization of incidental takes of marine mammals under the MMPA and incidental takes of threatened and endangered marine and terrestrial species under the ESA.
- Adjust baseline training and testing activities from current levels to the level needed to support military training and testing requirements beginning in 2015. As part of the adjustment, the Navy proposes to account for other activities and sound sources not addressed in the previous analyses.
- Analyze the potential environmental impacts of training and testing activities in additional at-sea areas (areas not covered in previous documents) where training and testing historically occurs, including Navy ports and the transit corridor serving these areas.
- Update the environmental impact analyses in the previous documents to account for force structure changes, including those resulting from the development, testing, and use of weapons, platforms, and systems that will be operational by 2020.
- Implement enhanced range capabilities.
- Update environmental analyses with the best available science and most current acoustic analysis methods to evaluate the potential effects of training and testing activities on the marine environment.

ES.5.1 NO ACTION ALTERNATIVE

The No Action Alternative is required by regulations of the CEQ as a baseline against which the impacts of the Proposed Action are compared. The No Action Alternative continues baseline training and testing activities and force structure requirements as defined by existing Navy environmental planning documents.

The No Action Alternative represents the activities and events analyzed in previously completed documents. However, it would fail to meet the current purpose and need for the Navy's Proposed Action because it would not allow the Navy to conduct the training and testing activities necessary to achieve and maintain Fleet readiness. For example, the baseline activities do not account for changes in force structure requirements, the introduction of weapons and platforms, and the training and testing required for proficiency with these systems.

ES.5.2 ALTERNATIVE 1 (PREFERRED ALTERNATIVE)

This Alternative consists of the No Action Alternative, plus the expansion of Study Area boundaries and adjustments to location, type, and tempo of training activities, which includes the addition of platforms and systems.

- **Adjustment of the Study Area.** This EIS/OEIS contains an analysis of areas where training and testing would continue as in the past, but were not considered in previous environmental analyses. Alternative 1 would expand the area that is to be analyzed as depicted in Figure ES-1 and described below.

  - **Expansion of the Northern and Western Boundary of the Study Area:** The area to the north of the MIRC that is within the Exclusive Economic Zone of the Northern Mariana Islands and the areas to the west of the MIRC.
  - **Transit Corridor:** An area not previously analyzed in the open ocean between the MIRC and the HRC. During transit within this area, U.S. Navy ships conduct limited training and testing. These activities would be included in this EIS/OEIS.
- **Adjustments to Locations and Tempo of Training and Testing Activities.** This alternative also includes changes to training and testing requirements necessary to accommodate (a) the relocation of ships, aircraft, and personnel; (b) planned aircraft, vessels, and weapons systems; and (c) ongoing activities not addressed in previous documentation.
  - **Force Structure Changes:** Force structure changes involve the relocation of ships, aircraft, and personnel. As forces are moved within the existing Navy structure, training needs will necessarily change as the location of forces change.
  - **Planned Aircraft, Vessels, and Weapons Systems:** This EIS/OEIS examines the training and testing requirements of planned vessels, aircraft, and weapons systems.
  - **Ongoing Activities:** Current training and testing activities not addressed in previous documentation are analyzed in this EIS/OEIS.
  - **Danger Zones:** This EIS/OEIS examines establishment of Title 33 C.F.R. Part 334 Danger Zones for existing shore-based small arms and explosive ordnance disposal ranges and a nearshore small arms training area.
  - **Net Explosive Weight Increases:** An increase in net explosive weight for underwater detonations from 10 pounds (lb.) to 20 lb. at Agat Bay Mine Neutralization Site. This is a change from the Draft EIS/OEIS based on comments received. No increases in the NEW at the Outer Apra Harbor Underwater Detonation Site would occur under Alternative 1.

Alternative 1 reflects adjustments to the baseline activities, which are necessary to support all current and proposed training and testing activities through 2020.

ES.5.3 ALTERNATIVE 2

Alternative 2 consists of all activities that would occur under Alternative 1 and adjustments to the type and tempo of training and testing. This alternative is contingent upon potential budget increases, strategic necessity, and future training and testing requirements.

Alternative 2 includes the following:

- The addition of three major at-sea training activities (Fleet Strike Group Exercise, Integrated Anti-Submarine Warfare Exercise, and Ship Squadron Anti-Submarine Warfare Exercise) conducted in the Study Area.
- Adjustments to Alternative 1 for Naval Air Systems Command and Naval Sea Systems Command testing activities are proposed.

ES.6 SUMMARY OF ENVIRONMENTAL EFFECTS

Environmental effects which might result from the implementation of the Navy's Proposed Action or alternatives have been analyzed in this EIS/OEIS. Resource areas analyzed include sediment and water quality, air quality, marine habitats, marine mammals, sea turtles, marine birds, marine vegetation, marine invertebrates, fish, terrestrial species and habitats, cultural resources, socioeconomic resources, and public health and safety. Since the publication of the Draft EIS/OEIS, five coral species and the

scalloped hammerhead shark (Indo-West Pacific Distinct Population Segment) have been listed under the ESA. These species are addressed in the Final EIS/OEIS. In addition, since the publication of the Draft EIS/OEIS, the Navy has reviewed numerous publications relevant to the environmental resources analyzed in the Final EIS/OEIS and has identified over 50 additional references, many of them published within the last year, for inclusion in the Final EIS/OEIS. Table ES.6-1 provides a comparison of the environmental impacts of the No Action Alternative, Alternative 1 (Preferred Alternative), and Alternative 2.

Table ES.6-1: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2

Resource Category	Summary of Impacts
Section 3.1 Sediments and Water Quality	**Stressors**: Stressors analyzed include explosives and explosive byproducts, metals, chemicals other than explosives, and other materials. **No Action Alternative:** Explosives and Explosive Byproducts: Impacts of explosive byproducts could be short-term and local, while impacts of unconsumed explosives and metals would be long-term and local. Chemical, physical, or biological changes in sediment or water quality would be measurable but below applicable standards, regulations, and guidelines, and within existing conditions or designated uses. Metals: Impacts of metals would be long-term and local. Corrosion and biological processes would reduce exposure of military expended materials to seawater, decreasing the rate of leaching, and most leached metals would bind to sediments and other organic matter. Sediments near military expended materials would contain some metals, but concentrations would be below applicable standards, regulations, and guidelines. Chemicals Other than Explosives: Impacts of chemicals other than explosives and impacts of other materials could be both short- and long-term and local. Chemical, physical, or biological changes in sediment or water quality would not be detectable, and would be within existing conditions or designated uses. Other Materials: Impacts of other materials would be short-term and local. Most other materials from military expended materials would not be harmful to marine organisms, and would be consumed during use. Chemical, physical, or biological changes in sediment or water quality would not be detectable. **Alternative 1 (Preferred Alternative):** The number of individual impacts may increase under Alternative 1, but the types of impacts would be the same as the No Action Alternative. Despite the increase, changes to sediments and water quality under Alternative 1 would be considered localized, short- and long-term. Impacts under Alternative 1 would be below applicable standards, regulations, and guidelines and would be within existing conditions or designated uses. **Alternative 2:** The number of individual impacts may increase under Alternative 2, but the types of impacts would be the same as the No Action Alternative. Despite the increase, changes to sediments and water quality under Alternative 2 would be considered localized, short- and long-term. Impacts under Alternative 2 would be below applicable standards, regulations, and guidelines and would be within existing conditions or designated uses.

Table ES.6-1: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
Section 3.2 Air Quality	**Stressors**: Stressors analyzed include criteria pollutants and hazardous air pollutants. **No Action Alternative:** All reasonably foreseeable direct and indirect emissions of criteria pollutants in nonattainment and maintenance areas do not equal or exceed applicable *de minimis* levels. The Navy's Proposed Action conforms to the applicable State Implementation Plan, and formal conformity determination procedures are not required. A Record of Non-Applicability has been prepared. The public would not be exposed to substantial concentrations of hazardous air pollutants. **Alternative 1 (Preferred Alternative):** The number of individual impacts may increase under Alternative 1, but the types of impacts would be the same as the No Action Alternative. Despite the increase in criteria air pollutants, changes to air quality under Alternative 1 would be considered minor and localized; changes to air quality from hazardous air pollutants are not expected to be detectable. **Alternative 2:** The number of individual impacts may increase under Alternative 2, but the types of impacts would be the same as the No Action Alternative. Despite the increase in criteria air pollutants, changes to air quality under Alternative 2 would be considered minor and localized; changes to air quality from hazardous air pollutants are not expected to be detectable.

Table ES.6-1: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
Section 3.3 Marine Habitats	**Stressors:** Stressors analyzed include acoustic (underwater explosives), and physical disturbance and strike (vessels, in-water devices, military expended materials, and seafloor devices). **No Action Alternative:** Acoustic: Most of the high-explosive military expended materials would detonate at or near the water surface. Only bottom-laid explosives could affect bottom substrate and, therefore, marine habitats. Habitat utilized for underwater detonations would primarily be soft-bottom sediment. The surface area of bottom substrate affected would be a fraction of the total training and testing area available in the Study Area. Physical Disturbance and Strike: Ocean approaches would not be expected to affect marine habitats because of the nature of high-energy surf and shifting sands. Seafloor devices would be located in areas that would be primarily soft-bottom habitat. Most seafloor devices would be placed in areas that would result in minor bottom substrate impacts. Once on the seafloor, military expended material would be buried by sediment, corroded from exposure to the marine environment, or colonized by benthic organisms. The surface area of bottom substrate affected would be a fraction of the total training and testing area available in the Study Area. Pursuant to the Essential Fish Habitat requirements of the Magnuson Stevens Fishery Conservation and Management Act and implementing regulations, the use of explosives on or near the bottom, military expended materials, and seafloor devices during training and testing activities may have an adverse effect on Essential Fish Habitat by reducing the quality and quantity of non-living substrates that constitute Essential Fish Habitat and Habitat Areas of Particular Concern. Essential Fish Habitat conclusions for associated marine vegetation and sedentary invertebrates are summarized in corresponding resource sections (e.g., Marine Vegetation, Marine Invertebrates). Impacts to the water column as Essential Fish Habitat are summarized in corresponding resource sections (e.g., Marine Invertebrates, Fish) because they are impacts on the organisms themselves. **Alternative 1 (Preferred Alternative):** The number of individual impacts may increase under Alternative 1, but the types of impacts would be the same as the No Action Alternative. Despite the increases, most detonations would continue to occur at or near the surface, and those that do occur on the seafloor would be located in primarily soft-bottom habitat. Changes to marine substrates could include localized disturbance of the seafloor and cratering of soft-bottom sediments. Impacts on soft-bottom habitats would be short term, and impacts on hard bottom would be long term. Activities under Alternative 1 would not impact the ability of marine substrates to serve their function as habitat. **Alternative 2:** The number of individual impacts may increase under Alternative 2, but the types of impacts would be the same as the No Action Alternative. Despite the increases, most detonations would continue to occur at or near the surface, and those that do occur on the seafloor would be located in primarily soft-bottom habitat. Changes to marine substrates could include localized disturbance of the seafloor and cratering of soft-bottom sediments. Impacts on soft-bottom habitats would be short term, and impacts on hard bottom would be long term. Activities under Alternative 2 would not impact the ability of marine substrates to serve their function as habitat.

Table ES.6-1: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
Section 3.4 Marine Mammals	**Stressors:** Stressors analyzed include acoustic (sonar and other active acoustic sources; underwater explosives; swimmer defense airguns; weapons firing, launch, and impact noise; vessel noise; and aircraft noise), energy (electromagnetic devices), physical disturbance and strike (vessels, in-water devices, military expended materials, and seafloor devices), entanglement (fiber optic cables and guidance wires, and decelerators/parachutes), ingestion (munitions and military expended materials other than munitions), and secondary (impacts associated with sediments and water quality). There is no marine mammal critical habitat in the MITT Study Area. **No Action Alternative:** Acoustic: Pursuant to the Marine Mammal Protection Act (MMPA), the use of sonar and other active acoustic sources, and underwater explosives may result in mortality, Level A harassment, or Level B harassment of certain marine mammals. The use of; weapons firing, launch, and impact noise; vessel noise; and aircraft noise are not expected to result in mortality, Level A harassment, or Level B harassment of any marine mammals. Pursuant to the Endangered Species Act (ESA), the use of sonar and other active acoustic sources may affect, and is likely to adversely affect, certain ESA-listed marine mammals. The use of underwater explosives may affect, but is not likely to adversely affect, marine mammals. Weapons firing, launch, and impact noise; vessel noise; and aircraft noise may affect, but are not likely to adversely affect, certain ESA-listed marine mammals. Energy: Pursuant to the MMPA, the use of electromagnetic devices is not expected to result in mortality, Level A harassment, or Level B harassment of any marine mammals. Pursuant to the ESA, the use of electromagnetic devices may affect, but is not likely to adversely affect, certain ESA-listed marine mammals. Physical Disturbance and Strike: Pursuant to the MMPA, the use of vessels may result in mortality or Level A harassment of certain marine mammal species but is not expected to result in Level B harassment. The use of in-water devices, military expended materials, and seafloor devices is not expected to result in mortality, Level A harassment, or Level B harassment of any marine mammal. Pursuant to the ESA, vessel use may affect, and is likely to adversely affect, certain ESA-listed species. The use of in-water devices and military expended materials may affect, but is not likely to adversely affect, certain marine mammal species. The use of seafloor devices would have no effect on any ESA-listed marine mammal. Entanglement: Pursuant to the MMPA, the use of fiber optic cables, guidance wires, and decelerators/parachutes is not expected to result in mortality, Level A harassment, or Level B harassment of any marine mammal. Pursuant to the ESA, the use of fiber optic cables and guidance wires, and decelerators/parachutes may affect, but is not likely to adversely affect, certain ESA-listed marine mammals. Ingestion: Pursuant to the MMPA, the potential for ingestion of all types of military expended materials is not expected to result in mortality, Level A harassment, or Level B harassment of any marine mammal. Pursuant to the ESA, the potential for ingestion of all types of military expended materials may affect, but is not likely to adversely affect, certain ESA-listed marine mammals. Secondary: Pursuant to the MMPA, secondary stressors are not expected to result in mortality, Level A harassment, or Level B harassment of any marine mammal. Pursuant to the ESA, secondary stressors may affect, but are not likely to adversely affect, certain ESA-listed marine mammals. **Alternative 1 (Preferred Alternative):** The number of individual impacts under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative. Under Alternative 1, swimmer defense airguns would be used. Swimmer defense airguns would have no effect on any ESA-listed marine mammal. Despite the increase and use of swimmer defense airguns, impacts on marine mammals under Alternative 1 are not expected to decrease the overall fitness of any marine mammal population. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase under Alternative 2, but the types of impacts would be the same as under the No Action Alternative. Under Alternative 2, swimmer defense airguns would be used. Swimmer defense airguns would have no effect on any ESA-listed marine mammal. Despite the increase and use of swimmer defense airguns, impacts on marine mammals under Alternative 2 are not expected to decrease the overall fitness of any marine mammal population.

Table ES.6-1: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
Section 3.5 Sea Turtles	**Stressors:** Stressors analyzed include acoustic (sonar and other active acoustic sources; underwater explosives; swimmer defense airguns; weapons firing, launch, and impact; vessel noise; and aircraft noise), energy (electromagnetic devices), physical disturbance and strike (vessels, in-water devices, military expended materials, and seafloor devices), entanglement (fiber optic cables and guidance wires, and decelerators/parachutes), ingestion (munitions and military expended materials other than munitions), and secondary (impacts associated with sediments and water quality). There is no critical habitat for any of the five listed sea turtles in the Study Area. **No Action Alternative:** Acoustic: Pursuant to the ESA, the use of sonar and other active acoustic sources may affect, but is not likely to adversely affect, green, hawksbill, loggerhead, olive ridley or leatherback sea turtles. The use of explosives may affect, and is likely to adversely affect, ESA-listed green and hawksbill sea turtles but is not likely to adversely affect ESA-listed loggerhead, olive ridley, or leatherback sea turtles. Weapons firing, launch, and impact noise; vessel noise; and aircraft noise may affect, but is not likely to adversely affect, green, hawksbill, loggerhead, olive ridley, and leatherback sea turtles. Energy: Pursuant to the ESA, energy sources used during training and testing activities may affect, but are not likely to adversely affect, the ESA-listed green, hawksbill, loggerhead, olive ridley, and leatherback sea turtles. Physical Disturbance and Strike: Pursuant to the ESA, physical disturbance and strike stressors may affect, but are not likely to adversely affect, the ESA-listed green, hawksbill, loggerhead, olive ridley, and leatherback sea turtles. Entanglement: Pursuant to the ESA, fiber optic cable and guidance wires, and decelerators/parachutes may affect, but are not likely to adversely affect, the ESA-listed green, hawksbill, loggerhead, olive ridley, and leatherback sea turtles. Ingestion: Pursuant to the ESA, the potential for ingestion of munitions and military expended materials other than munitions may affect, but are not likely to adversely affect, the ESA-listed green, hawksbill, loggerhead, olive ridley and leatherback sea turtles. Secondary: Pursuant to the ESA, secondary stressors would not affect sea turtles because changes in sediments and water quality from explosives, explosive byproducts and unexploded ordnance, metals, and chemicals are not likely to be detectable, and no detectable changes in growth, survival, propagation, or population-levels of sea turtles are anticipated. **Alternative 1 (Preferred Alternative):** The number of individual impacts under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative with the exception of responses to acoustics. Acoustic: Pursuant to the ESA, the use of sonar and other active acoustic sources may affect, and is likely to adversely affect, ESA-listed green, hawksbill, loggerhead, and leatherback sea turtles. The use of acoustic stressors may affect, but is not likely to adversely affect, the ESA-listed olive ridley sea turtle. The use of explosives may affect, and is likely to adversely affect, ESA-listed green and hawksbill sea turtles, but is not likely to adversely affect ESA-listed loggerhead, olive ridley, and leatherback sea turtles. Under Alternative 1, swimmer defense airguns would be used. Swimmer defense airguns noise would not affect green, hawksbill, loggerhead, olive ridley, and leatherback sea turtles. Despite the increase and use of swimmer defense airguns, impacts on sea turtles under Alternative 1 are not expected to decrease the overall fitness of any sea turtle population. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase under Alternative 2, but the types of impacts would be the same as under the No Action Alternative with the exception of responses to acoustics. Acoustic: Pursuant to the ESA, the use of sonar and other active acoustic sources may affect, and is likely to adversely affect, ESA-listed green, hawksbill, loggerhead, and leatherback sea turtles. The use of acoustic stressors may affect, but is not likely to adversely affect, the ESA-listed olive ridley sea turtle. The use of explosives may affect, and is likely to adversely affect, ESA-listed green and hawksbill sea turtles, but is not likely to adversely affect ESA-listed loggerhead, olive ridley, and leatherback sea turtles. Under Alternative 2, swimmer defense airguns would be used. Swimmer defense airguns noise would not affect green, hawksbill, loggerhead, olive ridley, and leatherback sea turtles. Despite the increase and use of swimmer defense airguns, impacts on sea turtles under Alternative 2 are not expected to decrease the overall fitness of any sea turtle population.

Table ES.6-1: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
Section 3.6 Marine Birds	**Stressors:** Stressors analyzed include acoustic (sonar and other active acoustic sources; underwater explosives; swimmer defense airguns; weapons firing, launch, and impact noise; vessel noise; and aircraft noise), energy (electromagnetic devices), physical disturbance and strike (aircraft and aerial targets, vessels, in-water devices, military expended materials, ground disturbance, and wildfires), ingestion (munitions and military expended materials other than munitions), and secondary (impacts associated with sediments and water quality, and air quality). There is no critical habitat for ESA-listed marine birds within the MITT Study Area. **No Action Alternative:** Acoustic: Pursuant to the ESA, the use of sonar and other active acoustic sources, underwater explosives, vessel noise, and aircraft noise would have no effect on ESA-listed marine birds. Energy: Pursuant to the ESA, the use of electromagnetic devices would have no effect on ESA-listed marine birds. Physical Disturbance and Strike: Pursuant to the ESA, the use of aircraft, vessels, in-water devices, and military expended materials would have no effect on ESA-listed marine birds. Ingestion: Pursuant to the ESA, the potential for ingestion of military expended materials would have no effect on ESA-listed marine birds. Secondary: Pursuant to the ESA, secondary stressors would have no effect on ESA listed marine birds. Under the MBTA regulations applicable to military readiness activities (50 C.F.R. Part 21), the stressors introduced during training and testing activities would not result in a significant adverse effect on migratory bird populations. **Alternative 1 (Preferred Alternative):** The number of individual impacts under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative. Under Alternative 1, swimmer defense airguns would be used. Despite the increase and use of swimmer defense airguns, impacts on marine birds under Alternative 1 are not expected to decrease the overall fitness of any bird population. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase under Alternative 2, but the types of impacts would be the same as under the No Action Alternative. Under Alternative 2, swimmer defense airguns would be used. Despite the increase and use of swimmer defense airguns, impacts on marine birds under Alternative 2 are not expected to decrease the overall fitness of any bird population.

Table ES.6-1: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
Section 3.7 Marine Vegetation	**Stressors:** Stressors analyzed include acoustic (underwater explosives), physical disturbance and strike (vessels, in-water devices, military expended materials, and seafloor devices), and secondary (impacts associated with sediments and water quality). No ESA-listed marine vegetation species are found in the MITT Study Area. **No Action Alternative:** Acoustic: Underwater explosives could affect marine vegetation by destroying individual plants or damaging parts of plants. The impacts of these stressors are not expected to result in detectable changes in survival or propagation, and are not expected to result in population-level impacts on marine plant species. Physical Disturbance and Strike: Physical disturbance and strikes could affect marine vegetation by destroying individual plants or damaging parts of plants. The impacts of these stressors are not expected to result in population-level impacts on marine plant species. Secondary: Secondary stressors are not expected to result in detectable changes in growth, survival, propagation, or population-level impacts because changes in sediment and water quality are not likely to be detectable. Pursuant to EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations, the use of explosives and other impulsive sources, vessel movement, in-water devices, military expended materials, and seafloor devices during training and testing activities may have an adverse effect on EFH by reducing the quality and quantity of marine vegetation that constitutes EFH or Habitat Areas of Particular Concern. **Alternative 1 (Preferred Alternative):** The number of individual impacts under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative. Despite the increase, impacts from acoustic stressors and physical disturbance are not expected to result in detectable changes to marine vegetation survival or propagation and are not expected to result in population-level impacts. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase under Alternative 2, but the types of impacts would be the same as under the No Action Alternative. Despite the increase, impacts from acoustic stressors and physical disturbance are not expected to result in detectable changes to marine vegetation survival or propagation and are not expected to result in population-level impacts.

Table ES.6-1: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
Section 3.8 Marine Invertebrates	**Stressors:** Stressors analyzed include acoustic (sonar and other active acoustic sources; underwater explosives; swimmer defense airguns; weapons firing, launch and impact noise; vessel noise; and aircraft noise), energy (electromagnetic devices), physical disturbance and strike (vessels, in-water devices, military expended materials, and seafloor devices), entanglement (fiber optic cables and guidance wires, and decelerators/parachutes), ingestion (military expended materials), and secondary (impacts associated with sediments and water quality). There is no marine invertebrate critical habitat in the Study Area. **No Action Alternative:** Acoustic: Pursuant to the Endangered Species Act (ESA), the use of sonar and other active acoustic sources; underwater explosives; swimmer defense airguns weapons firing, launch and impact noise; aircraft noise; and vessel noise may affect ESA-listed coral species. Energy: Pursuant to the ESA, the use of electromagnetic devices would have no effect on ESA-listed coral species. Physical Disturbance and Strike: Pursuant to the ESA, the use of vessels, in-water devices, and military expended materials may affect ESA-listed coral species. The use of military expended materials on FDM may affect ESA-listed coral species as a result of direct strikes from off island munitions. The use of seafloor devices would have no effect on ESA-listed coral species. Entanglement: Pursuant to the ESA, the use of fiber optic cables and guidance wires as well as parachutes/decelerators would have no effect on ESA-listed coral species. Ingestion: Pursuant to the ESA, the use of military expended materials would have no effect on ESA-listed coral species. Secondary: Pursuant to the ESA, secondary stressors would have no effect on ESA-listed coral species. Pursuant to the Essential Fish Habitat (EFH) requirements of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations, the use of sonar and other acoustic sources, vessel noise, weapons firing noise, electromagnetic sources, vessel movement, in-water devices, and metal, chemical, or other material byproducts will have no adverse effect on sedentary invertebrate beds or reefs that constitute EFH or Habitat Areas of Particular Concern. The use of electromagnetic sources will have minimal and temporary adverse impact to invertebrates occupying water column EFH or Habitat Areas of Particular Concern. The use of explosives, military expended materials, seafloor devices, and explosives and explosive byproducts may have an adverse effect on EFH by reducing the quality and quantity of sedentary invertebrate beds or reefs that constitute EFH or Habitat Areas of Particular Concern.

Table ES.6-1: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
Section 3.8 Marine Invertebrates (continued)	**Alternative 1 (Preferred Alternative):** The number of individual impacts under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative. Despite the increase and use of swimmer defense airguns under Alternative 1, impacts to marine invertebrates are expected to be similar to those described under the No Action Alternative. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase under Alternative 2, but the types of impacts would be the same as under the No Action Alternative. Despite the increase and use of swimmer defense airguns under Alternative 2, impacts to marine invertebrates are expected to be similar to those described under the No Action Alternative.
Section 3.9 Fish	**Stressors:** Stressors analyzed include acoustic (sonar and other active acoustic sources; underwater explosives; swimmer defense airguns; weapons firing, launch, and impact noise; vessel noise; and aircraft noise), energy (electromagnetic devices), physical disturbance and strike (vessels, in-water devices, military expended materials, and seafloor devices), entanglement (fiber optic cables and guidance wires, and decelerators/parachutes), ingestion (munitions and military expended materials other than munitions), and secondary (impacts associated with sediments and water quality). **No Action Alternative:** Acoustic: Pursuant to the ESA, the use of sonar and other non-impulse acoustic sources may affect, but is not likely to adversely affect ESA-listed scalloped hammerhead shark. The use of explosives and other impulse sound sources may affect, and is likely to adversely affect ESA-listed scalloped hammerhead sharks. Acoustic stressors have the potential to impact certain non-ESA fish species, which may include injury or mortality. These impacts are not expected to result in population-level impacts on fish species. Energy: Electromagnetic devices could affect certain fish species by eliciting a brief behavioral or physiological response. These impacts are not expected to result in population-level impacts on fish species. Pursuant to the ESA, the use of electromagnetic devices may affect, but is not likely to adversely affect ESA-listed scalloped hammerhead sharks. Physical Disturbance and Strike: Physical disturbance and strikes have the potential to impact fish; however, this potential is low. These impacts are not expected to result in population-level impacts on fish species. The use of vessels and in-water devices, military expended materials, and seafloor devices would have no effect on ESA-listed scalloped hammerhead sharks. Entanglement: The use of fiber optic cables and guidance wires, as well as parachutes/decelerators has the potential to impact certain fish species, which may include injury or mortality; however, this potential is low. These impacts are not expected to result in population-level impacts on fish species. Pursuant to the ESA, the use of fiber optic cables, guidance wires, and parachutes may affect, but is not likely to adversely affect ESA-listed scalloped hammerhead sharks. Ingestion: Munitions and military expended materials other than munitions have the potential to be ingested by fish in the Study Area; however, the likelihood is low. Therefore, these impacts are not expected to result in population-level impacts on fish species. Pursuant to the ESA, the potential for ingestion of military expended materials may affect, but is not likely to adversely affect ESA-listed scalloped hammerhead sharks.

Table ES.6-1: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
Section 3.9 Fish (continued)	Secondary: Secondary stressors are not expected to result in population-level impacts because changes in sediment and water quality are not likely to be detectable. Pursuant to the ESA, secondary stressors may affect, but are not likely to adversely affect, ESA-listed scalloped hammerhead sharks. Pursuant to the EFH requirements, the use of sonar and other active acoustic sources, underwater explosives, and electromagnetic devices may have a minimal and temporary adverse effect on the fishes that occupy water column EFH. **Alternative 1 (Preferred Alternative):** The number of individual impacts under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative with one exception: swimmer defense airgun noise has the potential to impact certain fish species, which may include injury or mortality. These impacts are not expected to result in population-level impacts on fish species. Overall, despite the increase and use of swimmer defense airguns, impacts on fish under Alternative 1 are not expected to decrease the overall fitness of any fish population. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase under Alternative 2, but the types of impacts would be the same as under the No Action Alternative with one exception: swimmer defense airgun noise has the potential to impact certain fish species, which may include injury or mortality. These impacts are not expected to result in population-level impacts on fish species. Overall, despite the increase and use of swimmer defense airguns, impacts on fish under Alternative 2 are not expected to decrease the overall fitness of any fish population.
Section 3.10 Terrestrial Species and Habitats	**Stressors:** Stressors analyzed include acoustic (explosives noise, weapons firing noise, and aircraft noise), physical (disturbance or strikes by aircraft and aerial targets, military expended materials including explosive munitions fragments, ground disturbance, and wildfires), and secondary (introduction of invasive species). **No Action Alternative:** Acoustic: Pursuant to the ESA, acoustic stressors on Guam may affect, but are not likely to adversely affect, the Mariana fruit bat, Mariana common moorhen, and the Mariana swiftlet. Acoustic stressors on Guam would have no effect on the Guam rail, Mariana crow, Micronesian kingfisher, or *Serianthes nelsonii*. Acoustic stressors on Rota may affect, but are not likely to adversely affect, the Mariana fruit bat and Mariana crow. Acoustic stressors on Rota would have no effect on Rota bridled white-eye, *Serianthes nelsonii*, *Nesogenes rotensis*, or *Osmoxylon mariannense.* Acoustic stressors on Tinian may affect, but are not likely to adversely affect, the Mariana fruit bat, Micronesian megapode, or Mariana common moorhen. Acoustic stressors on Saipan may affect, but are not likely to adversely affect, the Mariana swiftlet, Micronesian megapode, and nightingale reed-warbler. Acoustic stressors on FDM may affect, and are likely to adversely affect, the Micronesian megapode and the Mariana fruit bat.

Table ES.6-1: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
Section 3.10 Terrestrial Species and Habitats (continued)	Physical: Pursuant to the ESA, physical stressors on Guam may affect, but are not likely to adversely affect, the Mariana fruit bat, Mariana common moorhen, and the Mariana swiftlet. Physical stressors on Guam would have no effect on the Guam rail, Mariana crow, Micronesian kingfisher, or *Serianthes nelsonii*. Physical stressors on Rota may affect, but are not likely to adversely affect, the Mariana fruit bat and Mariana crow. Physical stressors on Rota would have no effect on Rota bridled white-eye, *Serianthes nelsonii*, *Nesogenes rotensis*, or *Osmoxylon mariannense.* Physical stressors on Tinian may affect, but are not likely to adversely affect, the Mariana fruit bat, Micronesian megapode, or Mariana common moorhen. Physical stressors on Saipan may affect, but are not likely to adversely affect, the Mariana swiftlet, Micronesian megapode, and Nightingale reed-warbler. Acoustic stressors on FDM may affect, and are likely to adversely affect, the Micronesian megapode and the Mariana fruit bat on FDM. Wildfires on FDM may affect, and are likely to adversely affect, the Micronesian megapode and Mariana fruit bat. The USFWS has designated Critical Habitats on Guam for the Mariana fruit bat, Mariana crow, and Guam Micronesian kingfisher. The USFWS has designated Critical Habitats on Rota for the Rota bridled white-eye and Mariana crow. Proposed training and testing activities would not occur within these designated Critical Habitats; therefore, there would be no effect on Critical Habitat. Secondary: Pursuant to the ESA, secondary stressors would have no effect on ESA-listed species. The Navy, in cooperation with the U.S. Fish and Wildlife Service and other resource agencies, engages in policies and practices that reduce the potential for the transport of invasive species to the Mariana Islands and between military training areas. Acoustic and physical stressors have the potential to injure and kill terrestrial bird species that are not ESA-listed, particularly those that roost and breed on FDM. Pursuant to the MBTA and 50 C.F.R. Part 21.15, these impacts will not cause significant adverse effects to populations of bird species not ESA-listed and otherwise protected under the MBTA. **Alternative 1 (Preferred Alternative):** The number of individual impacts under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative. Although potential impacts to certain terrestrial species from the training activities that occur on land within the Study Area may include injury or mortality, impacts are not expected to decrease the overall fitness of any given population. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase under Alternative 2, but the types of impacts would be the same as under the No Action Alternative. Although potential impacts to certain terrestrial species from the training activities that occur on land within the Study Area may include injury or mortality, impacts are not expected to decrease the overall fitness of any given population.

Table ES.6-1: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
Section 3.11 Cultural Resources	**Stressors:** Stressors analyzed include acoustic (underwater explosives) and physical disturbance (ground disturbance, use of towed-in-water devices, deposition of military expended materials, and use of seafloor devices). **No Action Alternative:** Acoustic and Physical Disturbance: Acoustic and physical stressors would not adversely affect submerged historic resources within U.S. territorial waters and National Register of Historic Places-eligible resources on Guam and the Commonwealth of the Northern Mariana Islands in accordance with Section 106 of the National Historic Preservation Act because measures were previously implemented to protect these resources and will continue to be implemented according to the conservation measures and procedures identified and described in the 2009 MIRC Programmatic Agreement. In accordance with Section 402 of National Historic Preservation Act, no World Heritage Sites would be affected. The Programmatic Agreement identifies 13 No Training areas (eight on Guam and five on Tinian) and 35 Limited Training areas (20 on Guam and 15 on Tinian). Limited Training areas are defined as pedestrian traffic areas with vehicular access limited to designated roadways and/or the use of rubber-tired vehicles. No pyrotechnics, demolition, or digging is allowed without prior consultation with the appropriate Historic Preservation Office. In addition to establishing No Training and Limited Training areas, stipulations for additional cultural resources investigations in unsurveyed areas, archaeological monitoring and conditions documentation of military use of ingress and egress paths and training areas, and preparation of field reports were also implemented. **Alternative 1 (Preferred Alternative):** The number of individual impacts under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative. Training and testing activities associated with acoustic and physical stressors would not impact cultural resources because measures have been previously implemented to protect these resources and would continue to be implemented according to the conservation measures and procedures identified and described in the 2009 MIRC Programmatic Agreement. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase under Alternative 2, but the types of impacts would be the same as under the No Action Alternative. Training and testing activities associated with acoustic and physical stressors would not impact cultural resources because measures have been previously implemented to protect these resources and would continue to be implemented according to the conservation measures and procedures identified and described in the 2009 MIRC Programmatic Agreement.

Table ES.6-1: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
Section 3.12 Socioeconomic Resources	**Stressors:** Stressors analyzed include accessibility (limiting access to the ocean and the air), physical disturbance and strike (aircraft, vessels, in-water devices, and military expended materials), airborne acoustics (weapons firing, aircraft and vessel noise), and secondary (availability of resources). **No Action Alternative:** Accessibility: Accessibility stressors may result in impacts on commercial and recreational fishing, subsistence use, or tourism when areas of co-use are temporarily inaccessible to ensure public safety during military training and testing activities. No impacts on commercial transportation and shipping are anticipated. The military will continue to collaborate with local communities to enhance existing means of communication with the public that are intended to reduce the potential effects of limiting accessibility to areas designated for use by the military. Physical Disturbance and Strike: Physical disturbance and strike stressors are not expected to result in impacts on commercial and recreational fishing, subsistence use, or tourism because the vast majority of military training and testing activities would occur in areas of the Study Area far from the locations of these socioeconomic activities. Furthermore, the large size of the Study Area over which these types of military activities would be distributed, and adherence to the Navy's standard operating procedures, would further reduce any potential for impacts. Airborne Acoustics: Airborne acoustic stressors are not expected to result in impacts to tourism or recreational activities, because the vast majority of military training and testing activities would occur in areas of the Study Area that are far out to sea and far from tourism and recreation locations. Secondary: Secondary stressors are not expected to result in impacts to commercial or recreational fishing, subsistence use, or tourism, based on the level of impacts described in other resources sections. **Alternative 1 (Preferred Alternative):** The number of individual impacts under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase under Alternative 2, but the types of impacts would be the same as under the No Action Alternative.

Table ES.6-1: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
Section 3.13 Public Health and Safety	**Stressors:** Stressors analyzed include underwater energy, in-air energy, physical interactions, and secondary (impacts associated with sediments and water quality). **No Action Alternative:** Because of the Navy's standard operating procedures, impacts on public health and safety would be unlikely. **Alternative 1 (Preferred Alternative):** Despite the increase in activities under Alternative 1, Navy safety procedures would continue to prevent proposed activities being co-located with public activities. Because of the Navy's safety procedures, the potential for activities to impact public health and safety under Alternative 1 would be unlikely. **Alternative 2:** Despite the increase in activities under Alternative 2, Navy safety procedures would continue to prevent proposed activities being co-located with public activities. Because of the Navy's safety procedures, the potential for activities to impact public health and safety under Alternative 2 would be unlikely.

Notes: C.F.R. = Code of Federal Regulations, EIS/OEIS = Environmental Impact Statement/Overseas Environmental Impact Statement, ESA = Endangered Species Act, FDM = Farallon de Medinilla, MBTA = Migratory Bird Treaty Act, MITT = Mariana Islands Training and Testing, MMPA = Marine Mammal Protection Act, Navy = United States Department of the Navy, U.S. = United States, USFWS = U.S. Fish and Wildlife Service

ES.6.1 CUMULATIVE IMPACTS

Marine mammals, sea turtles, terrestrial species, and socioeconomics are the primary resources of concern for cumulative impacts analysis:

- Past human activities have impacted these resources to the extent that several marine mammal species, all sea turtles species, and some terrestrial species occurring in the Study Area are ESA-listed. Several marine mammal species have stocks that are classified as strategic stocks under the MMPA.
- Several native forest-dwelling birds have been extirpated or suffered extinction in the Mariana Islands, primarily on Guam because of predation by introduced invasive species. These resources would be impacted by multiple ongoing and future actions.
- The use of sonar and other non-impulsive sound sources under the No Action Alternative, Alternative 1, and Alternative 2 has the potential to disturb or injure marine mammals and sea turtles.
- Explosive detonations, and vessel strikes under the No Action Alternative, Alternative 1, and Alternative 2 have the potential to disturb, injure, or kill marine mammals and sea turtles.
- Explosive detonations and other military training activities on Farallon de Medinilla (FDM) under the No Action Alternative, Alternative 1, and Alternative 2 have the potential to disturb, injure, or kill the Mariana fruit bat, Micronesian megapode, and seabirds that nest or visit FDM.
- Under Alternative 1 and Alternative 2, proposed danger zones could potentially restrict access to fishing and recreational areas when ranges are in use.

The aggregate impacts of past, present, and other reasonably foreseeable future actions are expected to result in significant impacts on some individual marine mammal, all sea turtle species, and terrestrial species in the Study Area. The No Action Alternative, Alternative 1, or Alternative 2 would contribute to cumulative impacts; however, marine mammal and sea turtle mortality and injury from bycatch, commercial vessel ship strikes, entanglement, ocean pollution, and other human causes are estimated to be orders of magnitude greater than the potential mortality, strandings, or injury resulting from Navy training and testing activities (hundreds of thousands of animals versus tens of animals) (Culik 2004; International Council for the Exploration of the Sea 2005; Read et al. 2006). Although the only significant impacts on terrestrial species and marine birds would occur on FDM, other activities within the Mariana Islands may indirectly impact or benefit species on FDM. For example, the main threats to terrestrial species within the Mariana Islands include invasive species introductions, habitat degradation, and poaching of fruit bats. These ecological stressors on species may influence inter-island movements, and either increase or decrease the potential for exposure on FDM. Alternatively, natural resource management activities, such as ungulate removal from some islands within the Mariana archipelago, may contribute to the recovery of declining species that occur on FDM.

The analysis presented in Chapter 4 (Cumulative Impacts) and Chapter 3 (Affected Environment and Environmental Consequences) indicate that the incremental contribution of the No Action Alternative, Alternative 1, or Alternative 2 to cumulative impacts on sediments and water quality, air quality, marine habitats, marine birds, marine vegetation, marine invertebrates, fish, cultural resources, socioeconomic resources, and public health and safety would be negligible. When considered with other actions, the No Action Alternative, Alternative 1, or Alternative 2 might contribute to cumulative impacts on submerged prehistoric and historic resources, if such resources are present in areas where bottom-disturbing training and testing activities take place. The No Action Alternative, Alternative 1, or Alternative 2 would

also make an incremental contribution to greenhouse gas emissions, representing approximately 0.003, 0.005, and 0.006 percent of U.S. 2009 greenhouse gas emissions, respectively.

ES.7 STANDARD OPERATING PROCEDURES, MITIGATION, AND MONITORING

Within the Study Area, the Navy implements standard operating procedures, mitigation measures, and marine species monitoring and reporting. Navy standard operating procedures have the indirect benefit of reducing potential impacts on marine and terrestrial resources. Mitigation measures are designed to help reduce or avoid potential impacts on marine and terrestrial resources. Marine species monitoring efforts are designed to track compliance with take authorizations, evaluate the effectiveness of mitigation measures, and improve understanding of the effects training and testing activities have on marine resources.

ES.7.1 STANDARD OPERATING PROCEDURES

The Navy currently employs standard practices to provide for the safety of personnel and equipment, including ships and aircraft, as well as the success of the training and testing activities. In many cases there are incidental environmental, socioeconomic, and cultural benefits resulting from standard operating procedures. Standard operating procedures serve the primary purpose of providing for safety and mission success, and are implemented regardless of their secondary benefits. Because standard operating procedures are crucial to safety and mission success, the Navy will not modify them as a way to further reduce effects to environmental resources. Because of their importance for maintaining safety and mission success, standard operating procedures have been considered as part of the Proposed Action under each alternative, and therefore are included in the Chapter 3 (Affected Environment and Environmental Consequences) environmental analyses for each resource.

ES.7.2 MITIGATION

The Navy recognizes that the Proposed Action has the potential to impact the environment. Unlike standard operating procedures, which are established for reasons other than environmental benefit, mitigation measures are modifications to the Proposed Action that are implemented for the sole purpose of reducing a specific potential environmental impact on a particular resource. These measures have been coordinated with NMFS and USFWS through the consultation and permitting processes. The Record of Decision for this EIS/OEIS will address any additional mitigation measures that may result from ongoing regulatory processes.

The Navy has engaged in consultation processes under the ESA with regard to listed species that may be affected by the Proposed Action described in this EIS/OEIS. For the purposes of the ESA Section 7 consultation, the mitigation measures proposed here may be considered by NMFS and USFWS as beneficial actions taken by the Federal agency or applicant (50 C.F.R. 402.14[g][8]). If necessary to satisfy requirements of the ESA, NMFS and USFWS may develop an additional set of measures contained in reasonable and prudent alternatives, reasonable and prudent measures, or conservation recommendations in any Biological Opinion issued for this Proposed Action.

The Navy's mitigation measures are organized into two categories: (1) procedural measures and (2) mitigation areas. The Navy undertook two assessment steps for each recommended mitigation measure. Step 1 is an effectiveness assessment to ensure that mitigations are effective at reducing potential impacts on the resource. Step 2 is an operational assessment of the impacts on safety, practicability, and readiness from the proposed mitigation measure. In determining effectiveness at avoiding or reducing the impact, information was collected from published and readily available sources,

as well as Navy after-action and monitoring reports. Table ES.7-1 summarizes the Navy's recommended mitigation measures with currently implemented mitigation measures for each activity category also summarized in the table.

ES.7.3 MITIGATION MEASURES CONSIDERED BUT ELIMINATED

A number of possible alternative or additional mitigation measures have been suggested during the public scoping period of this EIS/OEIS and comment periods of previous Navy environmental documents. Through the evaluation process, some measures were deemed to either be ineffective, have an unacceptable impact on the proposed training and testing activities, or both, and will not be carried forward for further consideration (refer to Section 5.4, Mitigation Measures Considered But Eliminated).

ES.7.4 MONITORING

The Navy is committed to demonstrating environmental stewardship while executing its National Defense Mission and complying with the suite of federal environmental laws and regulations. As a complement to the Navy's commitment to avoiding and reducing impacts of the Proposed Action through mitigation, the Navy will undertake monitoring efforts to track compliance with take authorizations, help investigate the effectiveness of implemented mitigation measures, and better understand the impacts of the Proposed Action on marine resources. Taken together, mitigation and monitoring comprise the Navy's integrated approach for reducing environmental impacts from the Proposed Action. The Navy's overall monitoring approach will seek to leverage and build on existing research efforts whenever possible.

Consistent with the cooperating agency agreement with NMFS, mitigation and monitoring measures presented in this EIS/OEIS focus on the requirements for protection and management of marine resources. Since monitoring will be required for compliance with the Final Rule issued for the Proposed Action under the MMPA, details of the monitoring program are being developed in coordination with NMFS through the regulatory process.

The Integrated Comprehensive Monitoring Program is intended to coordinate monitoring efforts across all regions where the Navy trains and to allocate the most appropriate level and type of effort for each range complex. The current Navy monitoring program is composed of a collection of "range-specific" monitoring plans, each developed individually as part of MMPA and ESA compliance processes as environmental documentation was completed. These individual plans establish specific monitoring requirements for each range complex and are collectively intended to address the Integrated Comprehensive Monitoring Program top-level goals. A Scientific Advisory Group of leading marine mammal scientists developed recommendations that would serve as the basis for a Strategic Plan for Navy monitoring. The Strategic Plan is intended to be a primary component of the Integrated Comprehensive Monitoring Program and provide a "vision" for Navy monitoring across geographic regions—serving as guidance for determining how to most efficiently and effectively invest the marine species monitoring resources to address Integrated Comprehensive Monitoring Program top-level goals and satisfy MMPA regulatory requirements. The objective of the Strategic Plan is to continue the evolution of Navy marine species monitoring towards a single integrated program, incorporating Scientific Advisory Group recommendations, and establishing a more transparent framework for soliciting, evaluation, and implementing monitoring work across the Navy's range complexes and testing ranges.

ES.7.5 REPORTING

The Navy is committed to documenting and reporting relevant aspects of training and testing activities in order reduce environmental impact, and improve future environmental assessments. Initiatives include exercise and monitoring reporting, stranding response planning, and bird strike reporting.

Table ES.7-1: At-Sea Mitigation Identification and Implementation[3]

Mitigation Measure	Benefit	Evaluation Criteria	Implementation	Responsible Command	Date Implemented
Marine Species Awareness Training All personnel standing watch on the bridge and Lookouts will successfully complete the training before standing watch or serving as a Lookout.	To learn the procedures for searching for and recognizing the presence of marine species, including detection cues (e.g., congregating seabirds) so that potentially harmful interactions can be avoided.	Successful completion of training by all personnel standing watch and all personnel serving as Lookouts. Personnel successfully applying skills learned during training.	The multimedia training program has been made available to personnel required to take the training. Personnel have been and will continue to be required to take the training prior to standing watch and serving as Lookouts.	Officer Conducting the Exercise or Test	Ongoing
Lookouts					
Use of Four Lookouts for Underwater Detonations Mine countermeasure and neutralization activities using time-delay will use four Lookouts, depending on the explosives being used. If applicable, aircrew and divers will report sightings of marine mammals or sea turtles.	Lookouts can visually detect marine species so that potentially harmful impacts to marine mammals and sea turtles from explosives use can be avoided. Lookouts can more quickly and effectively relay sighting information so that corrective action can be taken. Support from aircrew and divers, if they are involved in the activity, will increase the probability of sightings, reducing the potential for impacts.	Annual report documenting the number of marine mammals and sea turtles sighted, including trend analysis after 3 years. Annual report documenting the number of incidents when a Navy activity was halted or delayed as a direct result of a marine mammal or sea turtle sighting.	All Lookouts will receive marine species awareness training and will be positioned on vessels, and aircraft as described in Section 5.3.1.2 (Lookouts).	Officer Conducting the Exercise or Test	Ongoing

[3] Mitigation and conservation measures on land are being coordinated through the Section 7 ESA consultation process between the Navy and the USFWS. These measures have been included in this Final EIS (Chapter 5, Standard Operating Procedures, Mitigation, and Monitoring) with the publication of the USFWS Biological Opinion.

Table ES.7-1: Mitigation Identification and Implementation (continued)

Mitigation Measure	Benefit	Evaluation Criteria	Implementation	Responsible Command	Date Implemented
Use of One or Two Lookouts Vessels using low-frequency active sonar or hull-mounted mid-frequency active sonar associated with ASW activities will have either one or two Lookouts, depending on the activity and size of the vessel. Mine countermeasure and neutralization activities with positive control will use two Lookouts, with one on each support vessel. If applicable, aircrew and divers will also report the presence of marine mammals or sea turtles. One Lookout may be used under certain circumstances specific in Section 5.3.1.2 (Lookouts). Sinking Exercises will use two Lookouts (one in an aircraft and one on a vessel).	Lookouts can visually detect marine species so that potentially harmful impacts to marine mammals and sea turtles from Navy sonar and explosives use can be avoided. Lookouts can more quickly and effectively relay sighting information so that corrective action can be taken. Support from aircrew and divers, if they are involved in the activity, will increase the probability of sightings, reducing the potential for impacts.				

Table ES.7-1: Mitigation Identification and Implementation (continued)

Mitigation Measure	Benefit	Evaluation Criteria	Implementation	Responsible Command	Date Implemented
Use of One Lookout Surface ships and aircraft conducing ASW, ASUW, or MIW activities using high-frequency, non-hull mounted mid-frequency active sonar, helicopter dipping mid-frequency active sonar, anti-swimmer grenades, IEER sonobuoys, surface gunnery activities, surface missile activities, bombing activities, explosive torpedo testing, towed mine neutralization activities, and activities using non-explosive practice munitions, will have one Lookout.	Lookouts can visually detect marine species so that potentially harmful impacts to marine mammals and sea turtles from Navy sonar, explosives, sonobuoys, gunnery rounds, missiles, explosive torpedoes, towed systems, and non-explosive munitions can be avoided. A Lookout can more quickly and effectively relay sighting information so that corrective action can be taken.				
Use of a Mitigation Zone A mitigation zone is an area defined by a radius and centered on the location of a sound source or activity. The size of each mitigation zone is specific to a particular training or testing activity (e.g., sonar use or explosive use).	A mitigation zone defines the area in which Lookouts survey for marine mammals and sea turtles. Mitigation zones reduce the potential for injury to marine species.	For those activities where monitoring is required, record observations of marine mammals and sea turtles located outside of the mitigation zone and note any apparent reactions to ongoing Navy activities. Observation of acute reactions may be used as an indicator that the radius of the mitigation zone needs to be increased.	Mitigation zones have been and will continue to be implemented as described in Section 5.3.2 (Mitigation Zone Procedural Measures). Lookouts are trained to conduct observations within mitigation zones of different sizes.	Officer Conducting the Exercise or Test	Ongoing

Notes: ASUW = Anti-surface Warfare, ASW = Anti-submarine Warfare, IEER = Improved Extended Echo Ranging, MIW = Mine Warfare

ES.7.6 OTHER CONSIDERATIONS

ES.7.6.1 Consistency with Other Federal, State, and Local Plans, Policies and Regulations

Based on an evaluation of consistency with statutory obligations, the Navy and other Service's proposed training and testing activities would not conflict with the objectives or requirements of federal, state, regional, or local plans, policies, or legal requirements. The Navy and other Services are consulting and will continue to consult with regulatory agencies as appropriate during the NEPA process and prior to implementation of the Proposed Action to ensure all legal requirements are met.

ES.7.6.2 Relationship Between Short-Term Use of the Human Environment and Maintenance and Enhancement of Long-Term Productivity

In accordance with NEPA, this EIS/OEIS provides an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. The Proposed Action may result in both short- and long-term environmental effects. However, the Proposed Action would not be expected to result in any impacts that would reduce environmental productivity, permanently narrow the range of beneficial uses of the environment, or pose long-term risks to health, safety, or the general welfare of the public.

ES.7.6.3 Irreversible or Irretrievable Commitment of Resources

For the alternatives including the Proposed Action, most resource commitments are neither irreversible nor irretrievable. Most impacts are short-term and temporary or, if long lasting, are negligible. No habitat associated with threatened or endangered species would be lost as result of implementation of the Proposed Action. Since there would be no building or facility construction, the consumption of materials typically associated with such construction (e.g., concrete, metal, sand, fuel) would not occur. Energy typically associated with construction activities would not be expended and irreversibly lost.

Implementation of the Proposed Action would require fuels used by aircraft, ships, and ground-based vehicles. Since fixed- and rotary-wing flight and ship activities could increase, relative total fuel use could increase. Therefore, if total fuel consumption increased, this nonrenewable resource would be considered irretrievably lost.

ES.7.6.4 Energy Requirements and Conservation Potential of Alternatives and Mitigation Measures

Resources that will be permanently and continually consumed by project implementation include water, electricity, natural gas, and fossil fuels; however, the amount and rate of consumption of these resources would not result in significant environmental impacts or the unnecessary, inefficient, or wasteful use of resources. Prevention of the introduction of potential contaminants is an important component of mitigation of the alternative's adverse impacts. To the extent practicable, considerations in the prevention of introduction of potential contaminants are included.

Sustainable range management practices are in place that protect and conserve natural and cultural resources and preserve access to training areas for current and future training requirements while addressing potential encroachments that threaten to impact range and training area capabilities.

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