

Final

**Supplemental Environmental Impact Statement/
Overseas Environmental Impact Statement
Atlantic Fleet Training and Testing**

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5 MITIGATION

5.1 INTRODUCTION

The terms “mitigation” and “mitigation measures” mean actions taken to completely avoid, partially reduce, or minimize the potential for a stressor to impact a resource. This chapter describes and assesses mitigation the United States (U.S.) Department of the Navy (Navy) and U.S. Coast Guard (collectively referred to as the “Action Proponents”) will implement under Alternatives 1 or 2 of the Proposed Action. The Action Proponents developed mitigation separate from, and after, the National Environmental Policy Act (NEPA) alternatives development process described in Chapter 2 (Description of the Proposed Action and Alternatives). Mitigation was designed to be implemented under every action alternative carried forward. In addition to developing mitigation pursuant to NEPA, the Action Proponents developed mitigation in coordination with regulators and cooperating agencies, including the National Marine Fisheries Service (NMFS). Mitigation is designed to achieve one or more of the following overarching benefits:

- ensure that the Proposed Action has a negligible impact on marine mammal species and stocks, and effects the least practicable adverse impact on marine mammal species or stocks and their habitat (as required under the Marine Mammal Protection Act [MMPA])
- ensure that the Proposed Action does not jeopardize the continued existence of endangered or threatened species, or result in destruction or adverse modification of critical habitat (as required under the Endangered Species Act [ESA])
- avoid or minimize adverse effects on Essential Fish Habitat and habitats that provide critical ecosystem functions (as required under the Magnuson-Stevens Fishery Conservation and Management Act)
- avoid adversely impacting historic shipwrecks (as required under the Abandoned Shipwreck Act and National Historic Preservation Act)

For requirements under the MMPA, NMFS has supported the position that the reduction of impacts on marine mammal stocks and species (e.g., impacts on reproductive success or survivorship) may accrue through the application of mitigation that limits impacts on individual animals (National Marine Fisheries Service, 2023). Mitigation developed for the following types of impacts is thought to have greater value in reducing the likelihood or severity of adverse effects on marine mammal populations (National Marine Fisheries Service, 2023):

- avoiding injury or mortality
- limiting interruption of known feeding, breeding, mother/young, or resting behaviors
- minimizing abandonment of important habitat (temporally and spatially)
- minimizing the number of individuals subjected to these types of disruptions
- limiting degradation of habitat

NMFS has also described species-correlated factors that may (alone, or in combination) result in mitigation having a greater benefit toward reducing potential impacts on marine mammal species or stocks: (1) the stock is known to be decreasing or status is unknown, but believed to be declining; (2) the known annual mortality (from any source) is approaching or exceeding the potential biological removal level (as defined in section 3(20) of the MMPA); (3) the species or stock is a small, resident population; or (4) the stock is involved in an unusual mortality event or has other known vulnerabilities, such as recovering from an oil spill. Activity-based mitigation and geographic mitigation (which can include year-round or seasonal measures to reduce impacts on marine mammals or their prey and physical habitat), particularly within feeding, breeding, mother/young, migration, and resting areas (National Marine

Fisheries Service, 2023), are relevant to achieving the mitigation goals described above. Using this guidance from NMFS, the Action Proponents considered the potential benefits of mitigation for marine mammals in terms of the degree, likelihood, and context of the anticipated avoidance of impacts to individuals (and how many individuals), and within the context of the species-correlated factors. Similar considerations were applied to mitigation developed for ESA-listed species, including sea turtles, fish, birds, and corals.

The Navy standardizes its mitigation across the Atlantic, Hawaii-California, Mariana Islands, Northwest, and Gulf of Alaska Study Areas to the maximum extent practical. Mitigation is tailored to each Study Area as needed and appropriate based on the following:

- the Proposed Action
- best available science on species occurrence and potential impacts from the Proposed Action
- expected mitigation benefits
- operational practicality assessments
- consultations and coordination with regulatory agencies or departments, such as NMFS, the National Oceanic and Atmospheric Administration, the U.S. Fish and Wildlife Service (USFWS), state Coastal Zone Management program offices, and State Historic Preservation Officers
- consultations and coordination with Alaska Native federally recognized tribes, Native Hawaiian organizations, and Native American Tribes, nations, and tribal organizations
- suggestions received through public comments during scoping and on the Draft Supplemental Environmental Impact Statement (EIS)/Overseas EIS (OEIS)

Mitigation was initially developed for Phase I of at-sea environmental planning (2009 to 2014) and subsequently revised for Phase II (2013 to 2018) and Phase III (2018 to 2025) for the 2018 [*Final Atlantic Fleet Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement*](#). This Supplemental EIS/OEIS (which represents Phase IV) uses the 2018 Final EIS/OEIS mitigation as the baseline for refining mitigation specific to the Proposed Action. For additional information about the at-sea environmental planning process, see Chapter 1 (Purpose and Need).

The Action Proponents analyzed potential mitigation measures individually and then collectively as a holistic mitigation package to determine if mitigation would meet the appropriate balance between being environmentally beneficial and practical to implement. Mitigation measures are expected to have some degree of impact on the military readiness activities that implement them. The Action Proponents are willing to accept a certain level of impact on their military readiness activities to implement mitigation that is expected to be sufficiently beneficial (i.e., effective) at avoiding specific impacts from the Proposed Action. To determine if mitigation measures would be practical to implement, operational communities from each Action Proponent conducted a comprehensive assessment to determine how and to what degree each individual measure and the iterative and cumulative impact of all potential measures would be compatible with planning, scheduling, and conducting military readiness activities under the Proposed Action. Mitigation was considered practical to implement if it met all three criteria discussed in Table 5.1-1.

Table 5.1-1: Practicality Assessment Criterion

Criterion	Description of Practicality Assessment Criterion
Criterion 1. Safety: Implementing mitigation must be safe	<ul style="list-style-type: none"> Assessments considered if mitigation would increase safety risks to personnel, equipment, or the public through: <ul style="list-style-type: none"> increased fatigue of pilots or other personnel accelerated fatigue-life of vessels, aircraft, and other systems or platforms increased distance to aircraft emergency landing fields, critical medical facilities, and search and rescue capabilities exceedance of aircraft fuel restrictions (e.g., lengthened event duration, increased distance to refueling stations) exceedance of space restrictions on visual observation platforms decreased ability to de-conflict sea space or airspace conflicts (e.g., ensuring military readiness activities do not impact each other, avoiding interaction with established commercial air traffic routes, commercial vessel shipping lanes, and areas used for energy exploration or alternative energy development) decreased ability for Lookouts to safely and effectively maintain situational awareness while observing the mitigation zones during typical activity conditions decreased ability for Lookouts to safely perform other assigned job responsibilities decreased proficiency in the use of sensors and weapon systems, or reduced ability to complete shipboard maintenance, repairs, or testing prior to at-sea use (which would result in a significant risk to personnel or equipment safety during training, testing, and real-world missions) increased administrative burden that would significantly distract from safe conduct of primary mission objectives
Criterion 2. Sustainability: Implementing mitigation must be sustainable for the duration of the Proposed Action	<ul style="list-style-type: none"> Assessments considered if mitigation would be unsustainable for the duration of the Proposed Action by: <ul style="list-style-type: none"> requiring personnel to spend an inordinate amount of time on station or away from their homeport requiring the use or obligation of additional resources (i.e., personnel and equipment) in excess of what is available requiring expenditure of additional funding for increased operational costs associated with higher fuel consumption, additional maintenance of existing equipment, or acquisition of new equipment reducing efficiency in travel time and associated costs by increasing distance between activities and homeports, home bases, associated training ranges, testing facilities, air squadrons, and existing infrastructure (e.g., instrumented underwater ranges)
Criterion 3. Mission: Implementing mitigation must allow for the Action Proponents to continue meeting mission objectives and statutory mandates	<ul style="list-style-type: none"> Assessments considered if mitigation would modify military readiness activities in a way that would prevent them from meeting mission objectives, and the implications for the ability to continue meeting statutory mandates. Example barriers to meeting mission objectives and statutory mandates include: <ul style="list-style-type: none"> degraded training or testing realism decreased ready access to ranges, operating areas, (OPAREAs), airspace, or sea space with a variety of realistic tactical oceanographic and environmental conditions (e.g., variations in bathymetry, topography, surface fronts, and sea surface temperatures) that is extensive enough to allow for completion of activities without physical or logistical obstructions, to provide personnel the ability to develop competence and confidence in their capabilities across multiple types of weapons and sensors, and the ability to train to communicate and operate in a coordinated fashion as required during real-world missions and to avoid observation by potential adversaries decreased proficiency, erosion of capabilities, or reduction in perishable skills related to the use of sensors or weapon systems decreased ready access to facilities, range support structures, or systems command support facilities that provide critical infrastructure support and technical expertise necessary to conduct testing reduced ability to meet individual training and testing schedules, pre-deployment certification requirements, deployment schedules, and to deploy on time (factoring in variables such as maintenance and weather when scheduling event locations and timing) with the required level of skill and flexibility to accomplish any tasking by Combatant Commanders, national command authorities, or other national security tasking, including responding to national emergencies or emerging national security challenges reduced ability to conduct accurate oceanographic or acoustic research to meet research objectives, validate acoustic models, and conduct accurate engineering tests of acoustic sources, signal processing algorithms, and acoustic interactions reduced ability to ensure the safety, functionality, and accuracy of systems, platforms, and components through maintenance, repairs, or testing prior to use at sea as needed or required by acquisition milestones reduced ability to effectively test systems, platforms, and components before full-scale production or delivery in order to validate whether they perform as expected and determine whether they are operationally effective, suitable, survivable, and safe for their intended use by the fleet increased administrative burden that would significantly distract from efficient and effective conduct of primary mission objectives increased national security concerns related to providing advance notification of specific times and locations of platforms, such as those using active sonar measures that extend outside of the Action Proponents' legal authority to implement

The Action Proponents' Senior Leadership has reviewed, determined the practicality of, and approved all mitigation measures included in this Supplemental EIS/OEIS. Through the mitigation development and assessment processes, the Action Proponents will ultimately commit to the maximum level of mitigation that is both beneficial and practical to implement under the Proposed Action. The Records of Decision, MMPA Regulations and Letters of Authorization, ESA Biological Opinion, and other associated consultation documents will detail the mitigation to be implemented under the Proposed Action. Should the Action Proponents require a change in how they implement mitigation based on national security concerns, evolving readiness requirements, or other factors (e.g., significant changes in best available science), they will engage the appropriate agencies and reevaluate their mitigation or verify that potential impacts are adequately addressed in this Supplemental EIS/OEIS and consultation documents through the appropriate consultations or Adaptive Management (as described in [Section 5.5](#), Monitoring, Research, and Adaptive Management). Table 5.8-1 summarizes new or substantively modified mitigation measures included in this document (as compared to the 2018 Final EIS/OEIS). Mitigation measures that were considered but eliminated because they did not meet the appropriate balance between being environmentally beneficial and practical to implement are discussed in [Section 5.9](#) (Mitigation Considered but Eliminated).

5.2 MITIGATION DISSEMINATION

The Action Proponents will publish, broadcast, disseminate, or distribute mitigation instructions through pre-event briefs, governing instructions, broadcast messages, the Protective Measures Assessment Protocol, or other established internal processes. The Protective Measures Assessment Protocol is a software program accessed by appointed personnel during pre-event planning (see Figure 5.2-1). The program provides operators with notification of the required mitigation measures applicable to a particular training or testing event, as well as a visual display of the planned event location overlaid with relevant environmental data. Its text and mapping data will be updated to align with best available science and the final mitigation that results from this Supplemental EIS/OEIS and associated consultation documents.

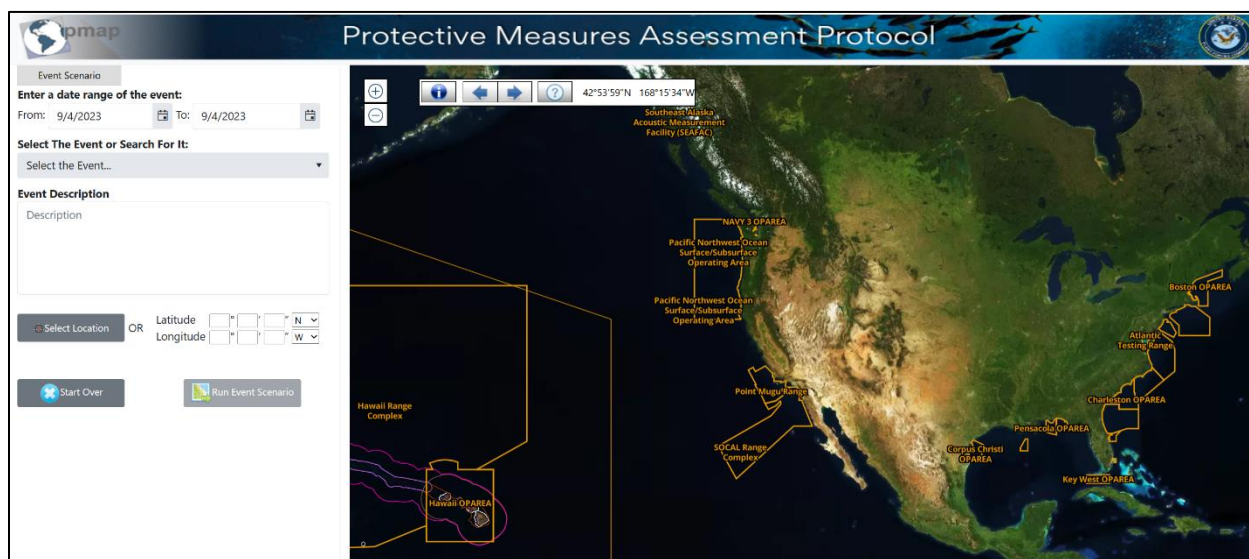


Figure 5.2-1: Protective Measures Assessment Protocol Home Screen

Mitigation requirements are mandatory for the Action Proponents when conducting activities under the Proposed Action. In furtherance of national security objectives, foreign militaries may participate in

multinational training and testing events in the Study Area. See Section 2.2 (Proposed Activities) for a discussion of foreign military activities that would be considered as part of the Proposed Action. During U.S.-led training events within the U.S. territorial seas (0 to 12 nautical miles [NM] from shore), the Action Proponents will request a foreign military unit's voluntary compliance with the applicable mitigations. When a foreign military unit participates in a training event with the Action Proponents beyond the U.S. territorial seas but within the U.S. Exclusive Economic Zone (12 to 200 NM from shore), the Action Proponents will encourage that unit's voluntary compliance with the mitigation when practical.

5.3 PERSONNEL TRAINING

As described in Section A.1.7 (Standard Operating Procedures), underway surface ships operated by or for the Action Proponents have personnel assigned to stand watch at all times (day and night) for safety of navigation, collision avoidance, range clearance, and man-overboard precautions. Personnel on underway small boats (e.g., crewmembers responsible for navigation) fulfill similar watch standing responsibilities to those positioned on surface ships. To qualify to stand watch as a Lookout, personnel undertake a training program that includes computer-based training, on-the-job instruction, and a formal qualification program. Lookouts are trained in accordance with the *U.S. Navy Lookout Training Handbook* or equivalent to use correct scanning procedures while monitoring assigned sectors, to estimate the relative bearing, range, position angle, and target angle of sighted objects, and to rapidly communicate accurate sighting reports. The *U.S. Navy Lookout Training Handbook* was updated in 2022 to include a more robust chapter on environmental compliance, mitigation, and marine species observation tools and techniques (NAVEDTRA 12968-E). Environmental awareness and education training is also provided to personnel through the Afloat Environmental Compliance Training program (described below) or equivalent. Training is designed to help personnel gain an understanding of their personal environmental compliance roles and responsibilities (including mitigation implementation). Upon reporting aboard and annually thereafter, appointed personnel must complete training identified in their career path training plan.

- **Introduction to Afloat Environmental Compliance.** Developed in 2014, the introduction module provides information on at-sea environmental laws, regulations, and compliance roles.
- **Marine Species Awareness Training.** This module was developed by civilian marine biologists employed by the Navy, and was reviewed and approved by NMFS. It provides information on marine species sighting cues, visual observation tools and techniques, and sighting notification procedures. It is a video-based complement to the *U.S. Navy Lookout Training Handbook* or equivalent. Since 2007, this module has been required for commanding officers, executive officers, equivalent civilian personnel, and personnel who will stand watch as a Lookout.
- **Protective Measures Assessment Protocol.** This module provides information on how personnel should access and operate the Protective Measures Assessment Protocol. Since 2014, this module has been required for personnel tasked with generating mitigation reports.
- **Sonar Positional Reporting System and Marine Mammal Incident Reporting.** This module provides information on sonar reporting requirements and marine mammal incident reporting procedures, which are described in [Section 5.4](#) (Reporting). Since 2014, this module has been required for personnel tasked with preparing, approving, or submitting applicable reports.

5.4 REPORTING

Reporting requirements are designed to track compliance with MMPA and ESA authorizations. They also provide the Action Proponents and regulators sufficient information to consider if changes to mitigation, monitoring, or reporting requirements might be appropriate. Report content and submission details will be included in the NMFS MMPA Regulations and Letters of Authorization. The Navy developed a classified data repository known as the Sonar Positional Reporting System to maintain internal records of in-water sound source use and to facilitate reporting pursuant to its MMPA Regulations and Letters of Authorization. Applicable data is provided to the NMFS Office of Protected Resources with annual reports describing the level of training and testing conducted in the Study Area and the special reporting mitigation areas described in [Section 5.7](#) (Geographic Mitigation). The reports include additional information for major training exercises and the Sinking Exercise (SINKEX) such as records of individual marine mammal sightings when mitigation was implemented during the events. The Action Proponents will also submit an annual report to NMFS on monitoring conducted under the U.S. Navy Marine Species Monitoring Program (described in [Section 5.5](#), Monitoring, Research, and Adaptive Management). Unclassified reports previously submitted to NMFS are available on the NMFS Office of Protected Resources (<https://www.fisheries.noaa.gov/about/office-protected-resources>).

5.4.1 Incident Reporting

As needed, the Action Proponents will follow established internal communication methods directed by Office of Chief of Naval Operations Instruction 3100.6 (series) if reportable incidents applicable to their activities are observed. Further, the Action Proponents will:

- Notify the appropriate regulatory agency, which may include NMFS or the USFWS, immediately (or as soon as operational security considerations allow) if a vessel strike, injury, or mortality of a marine mammal or sea turtle occurs that is (or may be) attributable to activities conducted under the Proposed Action. The notification will include relevant information pertaining to the incident, including, but not limited to, vessel speed or event type.
- Comply with the communication protocol for incidents involving marine mammals under NMFS' jurisdiction as outlined in the Notification and Reporting Plan, which will be publicly available on the NMFS Office of Protected Resources webpage.
- Comply with the reporting requirements for incidents involving ESA-listed species under NMFS' jurisdiction as outlined in the NMFS Biological Opinion.
- Comply with the reporting and response requirements for incidents involving ESA-listed species under USFWS' jurisdiction as outlined in the USFWS consultation documents, which would include immediately halting an event if harassment, injury, or death of a manatee is observed.
- Commence consultation with the appropriate State Historic Preservation Officer or Tribal Historic Preservation Officer in accordance with 36 Code of Federal Regulations section 800.13(b)(3) in the event a submerged historic property (e.g., archaeological resource) is found to have been incidentally impacted during a training or testing event.

5.5 MONITORING, RESEARCH, AND ADAPTIVE MANAGEMENT

The Action Proponents are one of the nation's largest sponsors of scientific research on, and monitoring of, protected marine species (Marine Mammal Commission, 2023). Details about the U.S. Navy Marine Species Monitoring Program, Living Marine Resources Program, and U.S. Navy Office of Naval Research is provided in Section 3.0.1.1 (Marine Species Monitoring and Research Programs). Through the Action Proponents' environmental offices and programs, the U.S. Navy Marine Species Monitoring Program, the Living Marine Resources Program, and the Office of Naval Research, the Action Proponents have

been sponsoring research and monitoring for over 30 years in areas where they conduct military readiness activities. This includes investments of nearly \$46 million in compliance-monitoring activities in the Study Area since 2009 (U.S. Department of the Navy, 2022b). Additionally, the Coast Guard spends tens of millions of dollars annually protecting living marine resources through its maritime response, prevention, and law enforcement missions, which have a direct and positive impact on the maritime environment. The Navy, Coast Guard, U.S. Army Corps of Engineers, and NMFS collaboratively sponsor aerial surveys to observe for North Atlantic right whales as part of the Early Warning System, which is a comprehensive information exchange network dedicated to reducing the risk of vessel strikes from all mariners, including military, Coast Guard, recreational, and commercial vessels. Early Warning System aerial surveys are flown daily off the coasts of Florida and Georgia from December 1 through March 31 (weather permitting) to observe for North Atlantic right whales from the shoreline out to approximately 30 to 35 NM offshore. Aerial surveyors relay sightings data to the Early Warning System network, which then disseminates information to mariners through Fleet Area Control and Surveillance Facility, Jacksonville. Geographic mitigation associated with the Early Warning System is described in [Section 5.7.13](#) (Jacksonville Operating Area North Atlantic Right Whale Mitigation Area) and [Section 5.7.14](#) (Southeast North Atlantic Right Whale Mitigation Area).

Thanks in part to advancements in science from these programs, the understanding of military readiness activity impacts on protected marine species continues to evolve. The programs have also made significant advancements in research on and development of emergent mitigation technologies, such as thermal detection systems, infrared systems, radar systems, passive acoustic range instrumentation, and autonomous and unmanned platforms with automated passive acoustic detection capabilities. Technological advancements are also being made through research sponsored by other entities (e.g., commercial off-the-shelf products). While these technologies have not reached the level of performance needed for deployment during military readiness activities, the Action Proponents plan to continue researching, testing, and developing them. If mitigation technologies mature to the state where they are determined to be sufficiently effective at mitigating marine mammal impacts when considering the range of environmental conditions analogous to where the Action Proponents train and test, the species that could co-occur in space and time with the activities, and the characteristics of the sound sources and platforms used during the activities, then the Action Proponents will assess their compatibility with military readiness applications. This would include a practicality assessment of the budget and acquisition process (including costs associated with designing, building, installing, maintaining, and manning equipment), the logistical and physical considerations for retrofitting platforms with the appropriate equipment and their associated maintenance, repairs, or replacements (e.g., conducting engineering studies to ensure compatibility with existing shipboard systems), the resource considerations for training personnel to effectively operate the equipment, and the potential security and classification issues.

The Action Proponents will continue to host marine species monitoring technical review meetings with NMFS, to include researchers and the Marine Mammal Commission. Additionally, routine Adaptive Management meetings will continue to be held with NMFS and the Marine Mammal Commission as a systematic approach to help account for advancements in science and in technology made after the issuance of MMPA Regulations and Letters of Authorization. The Action Proponents will provide information about the status and findings of sponsored mitigation technology research and any associated practicality assessments at these meetings. Through Adaptive Management, decisions,

policies, or actions can be adjusted as the science and outcomes from management actions become better understood over time (Williams et al., 2009).

5.6 ACTIVITY-BASED MITIGATION

Activity-based mitigation was referred to as “Procedural Mitigation” in the 2018 Final EIS/OEIS and “Visual Observations” in the 2024 Draft Supplemental EIS/OEIS. Activity-based mitigations are fundamentally consistent across stressors; however, there are activity-specific variations to account for differences in platform configurations, event characteristics, and stressor types. These mitigations have a primary objective of reducing overlap of individual marine mammals and sea turtles in real time with stressors that have the potential to cause injury or mortality.

Observations for “indicator species” are also conducted to offer an additional layer of protection for marine mammals and sea turtles. Floating vegetation can be an indicator of potential marine mammal or sea turtle presence because these animals have been known to seek shelter in, feed on, or feed among concentrations of floating vegetation. *Sargassum* habitat has been identified as a critical habitat feature for juvenile loggerhead sea turtles in portions of the Study Area (National Marine Fisheries Service, 2014). For mitigation purposes, the term “floating vegetation” refers specifically to floating concentrations of detached kelp paddies and *Sargassum*. For events with the largest net explosive weights (NEW; described in pounds [lb.]), indicator species also include other prey species or co-feeding species, such as jellyfish aggregations, large schools of fish, or flocks of seabirds, depending on the event and observation platforms involved.

Visual observations will be conducted by trained Lookouts. For mitigation purposes, the minimum number of Lookouts required is provided in Table 5.6-1 through Table 5.6-4. Some events may have additional personnel (beyond the minimum number of required Lookouts) who are already standing watch in or on the platform conducting the event or additional participating platforms, and would have eyes on the water for all or part of an event. For example, Bridge Watch Teams on underway surface ships typically include numerous personnel on the bridge, bridge wings, and aft deck. These additional personnel will serve as members of the “Lookout Team” for all acoustic, explosive, and physical disturbance and strike stressor mitigation categories. While performing their primary duties, the Lookout Team will perform ad hoc visual observations before, during, or after events as a secondary task when doing so is compatible with, and does not compromise, safety and primary duty performance.

Lookouts may be positioned on surface vessels, aircraft, piers, or the shore. Lookouts positioned on U.S. Navy surface vessels (including surfaced submarines) will be solely dedicated to visually observing their assigned sectors. On platforms with limited crew, Lookouts may also fulfill other duties. For example, a Lookout on a small boat may also be responsible for navigation or personnel supervision. A Lookout in an aircraft is typically an existing crewmember such as a pilot or Flight Officer whose primary duty is navigation or other mission-essential tasks. Observation platforms will be positioned according to safety, mission, and environmental conditions. For example, small boats observing explosive mine events would always be positioned outside of the detonation plume and human safety zone.

Lookouts will employ standard visual search techniques using naked-eye scanning, potentially in combination with the use of handheld binoculars, high-powered “big-eye” binoculars mounted on the deck of a surface ship (depending on the event and observation platform), and night search techniques (e.g., the use of night vision devices) if events occur after sunset or prior to sunrise. Lookouts will be advised that personal use of polarized sunglasses, when available, may help reduce sea surface glare,

which could improve the sightability of marine resources. Prior to the start of an event (or use of a stressor) and throughout the duration of the event (or stressor use), Lookouts will observe a “mitigation zone” and the sea space surrounding the mitigation zone; within the direct path of underway vessels, unmanned surface or underwater vehicles that are already being escorted and operated under positive control by manned surface vessels, or towed in-water devices; and throughout the range of visibility (e.g., to the horizon, depending on weather and observation platform characteristics). Mitigation zones are distances from a stressor (typically a radius measured in yards [yd]), as specified in Table 5.6-1 through Table 5.6-4. The specified mitigation zones are the largest areas Lookouts can reasonably be expected to observe during typical activity conditions and that are practical to implement from an operational standpoint. Lookouts may be responsible for observing multiple mitigation zones. For example, a Lookout positioned on a surface ship during an explosive large-caliber gunnery event may be responsible for observing both the weapon firing noise mitigation zone and the mitigation zone around the intended detonation location.

Lookouts will immediately relay relevant sightings information (e.g., animal or indicator species type, bearing, distance, direction of travel or drift, position relative to the mitigation zone) to the appropriate watch station through established communication methods. Lookouts will continue to observe for new sightings while maintaining situational awareness of the originally sighted animal or indicator species’ position relative to the mitigation zone (to the extent possible). Lookouts will immediately relay any relevant new or updated information to the watch station. The watch station will disseminate relevant information to other participating assets as needed for their situational awareness. When passive acoustic devices are required for an event, or are already being used in an event, acoustic operators will relay information about any passive acoustic detections of marine mammals to Lookouts prior to or during an event (when applicable, as indicated in Table 5.6-1 and Table 5.6-2) using established communication methods. Lookouts will use the information received to help inform their visual observations.

5.6.1 Mitigation Specific to Acoustic Stressors, Explosives, and Non-Explosive Ordnance

The mitigation measures described below will be implemented (as appropriate) in response to an applicable sighting within or entering the relevant mitigation zone for acoustic stressors, explosives, and non-explosive practice munitions:

- Prior to the initial start of an event (or stressor use), the Action Proponents will (1) relocate the event to a location where applicable species are not observed, or (2) delay the initial start of the event (or stressor use) until one of the “Mitigation Zone All-Clear Conditions” has been met.
- During the event (i.e., during use of a stressor) the Action Proponents will (until one of the Mitigation Zone All-Clear Conditions has been met) (1) power down or shut down active acoustic transmissions, (2) cease air gun use, (3) cease pile driving or pile removal, (4) cease weapon firing or ordnance deployment, or (5) cease explosive detonations or fuse initiations.

Mitigation Zone All-Clear Conditions indicate that the mitigation zone is determined to be free of applicable species. The conditions include (1) a Lookout observes the applicable species exiting the mitigation zone, (2) a Lookout determines the applicable species has exited the mitigation zone based on its observed course and speed relative to the mitigation zone, (3) a Lookout affirms the mitigation zone has been clear from additional sightings for an applicable “wait period,” or (4) for mobile events, the stressor has transited a distance equal to double the mitigation zone size beyond the location of the

last sighting. Wait periods were established because events cannot be delayed or ceased indefinitely for the purpose of mitigation due to impacts on safety, sustainability, and the ability to meet mission requirements. Wait periods are designed to allow animals the maximum amount of time practical to resurface (i.e., become available to be observed) before activities resume. The assumption that mitigation may need to be implemented more than once was factored when developing wait period durations. Wait periods are 15 minutes for pile driving events, 10 minutes when events involve aircraft that are typically fuel constrained, or 30 minutes when events involve only vessels or aircraft that are not typically fuel constrained.

5.6.1.1 Additional Details for Acoustic Stressors

Additional details on the activity-based mitigation requirements for acoustic stressors are described in Table 5.6-1. Activity-based mitigation will not apply to:

- sources not operated under positive control
- sources used for safety of navigation
- sources used or deployed by aircraft operating at high altitudes
- sources used, deployed, or towed by unmanned platforms except when escort vessels are already participating in the event and have positive control over the source
- sources used by submerged submarines
- *de minimis* sources
- unattended sources, such as moored buoys used for acoustic and oceanographic research
- vessel-based, unmanned vehicle-based, or towed in-water sources when marine mammals (e.g., dolphins) are determined to be intentionally swimming at the bow or alongside or directly behind the vessel, vehicle, or device (e.g., to bow-ride or wake-ride)
- sources above 2 kilohertz (kHz) for sea turtles (based on their hearing capabilities)

5.6.1.2 Additional Details for Explosives

Additional details on the activity-based mitigation requirements for explosives are described in Table 5.6-2. Mitigation will not apply to explosives (1) deployed by aircraft operating at high altitudes, (2) deployed by submerged submarines, except for explosive torpedoes, (3) deployed against aerial targets, (4) during vessel-launched missile or rocket events, (5) used at or below the *de minimis* threshold, and (6) deployed by unmanned platforms except when escort vessels are already participating in the event and have positive control over the explosive. Post-event observations are intended to aid incident reporting requirements for marine mammals and sea turtles. Practicality and the duration of post-event observations will be determined on site by fuel restrictions and mission-essential follow-on commitments.

5.6.1.3 Additional Details for Non-Explosive Ordnance

Additional details on the activity-based mitigation requirements for non-explosive ordnance are described in Table 5.6-3. Explosive aerial-deployed mines do not detonate upon contact with the water surface and are therefore considered non-explosive when mitigating the potential for a mine shape to strike a marine mammal or sea turtle at the water surface. Mitigation for the explosive component of aerial-deployed mines is described in Table 5.6-2. Mitigation does not apply to non-explosive ordnance deployed (1) by aircraft operating at high altitudes, (2) against aerial targets, (3) during vessel-launched missile or rocket events, and (4) by unmanned platforms except when escort vessels are already participating in the event and have positive control over ordnance deployment.

Table 5.6-1: Activity-Based Mitigations for Acoustic Stressors

<i>Mitigation Category</i>	<i>Mitigation Zones</i>	<i>Mitigation Requirements</i>	<i>Mitigation Requirement Timing</i>	<i>Wait Period</i>
Active Acoustic Sources				
<ul style="list-style-type: none"> Active acoustic sources with power down and shut down capabilities: <ul style="list-style-type: none"> Low-frequency active sonar ≥ 200 dB Mid-frequency active sonar sources that are hull mounted on a surface ship (including surfaced submarines) Broadband and other active acoustic sources > 200 dB 	<ul style="list-style-type: none"> 200 yd from active acoustic sources (shut down) 500 yd from active acoustic sources (power down of 10 dB total) 1,000 yd from active acoustic sources (power down of 6 dB total) 	<ul style="list-style-type: none"> One Lookout in/on one of the following: <ul style="list-style-type: none"> Aircraft Pierside, moored, or anchored vessel Underway vessel with space/crew restrictions (including small boats) Underway vessel already participating in the event that is escorting (and has positive control over sources used, deployed, or towed by) an unmanned platform Two Lookouts on an underway vessel without space/crew restrictions Lookouts would use information from passive acoustic detections to inform visual observations when passive acoustic devices are already being used in the event 	<ul style="list-style-type: none"> Immediately prior to the initial start of using active acoustic sources (e.g., while maneuvering on station), observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles (for sources < 2 kHz) Floating vegetation During use of active acoustic sources, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles (for sources < 2 kHz) 	<ul style="list-style-type: none"> 10 or 30 minutes (depending on fuel constraints of the platform)
<ul style="list-style-type: none"> Active acoustic sources with shut down (but not power down) capabilities: <ul style="list-style-type: none"> Low-frequency active sonar < 200 dB Mid-frequency active sonar sources that are not hull mounted on a surface ship (e.g., dipping sonar, towed arrays) High-frequency active sonar Air guns Broadband and other active acoustic sources < 200 dB 	<ul style="list-style-type: none"> 200 yd from active acoustic sources (shut down) 			
Pile Driving and Pile Removal				
<ul style="list-style-type: none"> Vibratory and impact pile driving and removal 	<ul style="list-style-type: none"> 100 yd from piles being driven or removed (cease pile driving or removal) 	<ul style="list-style-type: none"> One Lookout on one of the following: <ul style="list-style-type: none"> Shore Pier Small boat 	<ul style="list-style-type: none"> 15 minutes prior to the initial start of pile driving or pile removal, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Floating vegetation During pile driving or removal, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles 	<ul style="list-style-type: none"> 15 minutes
Weapon Firing Noise				
<ul style="list-style-type: none"> Explosive and non-explosive large-caliber gunnery firing noise (surface-to-surface and surface-to-air) 	<ul style="list-style-type: none"> 30 degrees on either side of the firing line out to 70 yd from the gun muzzle (cease fire) 	<ul style="list-style-type: none"> One Lookout on a vessel 	<ul style="list-style-type: none"> Immediately prior to the initial start of large-caliber gun firing (e.g., during target deployment), observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Floating vegetation During large-caliber gun firing, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles 	<ul style="list-style-type: none"> 30 minutes

Notes: dB = decibel; kHz = kilohertz; yd = yard

Table 5.6-2: Activity-Based Mitigations for Explosives

<i>Mitigation Category</i>	<i>Mitigation Zones</i>	<i>Mitigation Requirements</i>	<i>Mitigation Requirement Timing</i>	<i>Wait Period</i>
Explosive Bombs				
<ul style="list-style-type: none"> Any NEW 	<ul style="list-style-type: none"> 2,500 yd from the intended target (cease fire) 	<ul style="list-style-type: none"> One Lookout in an aircraft 	<ul style="list-style-type: none"> Immediately prior to the initial start of bomb delivery (e.g., when arriving on station), observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Floating vegetation During bomb delivery, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles After the event, when practical, observe the detonation vicinity for dead or injured: <ul style="list-style-type: none"> Marine mammals Sea turtles If a marine mammal is visibly injured or killed as a result of detonation, explosives use in the event shall be suspended immediately and established incident reporting procedures shall be followed. 	<ul style="list-style-type: none"> 10 minutes
Explosive Gunnery				
<ul style="list-style-type: none"> Air-to-surface medium-caliber ordnance 	<ul style="list-style-type: none"> 200 yd from the intended impact location (cease fire) 	<ul style="list-style-type: none"> One Lookout on a vessel or in an aircraft 	<ul style="list-style-type: none"> Immediately prior to the initial start of gun firing (e.g., while maneuvering on station), observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Floating vegetation During gunnery firing, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles After the event, when practical, observe the detonation vicinity for dead or injured: <ul style="list-style-type: none"> Marine mammals Sea turtles If a marine mammal is visibly injured or killed as a result of detonation, explosives use in the event shall be suspended immediately and established incident reporting procedures shall be followed. 	<ul style="list-style-type: none"> 10 or 30 minutes (depending on fuel constraints of the platform)
<ul style="list-style-type: none"> Surface-to-surface medium-caliber ordnance 	<ul style="list-style-type: none"> 600 yd from the intended impact location (cease fire) 			
<ul style="list-style-type: none"> Surface-to-surface large-caliber ordnance 	<ul style="list-style-type: none"> 1,000 yd from the intended impact location (cease fire) 			

Table 5.6-2: Activity-Based Mitigations for Explosives (continued)

<i>Mitigation Category</i>	<i>Mitigation Zones</i>	<i>Mitigation Requirements</i>	<i>Mitigation Requirement Timing</i>	<i>Wait Period</i>
Explosive Line Charges				
<ul style="list-style-type: none"> Any NEW 	<ul style="list-style-type: none"> 900 yd from the detonation site (cease fire) 	<ul style="list-style-type: none"> One Lookout on a vessel 	<ul style="list-style-type: none"> Immediately prior to the initial start of detonations (e.g., while maneuvering on station), observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Floating vegetation During detonations, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles After the event, when practical, observe the detonation vicinity for dead or injured: <ul style="list-style-type: none"> Marine mammals Sea turtles If a marine mammal is visibly injured or killed as a result of detonation, explosives use in the event shall be suspended immediately and established incident reporting procedures shall be followed. 	<ul style="list-style-type: none"> 30 minutes
Explosive Mine Countermeasure and Neutralization (No Divers)				
<ul style="list-style-type: none"> 0.1–5 lb. NEW 	<ul style="list-style-type: none"> 600 yd from the detonation site (cease fire) 	<ul style="list-style-type: none"> One Lookout on a vessel or in an aircraft 	<ul style="list-style-type: none"> Immediately prior to the initial start of detonations (e.g., while maneuvering on station; typically, 10 or 30 minutes depending on fuel constraints), observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Floating vegetation During detonations or fuse initiation, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles After the event, observe the detonation vicinity for 10 or 30 minutes (depending on fuel constraints), for dead or injured: <ul style="list-style-type: none"> Marine mammals Sea turtles If a marine mammal is visibly injured or killed as a result of detonation, explosives use in the event shall be suspended immediately and established incident reporting procedures shall be followed. 	<ul style="list-style-type: none"> 10 or 30 minutes (depending on fuel constraints of the platform)
<ul style="list-style-type: none"> >5 lb. NEW 	<ul style="list-style-type: none"> 2,100 yd from the detonation site (cease fire) 	<ul style="list-style-type: none"> Two Lookouts: one on a small boat and one in an aircraft 		

Table 5.6-2: Activity-Based Mitigations for Explosives (continued)

<i>Mitigation Category</i>	<i>Mitigation Zones</i>	<i>Mitigation Requirements</i>	<i>Mitigation Requirement Timing</i>	<i>Wait Period</i>
Explosive Mine Neutralization (With Divers)				
<ul style="list-style-type: none"> 0.1–20 lb. NEW (positive control) 	<ul style="list-style-type: none"> 500 yd from the detonation site (cease fire) 	<ul style="list-style-type: none"> Two Lookouts in two small boats (one Lookout per boat), or one small boat and one rotary-wing aircraft (with one Lookout each) 	<ul style="list-style-type: none"> Time-delay devices will be set not to exceed 10 minutes Immediately prior to the initial start of detonations or fuse initiation for positive control events (e.g., while maneuvering on station) or for 30 minutes prior for time-delay events, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Floating vegetation Manta rays Hammerhead sharks During detonations or fuse initiation, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Manta rays Hammerhead sharks When practical based on mission, safety, and environmental conditions: <ul style="list-style-type: none"> Boats will observe from the mitigation zone radius mid-point When two are used, boats will observe from opposite sides of the mine location Platforms will travel a circular pattern around the mine location Boats will have one Lookout observe inward toward the mine location and one observe outward toward the mitigation zone perimeter Divers will be part of the Lookout Team After the event, observe the detonation vicinity for 30 minutes for dead or injured: <ul style="list-style-type: none"> Marine mammals Sea turtles Manta rays Hammerhead sharks If a marine mammal is visibly injured or killed as a result of detonation, explosives use in the event shall be suspended immediately and established incident reporting procedures shall be followed. 	<ul style="list-style-type: none"> 10 or 30 minutes (depending on fuel constraints of the platform)
<ul style="list-style-type: none"> 0.1–20 lb. NEW (time-delay) >20–60 lb. NEW (positive control) 	<ul style="list-style-type: none"> 1,000 yd from the detonation site (cease fire) 	<ul style="list-style-type: none"> Four Lookouts in two small boats (two Lookouts per boat), and one additional Lookout in an aircraft if used in the event 		

Table 5.6-2: Activity-Based Mitigations for Explosives (continued)

<i>Mitigation Category</i>	<i>Mitigation Zones</i>	<i>Mitigation Requirements</i>	<i>Mitigation Requirement Timing</i>	<i>Wait Period</i>
Explosive Missiles and Rockets				
<ul style="list-style-type: none"> • 0.6–20 lb. NEW (air-to-surface) • >20–500 lb. NEW (air-to-surface) 	<ul style="list-style-type: none"> • 900 yd from the intended impact location (cease fire) • 2,000 yd from the intended impact location (cease fire) 	<ul style="list-style-type: none"> • One Lookout in an aircraft 	<ul style="list-style-type: none"> • Immediately prior to the initial start of missile or rocket delivery (e.g., during a fly-over of the mitigation zone), observe for: <ul style="list-style-type: none"> – Marine mammals – Sea turtles – Floating vegetation • During missile or rocket delivery, observe for: <ul style="list-style-type: none"> – Marine mammals – Sea turtles • After the event, when practical, observe the detonation vicinity for dead or injured: <ul style="list-style-type: none"> – Marine mammals – Sea turtles • If a marine mammal is visibly injured or killed as a result of detonation, explosives use in the event shall be suspended immediately and established incident reporting procedures shall be followed. 	<ul style="list-style-type: none"> • 10 or 30 minutes (depending on fuel constraints of the platform)
Explosive Sonobuoys and Research-Based Sub-Surface Explosives				
<ul style="list-style-type: none"> • Any NEW of sonobuoys • 0.1–5 lb. NEW for other types of sub-surface explosives used in research applications 	<ul style="list-style-type: none"> • 600 yd from the device or detonation site (cease fire) 	<ul style="list-style-type: none"> • One Lookout on a small boat or in an aircraft • Conduct passive acoustic monitoring for marine mammals; use information from detections to assist visual observations. 	<ul style="list-style-type: none"> • Immediately prior to the initial start of detonations (e.g., during sonobuoy deployment, which typically lasts 20 to 30 minutes), observe for: <ul style="list-style-type: none"> – Marine mammals – Sea turtles – Floating vegetation • During detonations, observe for: <ul style="list-style-type: none"> – Marine mammals – Sea turtles • After the event, when practical, observe the detonation vicinity for dead or injured: <ul style="list-style-type: none"> – Marine mammals – Sea turtles • If a marine mammal is visibly injured or killed as a result of detonation, explosives use in the event shall be suspended immediately and established incident reporting procedures shall be followed. 	<ul style="list-style-type: none"> • 10 or 30 minutes (depending on fuel constraints of the platform)

Table 5.6-2: Activity-Based Mitigations for Explosives (continued)

<i>Mitigation Category</i>	<i>Mitigation Zones</i>	<i>Mitigation Requirements</i>	<i>Mitigation Requirement Timing</i>	<i>Wait Period</i>
Explosive Torpedoes				
<ul style="list-style-type: none"> Any NEW 	<ul style="list-style-type: none"> 2,100 yd from the intended impact location (cease fire) 	<ul style="list-style-type: none"> One Lookout in an aircraft Conduct passive acoustic monitoring for marine mammals; use information from detections to assist visual observations. 	<ul style="list-style-type: none"> Immediately prior to the initial start of detonations (e.g., during target deployment), observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Floating vegetation Jellyfish aggregations During torpedo launches, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Jellyfish aggregations After the event, when practical, observe the detonation vicinity for dead or injured: <ul style="list-style-type: none"> Marine mammals Sea turtles If a marine mammal is visibly injured or killed as a result of detonation, explosives use in the event shall be suspended immediately and established incident reporting procedures shall be followed. 	<ul style="list-style-type: none"> 10 or 30 minutes (depending on fuel constraints of the platform)
Ship Shock Trials				
<ul style="list-style-type: none"> Any NEW 	<ul style="list-style-type: none"> 3.5 NM from the target ship hull (cease fire) 	<ul style="list-style-type: none"> On the day of the event, 10 observers (Lookouts and third-party observers combined), spread between aircraft or multiple vessels as specified in the event-specific mitigation plan 	<ul style="list-style-type: none"> The Navy will develop a detailed event-specific monitoring and mitigation plan in the year prior to the event and provide it to NMFS for review Beginning at first light on days of detonation, until the moment of detonation (as allowed by safety measures), observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Floating vegetation Jellyfish aggregations Large schools of fish Flocks of seabirds If an incident involving a marine mammal or sea turtle is observed after an individual detonation, the Navy will follow established incident reporting procedures and halt any remaining detonations until the Navy can consult with NMFS and review or adapt the event-specific mitigation plan, if necessary During the 2 days following the event at a minimum and up to 7 days at a maximum, and as specified in the event-specific mitigation plan, observe the detonation vicinity for dead or injured: <ul style="list-style-type: none"> Marine mammals Sea turtles 	<ul style="list-style-type: none"> 30 minutes

Table 5.6-2: Activity-Based Mitigations for Explosives (continued)

<i>Mitigation Category</i>	<i>Mitigation Zones</i>	<i>Mitigation Requirements</i>	<i>Mitigation Requirement Timing</i>	<i>Wait Period</i>
SINKEX				
<ul style="list-style-type: none"> Any NEW 	<ul style="list-style-type: none"> 2.5 NM from the target ship hull (cease fire) 	<ul style="list-style-type: none"> Two Lookouts: one on a vessel and one in an aircraft Conduct passive acoustic monitoring for marine mammals; use information from detections to assist visual observations. 	<ul style="list-style-type: none"> During aerial observations for 90 minutes prior to the initial start of weapon firing, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Floating vegetation Jellyfish aggregations From the vessel during weapon firing, and from the aircraft and vessel immediately after planned or unplanned breaks in weapon firing of more than 2 hours, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Observe the detonation vicinity for 2 hours after sinking the vessel or until sunset, whichever comes first, for dead or injured: <ul style="list-style-type: none"> Marine mammals Sea turtles If a marine mammal is visibly injured or killed as a result of detonation, explosives use in the event shall be suspended immediately and established incident reporting procedures shall be followed. 	<ul style="list-style-type: none"> 30 minutes

Notes: lb. = pound; NEW = Net Explosive Weight; NM = nautical mile; yd = yard

Table 5.6-3: Activity-Based Mitigations for Non-Explosive Ordnance

<i>Mitigation Category</i>	<i>Mitigation Zones</i>	<i>Mitigation Requirements</i>	<i>Mitigation Requirement Timing</i>	<i>Wait Period</i>
Non-Explosive Aerial-Deployed Mines and Bombs				
<ul style="list-style-type: none"> Non-explosive aerial-deployed mines Non-explosive bombs 	<ul style="list-style-type: none"> 1,000 yd from the intended target (cease fire) 	<ul style="list-style-type: none"> One Lookout in an aircraft 	<ul style="list-style-type: none"> Immediately prior to the initial start of mine or bomb delivery (e.g., when arriving on station), observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Floating vegetation During mine or bomb delivery, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles 	<ul style="list-style-type: none"> 10 minutes
Non-Explosive Gunnery				
<ul style="list-style-type: none"> Non-explosive surface-to-surface large-caliber ordnance Non-explosive surface-to-surface and air-to-surface medium-caliber ordnance Non-explosive surface-to-surface and air-to-surface small-caliber ordnance 	<ul style="list-style-type: none"> 200 yd from the intended impact location (cease fire) 	<ul style="list-style-type: none"> One Lookout on a vessel or in an aircraft 	<ul style="list-style-type: none"> Immediately prior to the initial start of gun firing (e.g., while maneuvering on station), observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Floating vegetation During gunnery firing, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles 	<ul style="list-style-type: none"> 10 or 30 minutes (depending on fuel constraints of the platform)
Non-Explosive Missiles and Rockets				
<ul style="list-style-type: none"> Non-explosives (air-to-surface) 	<ul style="list-style-type: none"> 900 yd from the intended impact location (cease fire) 	<ul style="list-style-type: none"> One Lookout in an aircraft 	<ul style="list-style-type: none"> Immediately prior to the start of missile or rocket delivery (e.g., during a fly-over of the mitigation zone), observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Floating vegetation During missile or rocket delivery, observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles 	<ul style="list-style-type: none"> 10 or 30 minutes (depending on fuel constraints of the platform)

Note: yd = yard

5.6.2 Mitigation Specific to Vessels, Vehicles, and Towed In-Water Devices

Additional details on the activity-based mitigation requirements for vessels, unmanned vehicles, and towed in-water devices are described in Table 5.6-4. For ship classes required to maintain more than one Lookout, the specific requirement is subject to change over time in accordance with the applicable navigation instruction, such as the Surface Ship Navigation Department Organization and Regulations Manual (U.S. Department of the Navy, 2021). The Action Proponents will notify NMFS should their Lookout policies change, including in the Surface Ship Navigation Department Organization and Regulations Manual. Mitigation will be implemented to the maximum extent practical based on the prevailing circumstances, including consideration of safety of vessels, unmanned vehicles, towing platforms, and crews, as well as maneuverability restrictions. Mitigation will not be implemented (1) by submerged submarines, (2) by unmanned vehicles except when escort vessels are already participating in the event and have positive control over the unmanned vehicle movements, (3) when marine mammals (e.g., dolphins) are determined to be intentionally swimming at the bow, alongside the vessel or vehicle, or directly behind the vessel or vehicle (e.g., to bow-ride or wake-ride), (4) when pinnipeds are hauled out on man-made navigational structures, port structures, and vessels, and (5) when impractical based on mission requirements (e.g., during certain aspects of amphibious exercises).

Table 5.6-4: Activity-Based Mitigations for Vessels, Vehicles, and Towed In-Water Devices

<i>Mitigation Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Zones and Requirements</i>
Manned Surface Vessels		
<ul style="list-style-type: none"> Manned surface vessels, including surfaced submarines 	<ul style="list-style-type: none"> One or more Lookouts on manned underway surface vessels in accordance with the most recent navigation safety instruction 	<ul style="list-style-type: none"> Immediately prior to manned surface vessels getting underway and while underway, the Lookout(s) will observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Underway manned surface vessels will maneuver themselves (which may include reducing speed) to maintain the following distances as mission and circumstances allow: <ul style="list-style-type: none"> 500 yd from whales 200 yd from other marine mammals Vicinity of sea turtles
Unmanned Vehicles		
<ul style="list-style-type: none"> Unmanned Surface Vehicles and Unmanned Underwater Vehicles already being escorted (and operated under positive control) by a manned surface support vessel 	<ul style="list-style-type: none"> One Lookout on a surface support vessel that is already participating in the event, and has positive control over the unmanned vehicle 	<ul style="list-style-type: none"> Immediately prior to unmanned vehicles getting underway and while underway, the Lookout will observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles A surface support vessel that is already participating in the event, and has positive control over the unmanned vehicle, will maneuver the unmanned vehicle (which may include reducing its speed) to ensure it maintains the following distances as mission and circumstances allow: <ul style="list-style-type: none"> 500 yd from whales 200 yd from other marine mammals Vicinity of sea turtles
Towed In-Water Devices		
<ul style="list-style-type: none"> In-water devices towed by an aircraft, a manned surface vessel, or an Unmanned Surface Vehicle or Unmanned Underwater Vehicle already being escorted (and operated under positive control) by a manned surface vessel 	<ul style="list-style-type: none"> One Lookout on the manned towing vessel or aircraft, or on a surface support vessel that is already participating in the event and has positive control over an unmanned vehicle that is towing an in-water device 	<ul style="list-style-type: none"> Immediately prior to and while in-water devices are being towed, the Lookout will observe for: <ul style="list-style-type: none"> Marine mammals Sea turtles Manned towing platforms, or surface support vessels already participating in the event that have positive control over an unmanned vehicle that is towing an in-water device, will maneuver itself or the unmanned vehicle (which may include reducing speed) to ensure towed in-water devices maintain the following distances as mission and circumstances allow: <ul style="list-style-type: none"> 250 yd from marine mammals Vicinity of sea turtles

Note: yd = yard

5.6.3 Visual Observation Effectiveness

Oedekoven and Thomas (2022) evaluated the effectiveness of Navy Lookout Teams at detecting marine mammals before they entered a defined set of mitigation zones (i.e., 200, 500, and 1,000 yd). The study analyzed sighting data collected by the Navy over 27 embarks from 2010 to 2019. Results indicated that the effectiveness of Navy Lookout Teams was generally less than that of trained biologist observer teams, and varied by sighted species, group size, and distance. The Navy reviewed the same dataset used by Oedekoven and Thomas (2022), plus sonar use data, and found that sonar status (i.e., on versus off) was an important factor in evaluating how species availability may influence the prevalence of marine mammal sightings for Navy Lookouts and biologists alike. Sighting rates near vessels using hull-mounted active sonar were lower when sonar was on versus off, suggesting that a portion of marine mammals were not available to be sighted when the sonar was on (due to changed surfacing behavior or avoiding close exposures to sonar) (U.S. Department of the Navy, 2023). Table 5.6-5 provides a summary of the factors that could potentially influence the real-time effectiveness of the Action Proponents' visual observations (Barlow, 2015; Jefferson et al., 2015; Oedekoven & Thomas, 2022; U.S. Department of the Navy, 2023). As described in Appendix E (Acoustic and Explosives Impacts Analysis), the quantitative analysis for this Supplemental EIS/OEIS does not reduce model-impacts to account for activity-based mitigation.

Table 5.6-5: Potential Factors Influencing Visual Observation Effectiveness

Factor	Description of Influence on Sightability
Species dive behavior	Long-duration and deep-diving species are not at the surface often or for long periods of time, which limits the amount of time they are available to be seen by Lookouts. Group size also influences sightability. Species that travel in groups or large pods (e.g., delphinids, sperm whales, fin whales) are generally easier to detect than solitary individuals or pairs. Information on dive behaviors and group sizes for species that occur in the Study Area is provided in the technical reports titled Dive Distribution for Marine Species Occurring in the U.S. Navy's Atlantic and Hawaii and California Training and Testing Study Areas the U.S. Navy Marine Species Density Database Phase IV for the Atlantic Fleet Training and Testing Study Area (U.S. Department of the Navy, 2024b).
Species group size	
Species physical traits and surface behaviors	Larger-bodied species (e.g., baleen and sperm whales) or species with tall dorsal fins (e.g., killer whales) would generally be easier to detect relative to small-bodied species and species without dorsal fins (e.g., pinnipeds, sea turtles). Similarly, species with highly conspicuous surface-active behaviors (e.g., breaching, leaping, bow-riding) are generally easier to detect than cryptic species. For example, whales that fluke regularly (e.g., humpback and North Atlantic right whales) or variably (e.g., blue and fin whales) before they dive may be easier to detect than those that fluke rarely (e.g., sei, common minke, and Bryde's whales). Similarly, species that are active at the surface (e.g., bottlenose and spinner dolphins) or remain at the surface for extended periods of time as they forage or socialize (e.g., sperm and North Atlantic right whales) would be easier to detect than cryptic species that surface inconspicuously (e.g., harbor porpoises, beaked whales, dwarf and pygmy sperm whales, sea turtles). Prominent blows, such as those exhibited by many species of baleen whales (e.g., humpback whales) are easier to detect than small or less visible blows (e.g., Bryde's and common minke whales). Some species do not exhibit a blow when they surface to breathe (e.g., pinnipeds, manatees, sea turtles).
Observation conditions	Weather conditions, such as clear daytime skies, low sea states, low winds (i.e., low prevalence of white caps), and low glare are optimal for marine species observations. Animal sightability generally declines as viewing conditions decline.
Observation area and platform	Marine mammal and sea turtle sightability may be influenced by the mitigation zone size, observation platform, and distance between the two. Aircraft (when not operating at high altitudes) generally have the best vantage point for observing throughout an entire mitigation zone due to their height and speed over the water, and ability to conduct close-approach flyovers (depending on the event). Aircraft Lookouts are typically existing crewmembers responsible for other essential tasks (e.g., navigation), and some types of aircraft may have windows that are small or positioned in a way that partially obstruct views of the sea space directly beneath the aircraft. Due to their low vantage point on the water, Lookouts in small boats may be more likely to detect animals in close proximity to the boat or that display conspicuous visual cues (e.g., blows, splashes, flukes, travel in groups) than animals at further distances (e.g., near a mitigation zone perimeter) or that display inconspicuous visual cues (e.g., solitary sea turtles surfacing without a splash). The bridges of surface ships offer a higher vantage point relative to small boats. For certain events, such as hull-mounted active sonar, the mitigation zone is located directly around the hull of the ship on which the Lookout is positioned. Species sightability would generally decrease with distance, particularly for mitigation zones located far from the observation platform (e.g., a gunnery mitigation zone several NM down range). The use of hand-held or big-eye binoculars can help compensate for the difficulty of sighting animals at distance (depending on the event).

Note: U.S. = United States

5.7 GEOGRAPHIC MITIGATION

Designated portions of the Study Area where the Action Proponents will implement geographic mitigation for physical habitats, marine species habitats, or cultural resources are referred to as “mitigation areas” (see Figure 5.7-1 through Figure 5.7-6). Table 5.7-1 demonstrates which mitigation areas pertain to which stressor or mitigation type (i.e., acoustic stressors, explosives, physical disturbance and strike stressors, or special reporting requirements). Table 5.7-2 provides a mitigation area naming convention crosswalk between the 2018 Final EIS/OEIS and this Supplemental EIS/OEIS. The remainder of this section provides the geographic mitigation requirements and a qualitative discussion of their environmental benefits. Mitigation areas apply year-round unless specified otherwise, and do not apply to *de minimis* sources. Detailed descriptions of important seafloor habitats (e.g., for corals), marine mammal habitats, ESA-listed fish, sea turtle, and bird habitats, and cultural resources (e.g., shipwrecks) within the Study Area, as well as maps depicting how these features overlap the mitigation areas, are provided in Appendix F (Biological Resources Supplemental Information) or within Section 3.3 (Habitats), Section 3.4 (Vegetation), Section 3.6 (Fishes), Section 3.7 (Marine Mammals), Section 3.8 (Reptiles), and Section 3.9 (Birds and Bats).

Should national security require the Action Proponents to exceed the limit of a mitigation area (e.g., sonar hours), personnel conducting the activity will be required to obtain approval through the chain of command prior to commencement of the applicable event. The Action Proponents would provide NMFS with advance notification and include relevant information about the event (e.g., sonar hours, use of explosives) in their annual training and testing activity reports.

Table 5.7-1: Stressors and Resources for Which Each Mitigation Area Was Developed

<i>Mitigation Area</i>	<i>Mitigation Type</i>				<i>Resources Benefiting from the Mitigation</i>							
	<i>Acoustic</i>	<i>Explosive</i>	<i>Physical Disturbance and Strike</i>	<i>Special Reporting</i>	<i>Vegetation</i>	<i>Habitats</i>	<i>Fishes</i>	<i>Marine Mammals</i>	<i>Reptiles</i>	<i>Birds and Bats</i>	<i>Cultural Resources</i>	<i>Invertebrates</i>
Shallow-Water Coral Reef Mitigation Areas		X	X			X	X					
Artificial Reef, Live Hard Bottom, Submerged Aquatic Vegetation, and Shipwreck Mitigation Areas		X	X		X	X	X				X	
Key West Range Complex Seafloor Mitigation Area			X		X	X	X					
South Florida Ocean Measurement Facility Seafloor Mitigation Area			X		X	X	X					
Nearshore North Carolina Sandbar Shark and Sea Turtle Mitigation Area		X					X		X			
Panama City Gulf Sturgeon and Sea Turtle Mitigation Area		X					X		X			
Inshore Manatee and Sea Turtle Mitigation Areas	X		X					X	X			
Ship Shock Trial Mitigation Areas		X						X				
Major Training Exercise Planning Awareness Mitigation Areas	X							X				
Northeast North Atlantic Right Whale Mitigation Area	X	X	X	X				X				
Gulf of Maine Marine Mammal Mitigation Area	X			X				X				
Jacksonville Operating Area North Atlantic Right Whale Mitigation Area	X	X	X					X				
Southeast North Atlantic Right Whale Mitigation Area	X	X	X	X				X				
Southeast North Atlantic Right Whale Special Reporting Mitigation Area				X				X				
Dynamic North Atlantic Right Whale Mitigation Areas	X	X	X					X				
Rice's Whale Mitigation Area	X	X		X				X				
Virginia Capes Bird Mitigation Area	X									X		
Dry Tortugas Bird and Cultural Resource Mitigation Area	X									X	X	
Martha's Vineyard North Atlantic Right Whale Mitigation Area			X					X				
Demolition Key Queen Conch Mitigation Area		X		X								X

Table 5.7-2: Mitigation Area Naming Convention Crosswalk

<i>2018 Final EIS/OEIS Mitigation Area Name</i>	<i>Final Supplemental EIS/OEIS Mitigation Area Name</i>
Seafloor Resource Mitigation Areas	Shallow-Water Coral Reef Mitigation Areas Artificial Reef, Live Hard Bottom, Submerged Aquatic Vegetation, and Shipwreck Mitigation Areas
Key West Range Complex	Key West Range Complex Seafloor Mitigation Area
South Florida Ocean Measurement Facility Testing Range	South Florida Ocean Measurement Facility Seafloor Mitigation Area
Navy Cherry Point Range Complex Nearshore Mitigation Area	Nearshore North Carolina Sandbar Shark and Sea Turtle Mitigation Area
Not applicable: categorized as procedural mitigation for line charge testing	Panama City Gulf Sturgeon and Sea Turtle Mitigation Area (Recategorized as geographic mitigation because the mitigation applies only to certain nearshore coastal areas and activity-based mitigation is not required)
Not applicable: categorized as procedural mitigation for active sonar	Inshore Manatee and Sea Turtle Mitigation Areas (Recategorized as geographic mitigation because the mitigation applies only to certain inshore and nearshore coastal areas, includes requirements beyond the standard activity-based mitigation, and is relevant to sea turtles and only one species of marine mammal)
Not applicable: categorized as procedural mitigation for ship shock trials	Ship Shock Trial Mitigation Areas (Recategorized as geographic mitigation because the mitigation applies to event location planning)
Gulf of Maine Planning Awareness Mitigation Area	Major Training Exercise Planning Awareness Mitigation Areas
Gulf of America Planning Awareness Mitigation Areas	
Northeast Planning Awareness Mitigation Areas	
Southeast and Mid-Atlantic Planning Mitigation Awareness Areas	
Northeast North Atlantic Right Whale Mitigation Area	Northeast North Atlantic Right Whale Mitigation Area
Gulf of Maine Planning Awareness Mitigation Area	Gulf of Maine Marine Mammal Mitigation Area (Reorganized to split out mitigation applicable to Major Training Exercise Planning Awareness Mitigation Areas)
Jacksonville Operating Area	Jacksonville Operating Area North Atlantic Right Whale Mitigation Area
Southeast North Atlantic Right Whale Mitigation Area	Southeast North Atlantic Right Whale Mitigation Area
Southeast North Atlantic Right Whale Critical Habitat Special Reporting Area	Southeast North Atlantic Right Whale Special Reporting Mitigation Area
Not applicable: categorized as procedural mitigation for vessel movement	Dynamic North Atlantic Right Whale Mitigation Areas (Recategorized as geographic mitigation because the mitigation applies only to certain locations and seasons, which will fluctuate based on NMFS Dynamic Management Areas)
Bryde's Whale Mitigation Area	Rice's Whale Mitigation Area (Renamed in this Supplemental EIS/OEIS to reflect the updated species name)
Not applicable: categorized as procedural mitigation for aircraft overflight noise	Virginia Capes Bird Mitigation Area (Recategorized as geographic mitigation because the mitigation applies only to certain nearshore coastal areas and activity-based mitigation is not required)
Not applicable: categorized as procedural mitigation for aircraft overflight noise	Dry Tortugas Bird and Cultural Resource Mitigation Area (Recategorized as geographic mitigation because the mitigation applies only to certain nearshore coastal areas and activity-based mitigation is not required)

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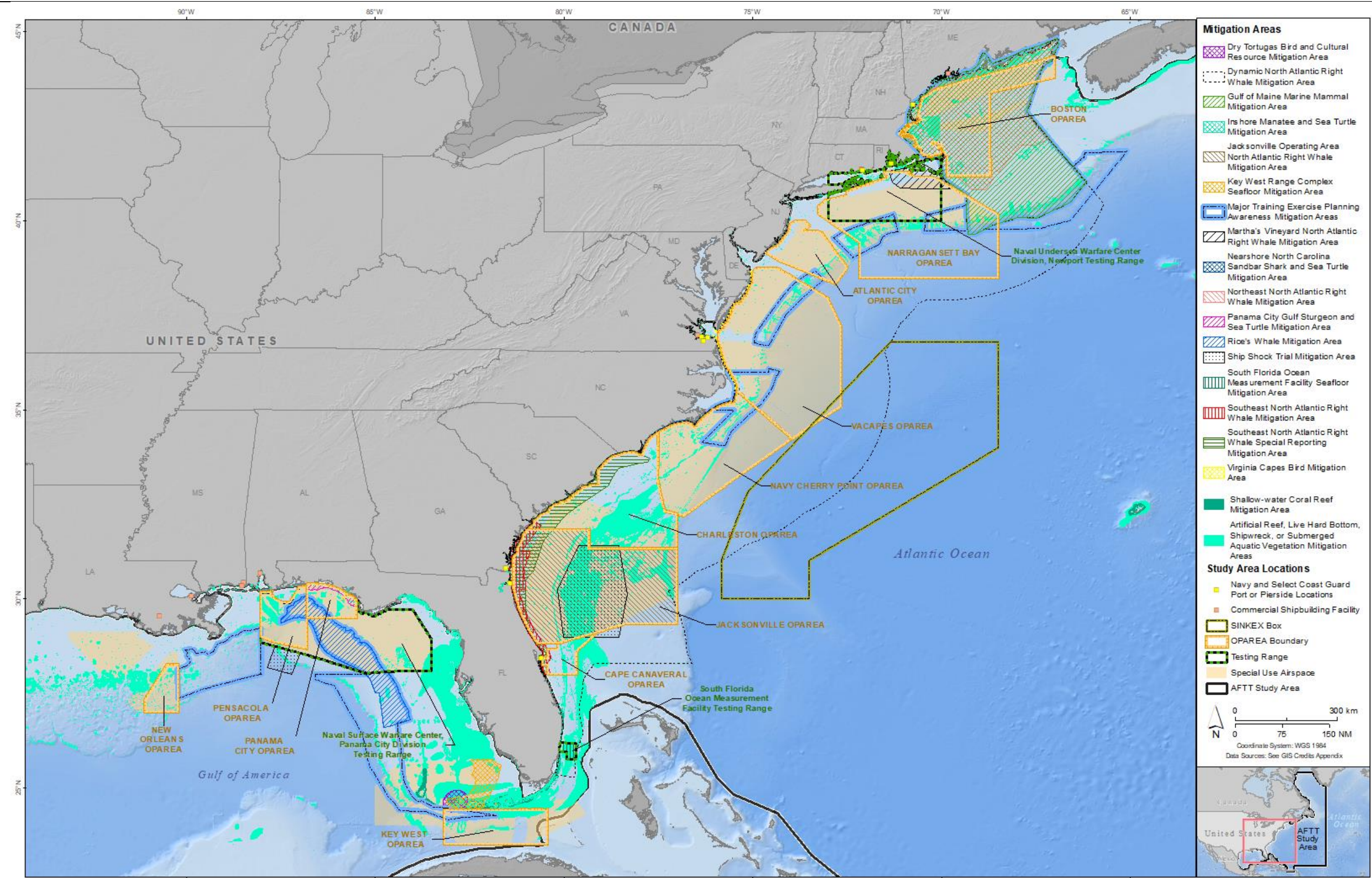


Figure 5.7-1: Mitigation Areas in the Study Area

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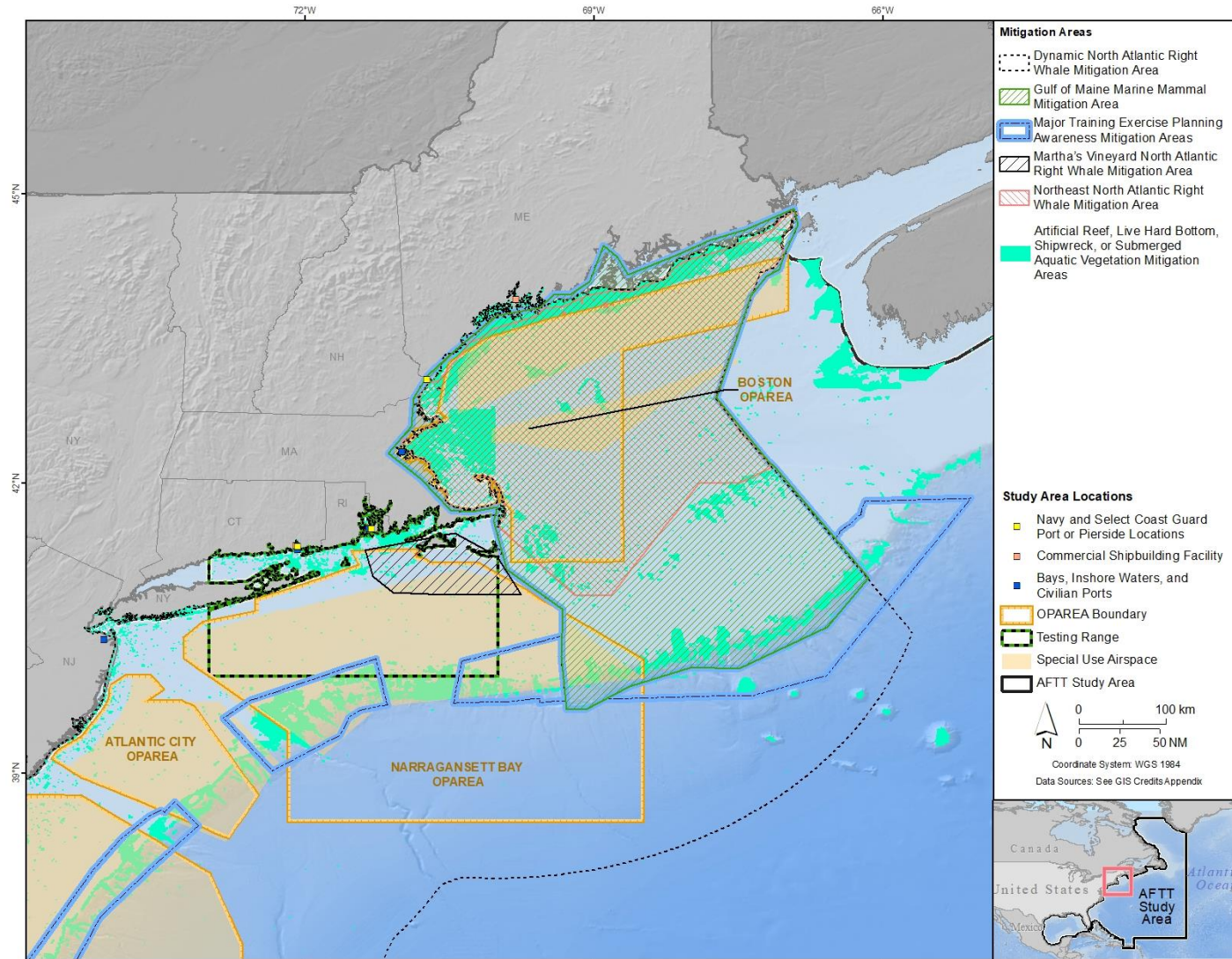
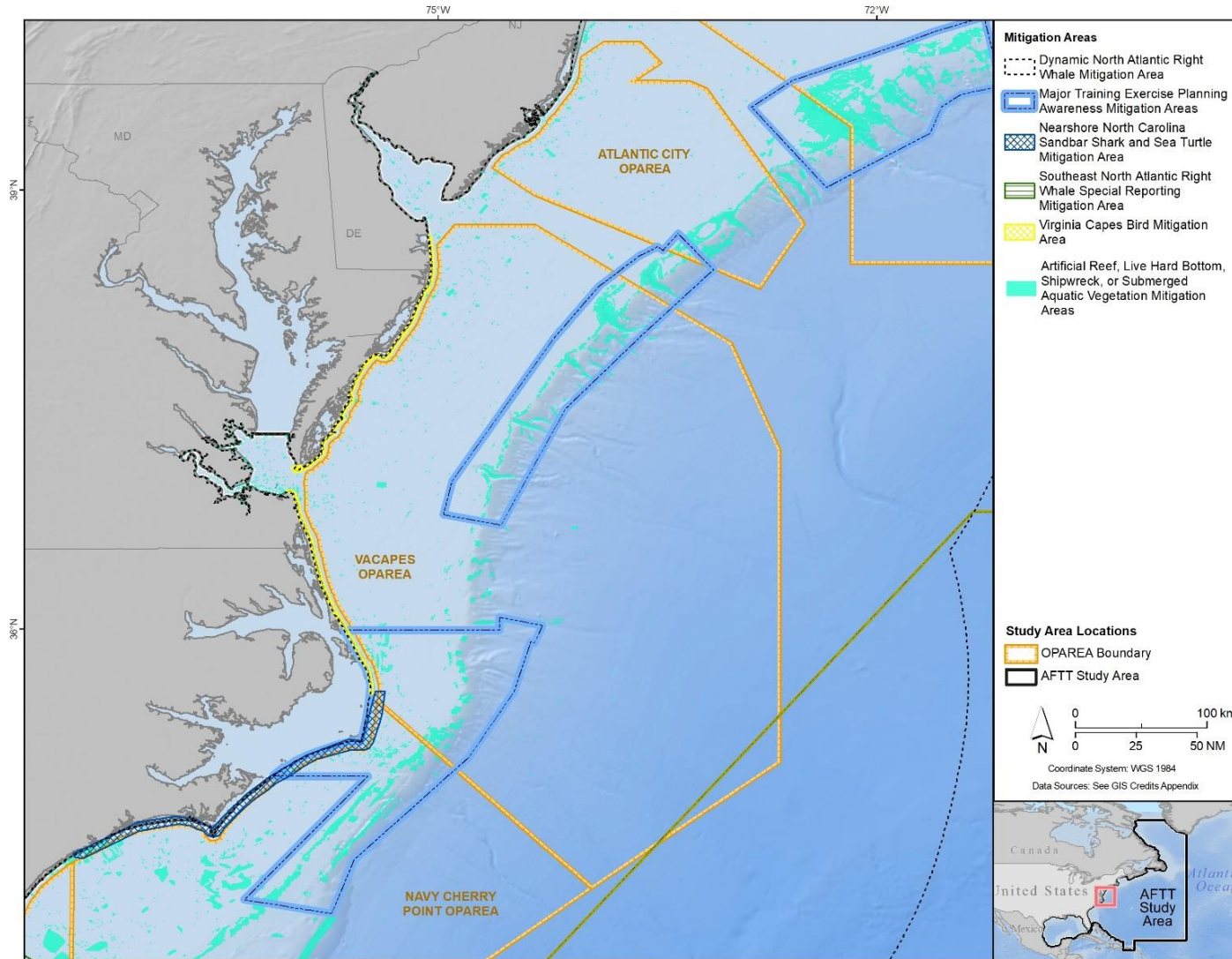
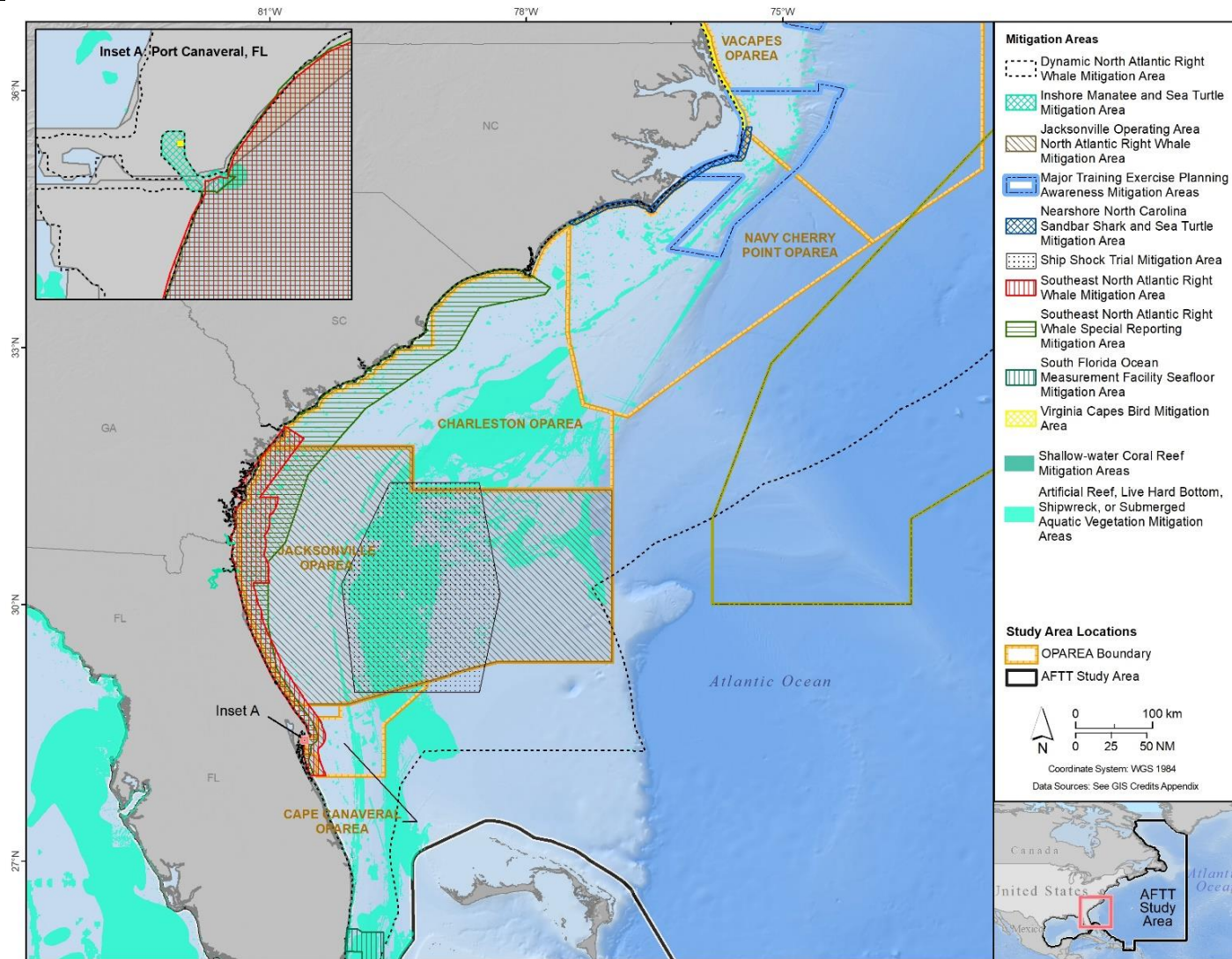


Figure 5.7-2: Mitigation Areas off the Northeastern United States



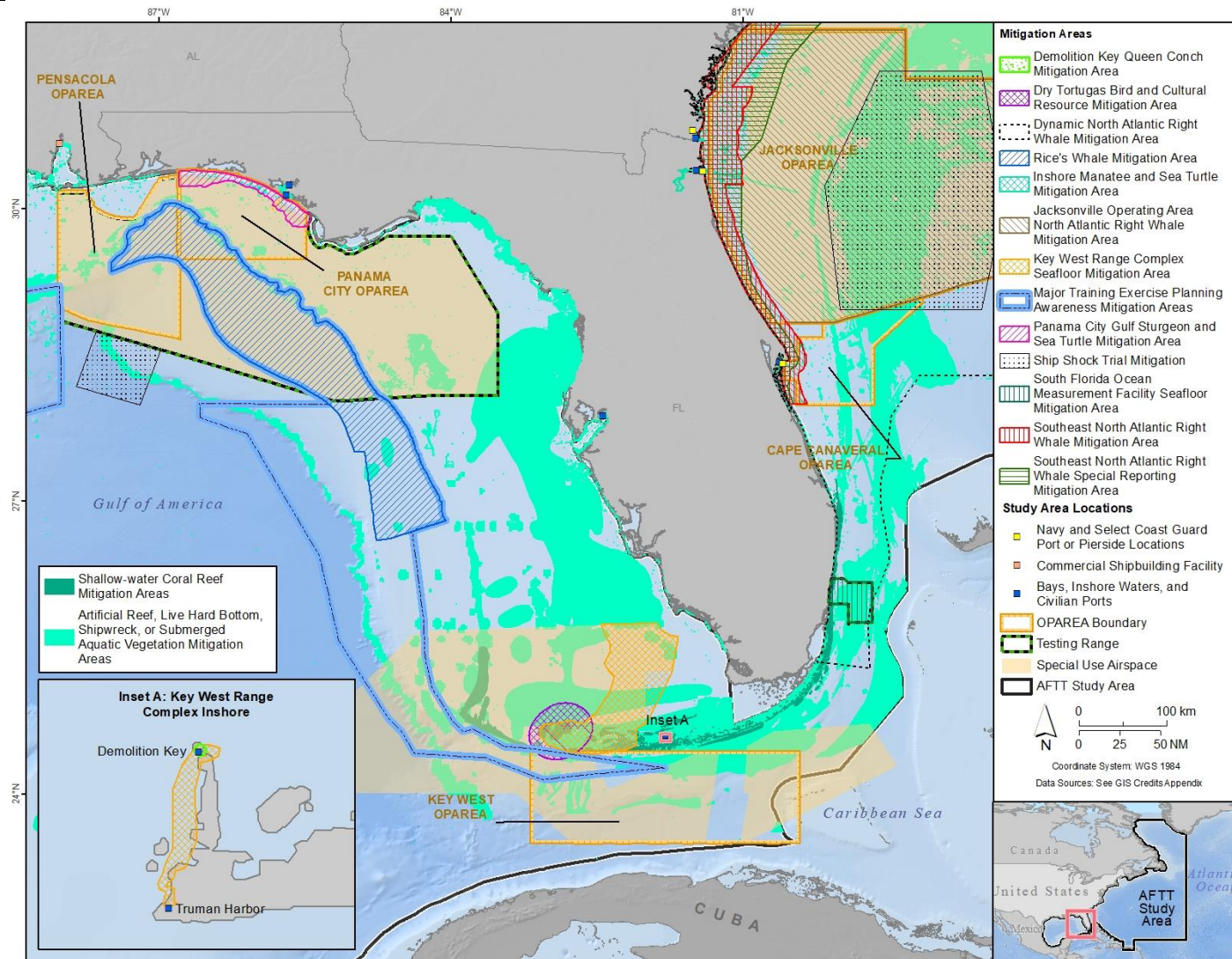
Notes: AFTT = Atlantic Fleet Training and Testing; OPAREA = operating area

Figure 5.7-3: Mitigation Areas off the Mid-Atlantic United States



Notes: AFTT = Atlantic Fleet Training and Testing; OPAREA = operating area

Figure 5.7-4: Mitigation Areas off the Southeastern United States



Notes: AFTT = Atlantic Fleet Training and Testing; OPEARA = operating area

Figure 5.7-5: Mitigation Areas off the Southeastern United States and in the Eastern Gulf of America

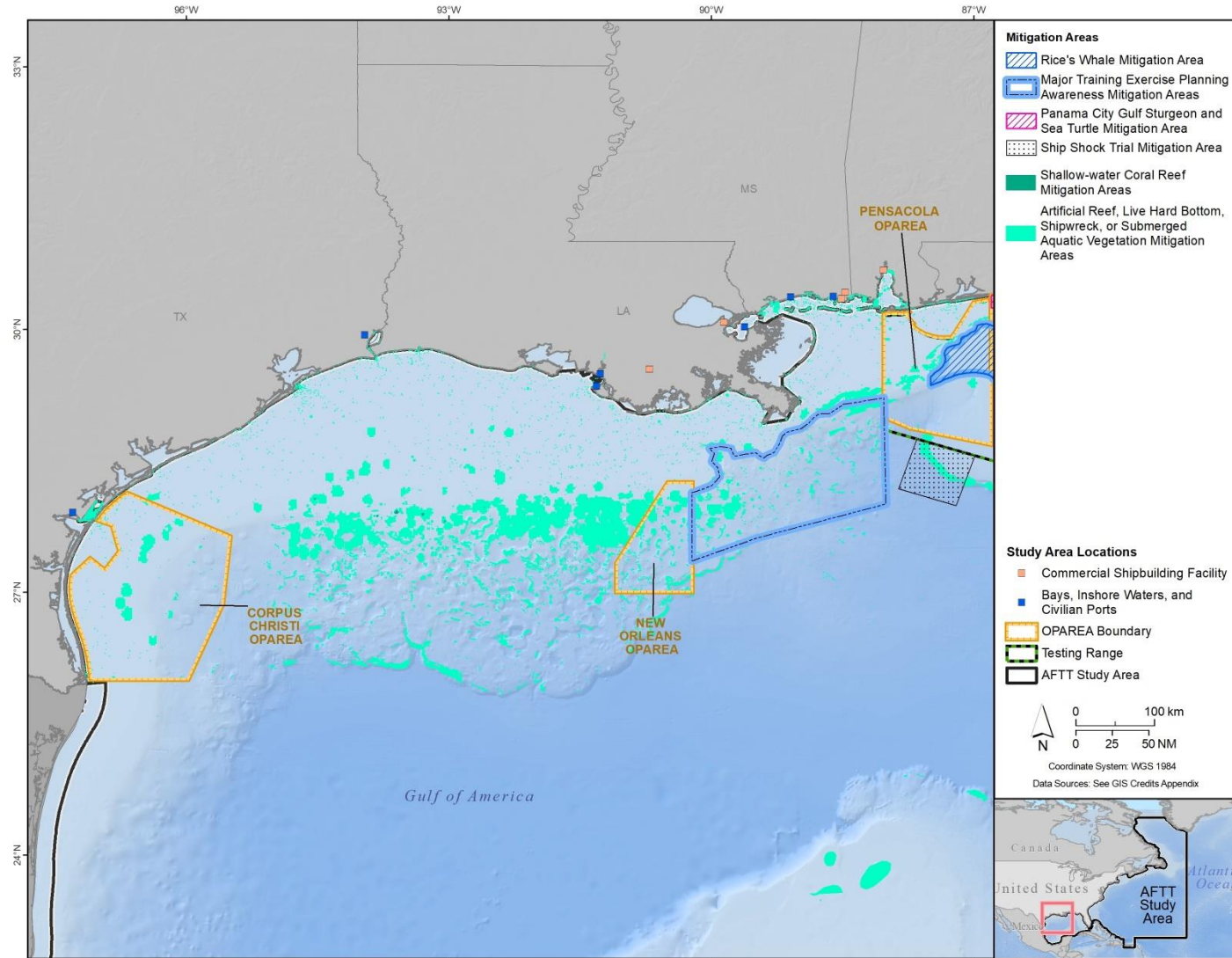


Figure 5.7-6: Mitigation Areas in the Western Gulf of America

5.7.1 Shallow-Water Coral Reef Mitigation Areas

Table 5.7-3 details geographic mitigation designed to avoid potential impacts from explosives and physical disturbance and strike stressors on shallow-water coral reefs, as well as their critical ecosystem functions and socioeconomic value. Mitigation will also help avoid potential impacts on organisms (e.g., invertebrates, fishes, sea turtles) that use shallow-water coral reefs for sheltering, resting, feeding, or other important life processes. Mitigation is a continuation from the 2018 Final EIS/OEIS. The overall effectiveness of the mitigation area would be correlated with the quality (e.g., accuracy) of the underlying mapping data, as discussed in the *Phase IV Atlantic Fleet Training and Testing SEIS/OEIS Supplement: Marine Habitat Database Technical Report* (U.S. Department of the Navy, 2024).

Table 5.7-3: Shallow-Water Coral Reef Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Explosives	<ul style="list-style-type: none"> The Action Proponents will not detonate any in-water explosives (including underwater explosives and explosives deployed against surface targets) within a horizontal distance of 350 yd from shallow-water coral reefs. 	<ul style="list-style-type: none"> The 350-yd mitigation area radius for in-water explosives was conservatively designed to be several times larger than the impact footprint (e.g., crater and expelled material radius) of the largest bottom-laid explosive used in the Study Area. As described in Appendix I (Military Expended Materials and Direct Strike Impact Analysis), that explosive is a 650-lb. NEW mine with an estimated impact footprint radius of 22.7 yd. The 350-yd mitigation area radius is 11 times larger than the maximum estimated explosive impact footprint radius, and is even more conservatively sized when compared to the impact footprints of smaller explosives. Therefore, the mitigation will prevent direct impacts (and some level of indirect impacts) from explosives on shallow-water coral reefs in the Study Area.
Physical disturbance and strike	<ul style="list-style-type: none"> The Action Proponents will not set vessel anchors within the anchor swing circle radius from shallow-water coral reefs (except in designated anchorages). The Action Proponents will not place non-explosive seafloor devices within a horizontal distance of 350 yd from shallow-water coral reefs (except as described in the bullet above for vessel anchors, and in Table 5.7-6 for the South Florida Ocean Measurement Facility Seafloor Mitigation Area). The Action Proponents will not deploy non-explosive ordnance against surface targets (including aerial-deployed mines) within a horizontal distance of 350 yd from shallow-water coral reefs. 	<ul style="list-style-type: none"> The anchor swing circle mitigation will ensure that vessel anchors do not come into contact with shallow-water coral reefs when factoring in environmental conditions that could affect anchoring position, such as winds, currents, and water depth. For ease of implementation, the 350-yd mitigation area radius for explosives was also adopted for seafloor devices and non-explosive ordnance deployed against surface targets. This mitigation area radius is even more conservative when compared to the small impact footprints of these non-explosive stressors. Therefore, the mitigation will prevent direct impacts (and some level of indirect impacts) from seafloor devices and non-explosive ordnance deployed against surface targets on shallow-water coral reefs.

Notes: lb. = pounds; NEW = Net Explosive Weight; yd = yard

5.7.2 Artificial Reef, Live Hard Bottom, Submerged Aquatic Vegetation, and Shipwreck Mitigation Areas

Table 5.7-4 details geographic mitigation for explosives and physical disturbance and strike stressors near artificial reefs, live hard bottom, submerged aquatic vegetation (which is Essential Fish Habitat in the Study Area), and shipwrecks. For mitigation, the term “live hard bottom” is defined as substrate in the marine environment with a covering of biotic features (e.g., seaweed, sponges, hard corals). Mitigation will also help avoid potential impacts on organisms (e.g., invertebrates, fishes, sea turtles) that use these seafloor resources for sheltering, resting, feeding, or other important life processes. Mitigation is a continuation from the 2018 Final EIS/OEIS, except for new requirements pertaining to precisely placed non-explosive seafloor devices as described in Table 5.7-4 and Table 5.8-1. The overall effectiveness of the mitigation would be correlated with the quality (e.g., accuracy) of the underlying mapping data, as discussed in the *Phase IV Atlantic Fleet Training and Testing SEIS/OEIS Supplement: Marine Habitat Database Technical Report* (U.S. Department of the Navy, 2024).

Table 5.7-4: Artificial Reef, Live Hard Bottom, Submerged Aquatic Vegetation, and Shipwreck Mitigation Area Requirements

Category	Mitigation Requirements	Mitigation Benefits
Explosives	<ul style="list-style-type: none"> The Action Proponents will not detonate explosives on or near the seafloor (e.g., explosive bottom-laid or moored mines) within a horizontal distance of 350 yd from artificial reefs, live hard bottom, submerged aquatic vegetation, and shipwrecks, except in designated locations where these resources will be avoided to the maximum extent practical (e.g., Truman Harbor, Demolition Key). 	<ul style="list-style-type: none"> The 350-yd mitigation area radius will prevent direct impacts (and some level of indirect impacts) from explosives on artificial reefs, live hard bottom, submerged aquatic vegetation, and shipwrecks for the reasons described in Section 5.7.1 (Shallow-Water Coral Reef Mitigation Areas).
Physical disturbance and strike	<ul style="list-style-type: none"> The Action Proponents will not set vessel anchors within the anchor swing circle radius from artificial reefs, live hard bottom, submerged aquatic vegetation, and shipwrecks (except in designated anchorages). The Action Proponents will not place non-explosive seafloor devices (that are not precisely placed) within a horizontal distance of 350-yd from artificial reefs, live hard bottom, submerged aquatic vegetation, and shipwrecks (except as described in the bullet above for vessel anchors, the bullet below for precisely placed seafloor devices, and in Table 5.7-6 for the South Florida Ocean Measurement Facility). The Action Proponents will not position precisely placed non-explosive seafloor devices directly on artificial reefs, live hard bottom, submerged aquatic vegetation, or shipwrecks. The Action Proponents will avoid positioning precisely placed non-explosive seafloor devices near these resources by the largest distance that is practical to implement based on mission requirements. 	<ul style="list-style-type: none"> Mitigation ensures that vessel anchors do not come into contact with artificial reefs, live hard bottom, submerged aquatic vegetation, and shipwrecks, when factoring in environmental conditions that could affect anchoring position, such as winds, currents, and water depth. For ease of implementation, the 350-yd mitigation area radius for explosives was also adopted for seafloor devices (that are not precisely placed), and is even more conservative when compared to the small impact footprints of non-explosive seafloor devices. Mitigation specific to precisely placed seafloor devices was first developed and coordinated with NMFS for live hard bottom habitats during the 2022 Hawaii-Southern California Training and Testing Study Area’s Essential Fish Habitat consultation reinitiation (U.S. Department of the Navy, 2022a). That mitigation is being included in this document, and applied to the whole mitigation area category of live hard bottom as well as artificial reefs, submerged aquatic vegetation, and shipwrecks, for consistency and practicality of implementation. Because precisely placed seafloor devices are deployed with a high degree of placement accuracy, the original intent of the mitigation (i.e., preventing direct physical strike and disturbance) will continue to be achieved. Therefore, the mitigation for seafloor devices that are either precisely placed or not precisely placed will collectively prevent direct impacts (and some level of indirect impacts) from seafloor devices on artificial reefs, live hard bottom, submerged aquatic vegetation, and shipwrecks.

Notes: U.S. = United States; yd = yard

5.7.3 Key West Range Complex Seafloor Mitigation Area

Table 5.7-5 details geographic mitigation related to the use of surface vessels in shallow areas of the Key West Range Complex. Mitigation is a continuation from the 2018 Final EIS/OEIS.

Table 5.7-5: Key West Range Complex Seafloor Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Physical disturbance and strike	<ul style="list-style-type: none"> The Action Proponents will operate surface vessels in waters deep enough to avoid bottom scouring or prop dredging, with at least a 1-foot clearance between the deepest draft of the vessel (with the motor down) and the seafloor at mean low water. 	<ul style="list-style-type: none"> The mitigation area is bound by the 30-meter depth contour, consistent with the deepest potential seagrass depth within the Key West Range Complex. Seafloor resources outside of this water depth would be at no risk of prop dredging or bottom scouring based on the deepest drafts of the surface vessels used in the Study Area. The mitigation will ensure that surface vessels and propellers do not contact the seafloor or seafloor resources. The mitigation is designed to protect the critical ecosystem functions, socioeconomic value, and cultural importance of submerged aquatic vegetation and shallow soft bottom (which are Essential Fish Habitats in the Study Area), shallow-water coral reefs, artificial reefs, live hard bottom, and shipwrecks at their known locations in the Key West Range Complex. The mitigation will also protect organisms (e.g., invertebrates, fishes, sea turtles) associated with these seafloor resources for sheltering, resting, feeding, or other important life processes.

5.7.4 South Florida Ocean Measurement Facility Seafloor Mitigation Area

Table 5.7-6 details geographic mitigation related to physical disturbance and strike stressors within the South Florida Ocean Measurement Facility. Mitigation is a continuation from the 2018 Final EIS/OEIS.

Table 5.7-6: South Florida Ocean Measurement Facility Seafloor Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Physical disturbance and strike	<ul style="list-style-type: none"> The Action Proponents will operate surface vessels in waters deep enough to avoid bottom scouring or prop dredging, with at least a 1-foot clearance between the deepest draft of the vessel (with the motor down) and the seafloor at mean low water. The Action Proponents will use a real-time geographic information system and global positioning system (along with remote-sensing verification) during deployment, installation, and recovery of anchors and mine-like objects and during deployment of bottom-crawling unmanned underwater vehicles in waters deeper than 10 feet to avoid shallow-water coral reefs and live hard bottom. Surface vessels deploying seafloor devices will aim to hold a relatively fixed position over the intended mooring or deployment location using a dynamic positioning navigation system with global positioning system. The Action Proponents will minimize surface vessel movement and drift (including anchor dragging) in accordance with mooring installation and deployment plans, and will conduct activities during sea and wind conditions that allow vessels to maintain position and speed control during deployment, installation, and recovery of seafloor devices. The Action Proponents will not anchor surface vessels or moor over shallow-water coral reefs or live hard bottom. The Action Proponents will use semi-permanent anchoring systems that are assisted with riser buoys over soft bottom habitats to avoid contact of mooring cables with shallow-water coral reefs and live hard bottom. 	<ul style="list-style-type: none"> The mitigation will ensure that surface vessels, propellers, and seafloor devices (e.g., anchors, anchoring systems, mine-like objects, bottom-crawling unmanned underwater vehicles) do not contact the seafloor or certain seafloor resources. The mitigation is designed to protect the critical ecosystem functions, socioeconomic value, and cultural importance of submerged aquatic vegetation and shallow soft bottom (which are Essential Fish Habitats in the Study Area), shallow-water coral reefs, artificial reefs, and live hard bottom at their known locations. The mitigation will also protect organisms (e.g., invertebrates, fishes, sea turtles) associated with these seafloor resources for sheltering, resting, feeding, or other important life processes.

5.7.5 Nearshore North Carolina Sandbar Shark and Sea Turtle Mitigation Area

Table 5.7-7 details geographic mitigation related to the use of explosives within 3.2 NM of an estuarine inlet and within 1.6 NM of the North Carolina shoreline in the Navy Cherry Point Range Complex. Mitigation is a continuation from the 2018 Final EIS/OEIS.

Table 5.7-7: Nearshore North Carolina Sandbar Shark and Sea Turtle Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Explosives	<ul style="list-style-type: none"> From March 1 to September 30, the Action Proponents will not detonate explosive mines during mine neutralization events involving divers, and will avoid detonating all other types of in-water explosives (including underwater explosives and explosives deployed against surface targets) to the maximum extent practical. 	<ul style="list-style-type: none"> Mitigation is designed to avoid exposure of in-water explosives on ESA-listed green, Kemp's ridley, loggerhead, and leatherback sea turtles during transit to and from nesting beaches. Nesting season typically lasts in this area from April to September for green and loggerhead sea turtles, and from March to September for leatherback sea turtles. Explosive mine neutralization events involving divers are the type of explosive event most likely to be conducted in these waters. Other in-water explosives events are unlikely in this location, but could potentially occur if necessitated by mission requirements. The mitigation area completely encompasses the Habitat Area of Particular Concern for sandbar sharks along Cape Hatteras National Seashore, which provides important seasonal reproduction habitat from May 15 to September 15 (e.g., nursery and pupping grounds).

5.7.6 Panama City Gulf Sturgeon and Sea Turtle Mitigation Area

Table 5.7-8 details geographic mitigation related to explosive line charge testing, which is conducted in the surf zone. Naval Surface Warfare Center, Panama City Division Testing Range is currently the Navy's only location capable of supporting explosive line charge testing. For the purpose of representing this area on a map, the mitigation area extends from the shoreline out to the 30-meter depth contour within the Naval Surface Warfare Center, Panama City Division Testing Range. Mitigation is a continuation from the 2018 Final EIS/OEIS.

Table 5.7-8: Panama City Gulf Sturgeon and Sea Turtle Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Explosives	<ul style="list-style-type: none"> From March 1 to September 30, the Action Proponents will not conduct line charge testing at night. From March 1 to September 30, the Action Proponents will avoid conducting line charge testing in nearshore areas off of beaches with known sea turtle nesting, to the maximum extent practical and as mission allows. From October 1 to March 31, the Action Proponents will not conduct line charge testing (except within a designated location on Santa Rosa Island). 	<ul style="list-style-type: none"> Mitigation to not conduct line charge testing at night from March 1 to September 30 is designed to avoid exposure of ESA-listed green, Kemp's ridley, loggerhead, and leatherback sea turtles to explosives during the time of day when individuals are most likely to transit to and from nesting beaches. Nesting season typically lasts in this area from April to September for green, Kemp's ridley, and loggerhead sea turtles, and March to September for leatherbacks. Mitigation to avoid conducting line charge testing in nearshore areas off of beaches with known sea turtle nesting is designed to minimize impacts of this activity on ESA-listed sea turtle reproductive behaviors. Mitigation to not conduct line charge testing (day or night) from October through March (except within a designated location on Santa Rosa Island) is designed to avoid exposure of ESA-listed Gulf sturgeon during seasonal migrations from the Gulf of America winter and feeding grounds to the spring and summer natal (hatching) grounds in the Yellow, Choctawhatchee, and Apalachicola Rivers.

Note: ESA = Endangered Species Act

5.7.7 Inshore Manatee and Sea Turtle Mitigation Areas

Table 5.7-9 details geographic mitigation related to pierside use of active sonar at Naval Submarine Base Kings Bay and Port Canaveral, Florida, and vessel movements within inshore waters of Naval Submarine Base Kings Bay and Naval Station Mayport, Florida. Mitigation is a continuation from the 2018 Final EIS/OEIS, except the modifications described in [Section 5.8](#) (Summary of New or Modified Mitigation Requirements).

Table 5.7-9: Inshore Manatee and Sea Turtle Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Acoustic	<ul style="list-style-type: none"> • Pierside at Naval Submarine Base Kings Bay, the Action Proponents will reduce mid-frequency active sonar transmissions by at least 36-dB from full power. • The Action Proponents will conduct pierside active sonar activities during daylight hours at Port Canaveral, Florida, and Naval Submarine Base Kings Bay. • The Action Proponents will notify the Port Authority prior to commencing pierside active sonar activities at Port Canaveral, Florida, and Naval Submarine Base Kings Bay. • The Action Proponents will post two Lookouts to conduct visual observations (who will follow applicable procedures described in Section 5.6, Activity-Based Mitigation) during pierside active sonar activities at Port Canaveral, Florida, and Naval Submarine Base Kings Bay. After completion of pierside active sonar activities, Lookouts will observe for marine mammals and sea turtles for 30 minutes. • Pierside at Naval Submarine Base Kings Bay, the Lookout will communicate sightings of manatees and sea turtles (e.g., time, location, count, animal size, description of research tags if present, direction of travel) during or within 30 minutes after pierside active sonar activities to Port Operations. Port Operations will record, report, or communicate relevant sightings information as required by the Integrated Natural Resource Management Plan. 	<ul style="list-style-type: none"> • Mitigation for active pierside sonar activities at Port Canaveral, Florida, and Naval Submarine Base Kings Bay are collectively designed to decrease potential impacts on manatees and sea turtles. • Mitigation to conduct pierside sonar activities during daylight hours at Port Canaveral, Florida, and Naval Submarine Base Kings Bay will help increase the likelihood that Lookouts will detect manatees and sea turtles. • Mitigation to implement a 36-dB reduction from full power for pierside mid-frequency active sonar transmissions at Naval Submarine Base Kings Bay, will reduce the level of sound exposure that would potentially be received by marine mammals (including manatees) and sea turtles, which would reduce the potential for injurious impacts at this location. • Mitigation for Lookouts to communicate information on sightings of manatees and sea turtles to Port Operations at Naval Submarine Base Kings Bay will assist sightings communication between platforms. Per the Integrated Natural Resource Management Plan at Naval Submarine Base Kings Bay the Port Authority communicates relevant sightings information to Action Proponent platforms operating in the vicinity, as well as any other record-keeping, reporting or communication procedures as required by the Integrated National Resource Management Plan.
Physical disturbance and strike	<ul style="list-style-type: none"> • When underway in the St. Johns River or in the turning basins, channels, and waterways adjacent to Naval Station Mayport, vessels will comply with federal, state, and local Manatee Protection Zones and reduce speed in accordance with established operational safety and security procedures. • When mooring pierside at Naval Submarine Base Kings Bay, submarines will ensure proper fendering techniques to remain off the quay wall. 	<ul style="list-style-type: none"> • Mitigation for underway vessels to comply with federal, state, and local Manatee Protection Zones will decrease the potential for interactions between vessels and manatees in the St. Johns River and within the waters of and adjacent to Naval Station Mayport. • Mitigation for fendering techniques is designed to prevent submarines from injuring or confining a manatee against the quay wall.

Note: dB = decibels

5.7.8 Ship Shock Trial Mitigation Areas

Table 5.7-10 details geographic mitigation related to ship shock trials, which involve the use of explosives. Ship shock trials are conducted only within established ship shock trial boxes within the Gulf of America and the Jacksonville OPAREA. The boundaries of the mitigation areas match the boundaries of each ship shock trial box. Mitigation is a continuation from the 2018 Final EIS/OEIS, except for new mitigation related to the location of the northern Gulf of America ship shock trial box as described in Table 5.7-10 and Table 5.8-1.

Table 5.7-10: Ship Shock Trial Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Explosives	<ul style="list-style-type: none"> The Action Proponents will reposition the northern Gulf of America ship shock trial box so it is situated outside of the Rice's whale core distribution area identified by NMFS in 2019 (84 <i>Federal Register</i> 15446) and updated in 2021 (86 <i>Federal Register</i> 47022). The Action Proponents will not conduct ship shock trials within the portion of the ship shock trial box that overlaps the Jacksonville OPAREA from November 15 through April 15. Pre-event planning for ship shock trials will include the selection of one primary and two secondary sites (within one of the ship shock trial boxes) where marine mammal abundance is expected to be the lowest during an event, with the primary and secondary locations located more than 2 NM from the western boundary of the Gulf Stream for events planned within the portion of the ship shock trial boxes that overlap the Jacksonville OPAREA. If the Action Proponents determine during pre-event visual observations that the primary site is environmentally unsuitable (e.g., continuous observations of marine mammals), it would evaluate the potential to move the event to one of the secondary sites in accordance with the event-specific mitigation and monitoring plan (see Table 5.6-2 for additional information). 	<ul style="list-style-type: none"> Prior to being repositioned, the northern Gulf of America ship shock trial box overlapped the ESA-listed Bryde's whale core distribution area identified by NMFS in 2019 (84 <i>Federal Register</i> 15446) and updated in 2021 to distinguish Rice's whale as a subspecies distinct from Bryde's whale (86 <i>Federal Register</i> 47022). Preliminary Navy Acoustic Effects Model data indicated that Rice's whales would have potentially been exposed to auditory injury, temporary threshold shift, and behavioral impacts from explosives if events were to occur at that location. The Action Proponents determined it would be practical to reposition the ship shock trial box outside of the Rice's whale core distribution area, and into a new location that will reduce the likelihood of exposure of Rice's whales to injurious levels of sound. The repositioned ship shock trial box is now located off the Naval Surface Warfare Center, Panama City Division Testing Range's southern boundary. Mitigation to not conduct ship shock trials in the Jacksonville OPAREA from November 15 through April 15 is designed to avoid potential injurious and behavioral impacts on North Atlantic right whales during calving season. Mitigation to consider marine mammal abundance during pre-event planning, to prioritize locations that are more than 2 NM from the western boundary of the Gulf Stream (where marine mammals would be expected in greater concentrations for foraging and migration) when conducting ship shock trials in the boxes that overlap the Jacksonville OPAREA, and to evaluate the environmental suitability of the selected site based on pre-event observations, are collectively designed to reduce the number of individual marine mammals exposed, as well as the level of impact that could potentially be received by each animal. The benefits of the mitigation for Rice's whales, North Atlantic right whales, and other marine mammal species would be substantial because ship shock trials use the largest NEW of any explosive activity conducted under the Proposed Action.

Notes: ESA = Endangered Species Act; NEW = net explosive weight; NM = nautical mile; NMFS = National Marine Fisheries Service; OPAREA = operating area

5.7.9 Major Training Exercise Planning Awareness Mitigation Areas

Table 5.7-11 details geographic mitigation related to major training exercises (i.e., Composite Training Unit Exercises and Sustainment Exercises). Mitigation is a continuation from the 2018 Final EIS/OEIS.

Table 5.7-11: Major Training Exercise Planning Awareness Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Acoustic	<ul style="list-style-type: none"> • Northeast: Within Major Training Exercise Planning Awareness Mitigation Areas located in the Northeast (i.e., the combined areas within the Gulf of Maine, over the continental shelves off Long Island, Rhode Island, Massachusetts, and Maine), the Action Proponents will not conduct any (or a portion of any) major training exercises. 	<ul style="list-style-type: none"> • Mitigation to prohibit or limit major training exercises within regional planning mitigation areas is collectively designed to reduce the number of marine mammal species, and individuals within each species, that are exposed to potential impacts from active sonar during major training exercises. The mitigation areas are situated among highly productive environments and persistent oceanographic features associated with upwellings, steep bathymetric contours, and canyons. The areas have high marine mammal densities, abundance, or concentrated use for feeding, reproduction, or migration. Mitigation benefits would be substantial because major training exercises are conducted on a larger scale and with more hours of active sonar use than other types of active sonar events.
Physical disturbance and strike	<ul style="list-style-type: none"> • Mid-Atlantic: Within Major Training Exercise Planning Awareness Mitigation Areas located in the Mid-Atlantic (i.e., the combined areas off Maryland, Delaware, and North Carolina), the Action Proponents will avoid conducting any (or a portion of any) major training exercises to the maximum extent practical, and will not conduct more than four (or a portion of more than four) major training exercises per year. • Gulf of America: Within the combined Major Training Exercise Planning Awareness Mitigation Areas located in the Gulf of America, the Action Proponents will not conduct any major training exercises within under Alternative 1, and not more than one under Alternative 2. 	<ul style="list-style-type: none"> • Mitigation for the Northeast planning areas (including in the Gulf of Maine) is designed to prevent major training exercises from occurring within North Atlantic right whale foraging critical habitat, across the shelf break in the northeast, on Georges Bank, and in areas that contain underwater canyons (e.g., Hydrographer Canyon). These locations (including within a portion of the Northeast Canyons and Seamounts National Marine Monument) have been associated with high occurrences of marine mammal feeding, abundance, or mating for harbor porpoises and humpback, minke, sei, fin, and North Atlantic right whales. • Mitigation for the Mid-Atlantic planning areas is designed to limit the number of major training exercises that could occur within large swaths of shelf break that contain underwater canyons or other habitats (e.g., Norfolk Canyon, part of the Cape Hatteras Special Research Area) associated with high marine mammal diversity in this region, including blue, fin, minke, sei, sperm, beaked, dwarf sperm, pygmy sperm, and humpback whales, as well as Risso's dolphins and other delphinid species. The planning areas also overlap North Atlantic right whale migration habitats. • Mitigation for the Gulf of America planning areas is designed to prohibit (Alternative 1) or limit (Alternative 2) the number of major training exercises that could occur within feeding, migration, and reproduction habitat (e.g., Mississippi Canyon, DeSoto Canyon) for sperm and Rice's whales.

5.7.10 Northeast North Atlantic Right Whale Mitigation Area

Table 5.7-12 details geographic mitigation related to active sonar and explosives (and special reporting for their use), and physical disturbance and strike stressors off the northeastern United States. The mitigation area extent matches that of the North Atlantic right whale foraging critical habitat designated by NMFS in 2016 (81 *Federal Register* 4838). Mitigation is a continuation from the 2018 Final EIS/OEIS, with clarification that requirements pertain to in-water stressors (i.e., not activities with no potential marine mammal impacts, such as air-to-air activities). Mitigation is designed to protect individual North Atlantic right whales within their foraging critical habitat. Mitigation is expected to also protect individuals of other species whose biologically significant habitats overlap the mitigation area, including harbor porpoises and humpback, minke, sei, and fin whales.

Table 5.7-12: Northeast North Atlantic Right Whale Mitigation Area Requirements

Category	Mitigation Requirements	Mitigation Benefits
Acoustic	<ul style="list-style-type: none"> The Action Proponents will minimize the use of low-frequency active sonar, mid-frequency active sonar, and high-frequency active sonar in the mitigation area to the maximum extent practical. 	<ul style="list-style-type: none"> Mitigation is designed to minimize exposure of North Atlantic right whales to sounds with potential for injury or behavioral impacts.
Explosives	<ul style="list-style-type: none"> The Action Proponents will not detonate in-water explosives (including underwater explosives and explosives deployed against surface targets) within the mitigation area. The Action Proponents will not detonate explosive sonobuoys within 3 NM of the mitigation area. 	<ul style="list-style-type: none"> Mitigation is designed to prevent exposure of North Atlantic right whales to explosives with potential for injury, mortality, or behavioral impacts. Mitigation to prohibit explosive sonobuoys within 3 NM is designed to further prevent exposure to large and dispersed explosive sonobuoy fields.
Physical disturbance and strike	<ul style="list-style-type: none"> The Action Proponents will not use non-explosive bombs within the mitigation area. During non-explosive torpedoes events within the mitigation area: <ul style="list-style-type: none"> The Action Proponents will conduct activities during daylight hours in Beaufort sea state 3 or less. In addition to Lookouts required as described in Section 5.6 (Activity-Based Mitigation), the Action Proponents will post two Lookouts in an aircraft during dedicated aerial surveys, and one Lookout on the submarine participating in the event (when surfaced). Lookouts will begin conducting visual observations immediately prior to the start of an event. If floating vegetation or marine mammals are observed in the event vicinity, the event will not commence until the vicinity is clear or the event is relocated to an area where the vicinity is clear. Lookouts will continue to conduct visual observations during the event. If marine mammals are observed in the vicinity, the event will cease until one of the Mitigation Zone All-Clear Conditions has been met as described in Section 5.6 (Activity-Based Mitigation). During transits and normal firing, surface ships will maintain a speed of no more than 10 knots; during submarine target firing, surface ships will maintain speeds of no more than 18 knots; and during vessel target firing, surface ship speeds may exceed 18 knots for brief periods of time (e.g., 10 to 15 minutes). For vessel transits within the mitigation area: <ul style="list-style-type: none"> The Action Proponents will conduct a web query or e-mail inquiry to the North Atlantic Right Whale Sighting Advisory System to obtain the latest sightings data prior to transiting the mitigation area. To the maximum extent practical, the Action Proponents will provide Lookouts the sightings data prior to standing watch. Lookouts will use that data to help inform visual observations during vessel transits. Surface ships will implement speed reductions after observing a North Atlantic right whale, if transiting within 5 NM of a sighting reported to the North Atlantic Right Whale Sighting Advisory System within the past week, and when transiting at night or during periods of reduced visibility. 	<ul style="list-style-type: none"> Mitigation to prohibit use of non-explosive bombs is designed to reduce the potential for North Atlantic right whales to be struck by non-explosive ordnance. Mitigation to conduct non-explosive torpedo activities during daylight hours in Beaufort sea state 3 or less, and to post additional Lookouts from aircraft (and submarines, when surfaced), is designed to improve marine mammal sightability during visual observations. Mitigation for vessels to obtain sightings information from the North Atlantic Right Whale Sighting Advisory System and implement speed reductions in certain circumstances is designed to reduce the potential for vessels to encounter North Atlantic right whales. The North Atlantic Right Whale Sighting Advisory System is a National Oceanographic and Atmospheric Administration Northeast Fisheries Science Center program that collects sightings information off the northeastern United States from aerial surveys, shipboard surveys, whale watching vessels, and opportunistic sources, such as the Coast Guard, commercial ships, fishing vessels, and the public.

Table 5.7-12: Northeast North Atlantic Right Whale Mitigation Area Requirements (continued)

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Special reporting for the use of acoustics and explosives	<ul style="list-style-type: none"> The Action Proponents will report the total annual hours and counts of active sonar and in-water explosives (including underwater explosives and explosives deployed against surface targets) used in the mitigation area in their training and testing activity reports submitted to NMFS. 	<ul style="list-style-type: none"> Special reporting requirements are designed to aid the Action Proponents and NMFS in continuing to analyze potential impacts of training and testing in the mitigation area.

Notes: NM = nautical mile; NMFS = National Marine Fisheries Service

5.7.11 Gulf of Maine Marine Mammal Mitigation Area

Table 5.7-13 details geographic mitigation related to active sonar and special reporting for the use of active sonar and in-water explosives within the Gulf of Maine. Mitigation is a continuation from the 2018 Final EIS/OEIS.

Table 5.7-13: Gulf of Maine Marine Mammal Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Acoustic	<ul style="list-style-type: none"> The Action Proponents will not use more than 200 hours of surface ship hull-mounted mid-frequency active sonar annually within the mitigation area. 	<ul style="list-style-type: none"> Mitigation is designed to reduce exposure of North Atlantic right whales to potentially injurious levels of sound from the type of active sonar with the highest source power used in the Study Area within foraging critical habitat designated by NMFS in 2016 (81 <i>Federal Register</i> 4838) and additional sea space southward over Georges Bank.
Special reporting for the use of acoustics and explosives	<ul style="list-style-type: none"> The Action Proponents will report the total annual hours and counts of active sonar and in-water explosives (including underwater explosives and explosives deployed against surface targets) used in the mitigation area in their training and testing activity reports submitted to NMFS. 	<ul style="list-style-type: none"> Special reporting requirements are designed to aid the Action Proponents and NMFS in continuing to analyze potential impacts of training and testing in the mitigation area.

Note: NMFS = National Marine Fisheries Service

5.7.12 Martha's Vineyard North Atlantic Right Whale

Table 5.7-14 details geographic mitigation related to physical disturbance and strike off the southern New England coast. Mitigation is new for this Supplemental EIS/OEIS.

Table 5.7-14: Martha's Vineyard North Atlantic Right Whale Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Physical disturbance and strike	<ul style="list-style-type: none"> The Action Proponents will avoid conducting vessel propulsion testing events in the mitigation area, to the maximum extent practical, within the mitigation area. 	<ul style="list-style-type: none"> Mitigation is designed to decrease the potential for North Atlantic right whale vessel strikes (which could result in mortality or serious injury).

5.7.13 Jacksonville Operating Area North Atlantic Right Whale Mitigation Area

Table 5.7-15 details geographic mitigation related to active sonar, explosives, and physical disturbance and strike stressors in the Jacksonville OPAREA. Mitigation is a continuation from the 2018 Final EIS/OEIS, with clarification that requirements pertain to in-water stressors (i.e., not activities with no potential marine mammal impacts, such as air-to-air activities).

Table 5.7-15: Jacksonville Operating Area North Atlantic Right Whale Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Acoustic	<ul style="list-style-type: none"> From November 15 to April 15 within the mitigation area, prior to vessel transits or military readiness activities involving active sonar, in-water explosives (including underwater explosives and explosives deployed against surface targets), or non-explosive ordnance deployed against surface targets (including aerial-deployed mines), the Action Proponents will initiate communication with Fleet Area Control and Surveillance Facility, Jacksonville to obtain Early Warning System data. The facility will advise of all reported North Atlantic right whale sightings in the vicinity of planned vessel transits and military readiness activities. <ul style="list-style-type: none"> Sightings data will be used when planning event details (e.g., timing, location, duration) to minimize interactions with North Atlantic right whales to the maximum extent practical. The Action Proponents will provide Lookouts the sightings data prior to standing watch to help inform visual observations. 	<ul style="list-style-type: none"> The Early Warning System is described in Section 5.5 (Monitoring, Research, and Adaptive Management). Mitigation is designed to minimize potential North Atlantic right whale vessel interactions and exposure to stressors with the potential for mortality, injury, or behavioral disturbance within the portions of the reproduction (calving) critical habitat designated by NMFS in 2016 (81 <i>Federal Register</i> 4838) and important migration habitat that overlaps the Jacksonville OPAREA. The benefits of the mitigation would be substantial because the Jacksonville OPAREA is an Action Proponent concentration area within the southeastern region.
Explosives		
Physical disturbance and strike		

Notes: NMFS = National Marine Fisheries Service; OPAREA = operating area

5.7.14 Southeast North Atlantic Right Whale Mitigation Area

Table 5.7-16 details geographic mitigation related to active sonar and explosives (and special reporting for their use), and physical disturbance and strike stressors off the Southeastern United States. Mitigation is a continuation from the 2018 Final EIS/OEIS, with clarification that requirements pertain to the use of in-water stressors (i.e., not activities with no potential marine mammal impacts, such as air-to-air activities). The mitigation area is the largest area practical to implement within the North Atlantic right whale reproduction critical habitat designated by NMFS in 2016 (81 *Federal Register* 4838). Mitigation is designed to protect reproductive mothers, calves, and mother–calf pairs within the only known North Atlantic right whale calving habitat. Mitigation benefits would be substantial because the mitigation area encompasses the Georgia and northeastern Florida coastlines (where the highest seasonal concentrations occur) and coastal extent of the Jacksonville OPAREA (an Action Proponent concentration area).

Table 5.7-16: Southeast North Atlantic Right Whale Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Acoustic	<ul style="list-style-type: none"> From November 15 to April 15 within the mitigation area, the Action Proponents will not use high-frequency active sonar; or low-frequency or mid-frequency active sonar except: <ul style="list-style-type: none"> To the maximum extent practical, the Action Proponents will minimize use of (1) helicopter dipping sonar (a mid-frequency active sonar source) and (2) low-frequency or surface ship hull-mounted mid-frequency active sonar during navigation training or object detection. 	<ul style="list-style-type: none"> Mitigation is designed to minimize exposure to levels of sound that have the potential to cause injurious or behavioral impacts.
Explosives	<ul style="list-style-type: none"> From November 15 to April 15 within the mitigation area, the Action Proponents will not detonate in-water explosives (including underwater explosives and explosives deployed against surface targets). From November 15 to April 15, the Action Proponents will not detonate explosive sonobuoys within 3 NM of the mitigation area. 	<ul style="list-style-type: none"> Mitigation is designed to prevent exposure to explosives with the potential for injury, mortality, or behavioral disturbance. Mitigation to prohibit explosive sonobuoys within 3 NM is designed to further prevent exposure to large and dispersed explosive sonobuoy fields.
Physical disturbance and strike	<ul style="list-style-type: none"> From November 15 to April 15 within the mitigation area, the Action Proponents will not deploy non-explosive ordnance against surface targets (including aerial-deployed mines). From November 15 to April 15 within the mitigation area, surface ships will minimize north-south transits and will implement speed reductions after they observe a North Atlantic right whale, if they are within 5 NM of an Early Warning System sighting reported within the past 12 hours, and at night and in poor visibility. From November 15 to April 15 within the mitigation area, the Action Proponents will not conduct vessel propulsion testing. 	<ul style="list-style-type: none"> Mitigation is designed to prevent strikes by non-explosive ordnance, and to decrease the potential for vessel strikes (which could result in mortality or serious injury). North-south transit restrictions are designed to reduce the time ships spend in the highest seasonal occurrence areas to further decrease vessel strike risk.
Acoustic	<ul style="list-style-type: none"> From November 15 to April 15 within the mitigation area, prior to vessel transits or military readiness activities involving active sonar, in-water explosives (including underwater explosives and explosives deployed against surface targets), or non-explosive ordnance deployed against surface targets (including aerial-deployed mines), the Action Proponents will initiate communication with Fleet Area Control and Surveillance Facility, Jacksonville to obtain Early Warning System sightings data. The facility will advise of all reported North Atlantic right whale sightings in the vicinity of planned vessel transits and military readiness activities. To the maximum extent practical, the Action Proponents will provide Lookouts the sightings data prior to standing watch to help inform visual observations. 	<ul style="list-style-type: none"> The Early Warning System is described in Section 5.5 (Monitoring, Research, and Adaptive Management). Mitigation is designed to minimize potential vessel interactions and exposure to stressors with the potential for mortality, injury, or behavioral disturbance.
Explosives		
Physical disturbance and strike		
Special reporting for the use of acoustics and explosives	<ul style="list-style-type: none"> The Action Proponents will report the total annual hours and counts of active sonar and in-water explosives (including underwater explosives and explosives deployed against surface targets) used in the mitigation area from November 15 to April 15 in their training and testing activity reports submitted to NMFS. 	<ul style="list-style-type: none"> Special reporting requirements are designed to aid the Action Proponents and NMFS in continuing to analyze potential impacts of training and testing in the mitigation area.

Notes: NM = nautical mile; NMFS = National Marine Fisheries Service

5.7.15 Southeast North Atlantic Right Whale Special Reporting Mitigation Area

Table 5.7-17 details geographic mitigation related to special reporting requirements for the use of active sonar and explosives off the southeastern United States. Mitigation is a continuation from the 2018 Final EIS/OEIS.

Table 5.7-17: Southeast North Atlantic Right Whale Special Reporting Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Special reporting for the use of acoustics and explosives	<ul style="list-style-type: none"> From November 15 to April 15, the Action Proponents will report the total annual hours and counts of active sonar and in-water explosives (including underwater explosives and explosives deployed against surface targets) used within the mitigation area in their training and testing activity reports submitted to NMFS. 	<ul style="list-style-type: none"> The mitigation area extent aligns with the boundaries of the North Atlantic right whale critical habitat for reproduction designated by NMFS in 2016 (81 <i>Federal Register</i> 4838). Special reporting requirements are designed to aid the Action Proponents and NMFS in continuing to analyze potential impacts of training and testing in the mitigation area.

Note: NMFS = National Marine Fisheries Service

5.7.16 Dynamic North Atlantic Right Whale Mitigation Area

Table 5.7-18 details geographic mitigation related to active sonar, explosives and physical disturbance and strike stressors off the eastern United States. Mitigation is a continuation from the 2018 Final EIS/OEIS, with clarification that requirements pertain to the use of in-water stressors (i.e., not activities with no potential marine mammal impacts, such as air-to-air activities).

Table 5.7-18: Dynamic North Atlantic Right Whale Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Acoustic	<ul style="list-style-type: none"> The mitigation area extent matches the boundary of the U.S. Exclusive Economic Zone on the East Coast, which is the full extent of where Dynamic Management Areas could potentially be established by NMFS year-round. The Action Proponents will provide North Atlantic right whale Dynamic Management Area information (e.g., location and dates) to applicable assets transiting and training or testing in the vicinity of the Dynamic Management Area. <ul style="list-style-type: none"> The information will alert assets (and their Lookouts) to the possible presence of North Atlantic right whales in their vicinity. Lookouts will use the information to help inform visual observations during military readiness activities that involve vessel movements, active sonar, in-water explosives (including underwater explosives and explosives deployed against surface targets), or non-explosive ordnance deployed against surface targets in the mitigation area. In PMAP reports generated in the Dynamic North Atlantic Right Whale Mitigation Area, Action Proponents will <ul style="list-style-type: none"> Provide the WhaleMap web address (whalemap.org); Advise that risk of whale strike is increased after observing a North Atlantic right whale; when operating within 5 NM of a known sighting reported within the past 24 hours; within a NMFS-designated Seasonal Management Area, Dynamic Management Area, or Slow Zone; and when transiting at night or during periods of reduced visibility; and 	<ul style="list-style-type: none"> NMFS manages the Dynamic Management Areas program off the U.S. East Coast with the primary goal of reducing the likelihood of North Atlantic right whale vessel strikes from all mariners. Mitigation is designed to minimize potential North Atlantic right whale vessel interactions and exposure to acoustic stressors, explosives, and physical disturbance and strike stressors that have the potential to cause mortality, injury, or behavioral disturbance
Explosives		
Physical disturbance and strike		

Table 5.7-18: Dynamic North Atlantic Right Whale Mitigation Area Requirements (continued)

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Physical disturbance and strike (continued)	<ul style="list-style-type: none"> – Reinforce the requirement of the International Regulations for Preventing Collisions at Sea for vessels to proceed at a safe speed, appropriate to the prevailing circumstances and conditions, to avoid a collision with any sighted object or disturbance, including any marine mammal or sea turtle. – During propulsion testing in the mitigation area, to the maximum extent practical, Lookouts will be provided recent whalemap.org sightings data to help inform visual observations. 	

Notes: NM = nautical mile; NMFS = National Marine Fisheries Service; U.S. = United States

5.7.17 Rice's Whale Mitigation Area

Table 5.7-19 details geographic mitigation related to active sonar and explosives (and special reporting for their use) in the northeastern Gulf of America. Mitigation is a continuation from the 2018 Final EIS/OEIS. The mitigation area extent aligns with this species' small and resident population area identified by NMFS in its 2016 status review (Rosel et al., 2016).

Table 5.7-19: Rice's Whale Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Acoustic	<ul style="list-style-type: none"> • The Action Proponents will not use more than 200 hours of surface ship hull-mounted mid-frequency active sonar annually within the mitigation area. 	<ul style="list-style-type: none"> • Mitigation is designed to reduce exposure of individuals within the small and resident population of Rice's whales to potentially injurious levels of sound by the type of active sonar with the highest source power used in the Study Area.
Explosives	<ul style="list-style-type: none"> • Except during mine warfare activities, the Action Proponents will not detonate in-water explosives (including underwater explosives and explosives deployed against surface targets) within the mitigation area. • The Action Proponents will not detonate explosive sonobuoys within 3 NM of the mitigation area. 	<ul style="list-style-type: none"> • Mitigation is designed to reduce exposure of individuals within the small and resident population of Rice's whales to explosives that have the potential to cause injury, mortality, or behavioral disturbance. • Mitigation to prohibit explosive sonobuoys within 3 NM is designed to further prevent exposure to large and dispersed explosive sonobuoy fields.
Physical disturbance and strike	<ul style="list-style-type: none"> • The Action Proponents will avoid conducting vessel propulsion testing events in the mitigation area, to the maximum extent practical. • The Action Proponents will issue an annual awareness message to Navy and Coast Guard vessels that routinely train or test in the vicinity of the Rice's Whale Critical Habitat. The message will advise that risk of whale strike is increased when transiting through Rice's whale critical habitat (i.e., within the 100- to 400-m isobaths), particularly at night or during periods of reduced visibility, and reinforce the requirement of the International Regulations for 	<ul style="list-style-type: none"> • Mitigation is designed to decrease the potential for Rice's whale vessel strikes (which could result in mortality or serious injury).

Table 5.7-19: Rice's Whale Mitigation Area Requirements (continued)

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Physical disturbance and strike (continued)	Preventing Collisions at Sea for vessels to proceed at a safe speed, appropriate to the prevailing circumstances and conditions, to avoid a collision with any sighted object or disturbance, including any marine mammal or sea turtle.	
Special reporting for the use of acoustics and explosives	<ul style="list-style-type: none"> The Action Proponents will report the total annual hours and counts of active sonar and in-water explosives (including underwater explosives and explosives deployed against surface targets) used in the mitigation area in their training and testing activity reports submitted to NMFS. 	<ul style="list-style-type: none"> Special reporting requirements are designed to aid the Action Proponents and NMFS in continuing to analyze potential impacts of training and testing in the mitigation area.

Notes: m =meter; NMFS = National Marine Fisheries Service

5.7.18 Virginia Capes Bird Mitigation Area

Table 5.7-20 details geographic mitigation related to rotary-wing aircraft overflights in and adjacent to the Virginia Capes Range Complex. For the purpose of showing this area on a map, the mitigation area extent is a shoreline buffer around Fisherman Island and along the coast of the Virginia Capes Range Complex from Delaware to North Carolina. Mitigation is a continuation from the 2018 Final EIS/OEIS.

Table 5.7-20: Virginia Capes Bird Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Acoustic	<ul style="list-style-type: none"> Rotary-wing aircraft will maintain at least a 3,000-foot altitude and a 1,000-yd horizontal distance from Fisherman Island National Wildlife Refuge when transiting between the Virginia Capes Range Complex and Norfolk Naval Station for at-sea training or testing. After transiting from Norfolk Naval Station for at-sea training or testing, rotary-wing aircraft will maintain a distance of at least 1 NM from the beach when flying within the Virginia Capes Range Complex. 	<ul style="list-style-type: none"> One of the highest concentration areas for rotary-wing aircraft training is located adjacent to fleet concentration areas at Naval Station Norfolk in the lower Chesapeake Bay and off the coast of Virginia Beach, Virginia, within the Virginia Capes OPAREA. This area is located nearby important nesting habitat for ESA-listed birds that breed along barrier islands from Delaware to North Carolina. Mitigation is designed to help avoid potential disturbances to nesting birds within the Virginia Capes Range Complex and Fisherman Island National Wildlife Refuge.

Notes: ESA = Endangered Species Act; NM = nautical mile; OPAREA = operating area

5.7.19 Dry Tortugas Bird and Cultural Resource Mitigation Area

Table 5.7-21 details geographic mitigation related to aircraft activities near the Dry Tortugas, Florida. The mitigation area matches the boundary of the Dry Tortugas OPAREA. Mitigation is a continuation from the 2018 Final EIS/OEIS.

Table 5.7-21: Dry Tortugas Bird and Cultural Resource Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Acoustic	<ul style="list-style-type: none"> The Action Proponents will not conduct air combat maneuver flights below a 5,000-foot altitude, or tactical maneuvers resulting in supersonic flights below a 20,000-foot altitude. The Action Proponents will conduct aircraft activities in the airspace adjacent to Fort Jefferson in a manner that will avoid sonic booms to the maximum extent practical. This includes conducting training flights predisposed to supersonic conditions within designated airspace at least 30 NM from Fort Jefferson. The Action Proponents will incorporate mitigation instructions into pre-flight planning guidance for applicable aircrew. 	<ul style="list-style-type: none"> Mitigation is designed to help preserve the structural integrity of Fort Jefferson, which is listed on the National Register of Historic Places. Fragile mortar in Fort Jefferson's brick masonry is susceptible to damage from sonic booms. Mitigation will also help reduce potential disturbance from aircraft overflight noise on a nesting colony of roseate terns in the Dry Tortugas Islands.

Note: NM = nautical mile

5.7.20 Demolition Key Queen Conch Mitigation Area

Table 5.7-22 details geographic mitigation related to the use of explosives near Demolition Key, Florida (and special reporting for their use). The mitigation area is the waters surrounding Demolition Key. Mitigation is new for this Supplemental EIS/OEIS.

Table 5.7-22: Demolition Key Queen Conch Mitigation Area Requirements

<i>Category</i>	<i>Mitigation Requirements</i>	<i>Mitigation Benefits</i>
Explosives	<ul style="list-style-type: none"> Action Proponent Personnel involved in this activity will review training module to include: <ul style="list-style-type: none"> how to identify a queen conch (adult and juvenile), how to handle them, survey protocols, and relocation protocols. Before the Activity: <ul style="list-style-type: none"> Up to 24 hours prior to detonation, personnel will survey 50-yd radius from the detonation location. If any conchs (adult or juvenile) are observed, they will be relocated to the back side of Demolition Key, following temporary relocation guidance. 	<ul style="list-style-type: none"> The mitigation will ensure that impacts to queen conch are reduced. The mitigation is designed to protect queen conch at their known locations surrounding Demolition Key.
Special reporting for the use of explosives	<ul style="list-style-type: none"> Action Proponents will report the number of events and number of conchs moved each year in the annual monitoring report. 	

Note: yd = yard

5.8 SUMMARY OF NEW OR MODIFIED MITIGATION REQUIREMENTS

Table 5.8-1 summarizes new mitigation measures and substantive modifications to existing measures as compared to the 2018 Final EIS/OEIS.

Table 5.8-1: Summary of New or Modified Mitigation Requirements

<i>Category</i>	<i>New or Modified Mitigation Requirements for this Supplemental EIS/OEIS</i>
Activity-Based Mitigations	
Lookout Teams	This Supplemental EIS/OEIS includes a requirement for additional personnel on the platform conducting the event, or on additional participating platforms, to serve as part of the Lookout Team for all acoustic, explosive, and physical disturbance and strike stressor mitigation categories. In the 2018 Final EIS/OEIS, additional personnel were required to assist Lookouts for explosive events only. The Action Proponents have also been, in practice, implementing this for active sonar and non-explosive events, and are now formalizing their current practice as a mitigation requirement. Additionally, the <i>U.S. Navy Lookout Training Handbook</i> was updated in 2022 to include a more robust chapter on environmental compliance, mitigation, and marine species observation tools and techniques (NAVEDTRA 12968-E). These changes are collectively designed to improve the effectiveness of activity-based mitigation.
Broadband and Other Active Acoustic Sources	For this Supplemental EIS/OEIS, a 200-yd shut down mitigation zone would apply to broadband and other active acoustic sources less than 200 dB, while the tiered 1,000-yd power down/50-yd power down/200-yd shut down mitigation zones would apply to those sources greater than or equal to 200 dB. This requirement is meant to encompass new acoustic sources (e.g., sources used for oceanographic and acoustic research) that use a range of frequencies. Broadband source mitigation zones were not specified in the 2018 Final EIS/OEIS.
Air Guns	For this Supplemental EIS/OEIS, the air gun mitigation zone size has been increased from 150 yd to 200 yd for consistency with other active acoustic sources.
High-Altitude Aircraft	This Supplemental EIS/OEIS clarifies that aircraft operating at high altitudes (e.g., Maritime Patrol Aircraft) are exempt from requirements to conduct activity-based mitigation. When operating at high altitudes, observations for marine mammals or sea turtles would not be effective.
Vessel Movements	This Supplemental EIS/OEIS clarifies that one or more Lookouts will be posted in accordance with the most recent navigation guidance, which is subject to change over time. The 2018 Final EIS/OEIS required one Lookout on underway vessels.
Unmanned Vehicles	This Supplemental EIS/OEIS includes new activity-based mitigation requirements for applicable events that involve Unmanned Surface Vehicles and Unmanned Underwater Vehicles (and the sources they use, tow, or deploy) that are already being escorted and operated under positive control by a manned surface vessel. In the 2018 Final EIS/OEIS, activity-based mitigations were not required for unmanned vehicles or sources they used, towed, or deployed.
Research-Based Sub-Surface Explosives	This Supplemental EIS/OEIS includes requirements for “research-based sub-surface explosives” to account for new explosive events with research applications (e.g., acoustic and oceanographic research) that would use 0.1 to 5-lb. NEW. These requirements are grouped within the explosive sonobuoy mitigation category because of their similarities between the charge sizes, detonation locations within the water column, and platforms that would be conducting activity-based mitigation.
Explosive Mine Neutralization (with Divers)	This Supplemental EIS/OEIS includes requirements to observe for manta rays and hammerhead sharks before, during, and after the activity.
All explosive categories (except Ship Shock Trials)	This Supplemental EIS/OEIS includes clarifying requirement language to immediately suspend explosive use if a marine mammal is visibly injured or killed as a result of a detonation. It has been Navy policy for many years to suspend the use of explosives if a marine mammal is visibly injured or killed as a result of detonation. However, since the publication of the Draft Supplemental EIS/OEIS, the Action Proponents have explicitly added this requirement to the activity-based mitigations for all activities involving the use of explosives, with the exception of Ship Shock Trials, which already has this requirement explicitly stated.

Table 5.8-1: Summary of New or Modified Mitigation Requirements (continued)

<i>Category</i>	<i>New or Modified Mitigation Requirements for this Supplemental EIS/OEIS</i>
Geographic Mitigation	
Artificial Reef, Live Hard Bottom, Submerged Aquatic Vegetation, and Shipwreck Mitigation Areas	This Supplemental EIS/OEIS includes new mitigation for precisely placed seafloor devices developed for live hard bottom habitats during the 2022 Hawaii-Southern California Training and Testing Study Area's Essential Fish Habitat consultation reinitiation (U.S. Department of the Navy, 2022a). For this Supplemental EIS/OEIS, that mitigation is being applied to the whole mitigation area category of live hard bottom as well as artificial reefs, submerged aquatic vegetation, and shipwrecks, for consistency and practicality of implementation.
Inshore Manatee and Sea Turtle Mitigation Areas	<p>This Supplemental EIS/OEIS includes:</p> <ul style="list-style-type: none"> • A reduction in the number of Lookouts required during pierside use of active sonar at Naval Submarine Base Kings Bay and Port Canaveral, Florida (from four to two) due to space restrictions. • Removal of the requirement for Lookouts to wear polarized sunglasses in the mitigation area. Instead, the use of polarized sunglasses will be encouraged for all Lookouts in this Supplemental EIS/OEIS regardless of location as described in Section 5.6 (Activity-Based Mitigation). • Clarification that relevant sightings at Naval Submarine Base Kings Bay will be reported to Port Operations. The 2018 Final EIS/OEIS required sightings to be reported to Port Operations, the Georgia Department of Natural Resources sightings hotline, and the Base Natural Resources Manager. This language has been updated for consistency with the installation's Integrated Natural Resource Management Plan, which specifies the record-keeping and communication protocols that should be followed in response to relevant sightings. • Clarification of language regarding fendering techniques at Naval Submarine Base Kings Bay to state that submarines will ensure proper techniques to keep off the quay wall. The 2018 Final EIS/OEIS implied that Navy would use buoys to keep submarines 20 feet off the quay wall. This language has been updated to allow flexibility in equipment used (which could include but is not limited to buoys) and distance off the wall (which will vary based on the fendering technique and equipment used). • Removal of language regarding manatee propeller guards, manatee awareness education and signage, and communication protocols for manatee sightings at Naval Station Mayport, all of which are actions managed under the Integrated Natural Resource Management Plan.
Ship Shock Trial Mitigation Areas	For this Supplemental EIS/OEIS, the Action Proponents repositioned the ship shock trial box outside of the Rice's whale core distribution area, and into a new location that would avoid potential exposure of Rice's whales to injurious levels of sound.
Demolition Key Queen Conch Mitigation Area	This Supplemental EIS/OEIS includes new mitigation for explosives and special reporting for the use of those explosives around Demolition Key, Florida. The mitigation requirements include training for the handling and relocation of queen conchs, surveys for queen conchs prior to explosive activity, temporary relocation of queen conchs, and special reporting regarding the number of events and number of queen conchs moved each year.
Panama City Gulf Sturgeon and Sea Turtle Mitigation Area	This Supplemental EIS/OEIS includes new explosive mitigation requirements to avoid conducting line charge testing in nearshore areas off of beaches with known sea turtle nesting, to the maximum extent practicable and as mission allows, from March 1 to September 30.
Southeast North Atlantic Right Whale, Rice's Whale, and Martha's Vineyard North Atlantic Right Whale Mitigation Areas	<p>This Supplemental EIS/OEIS includes:</p> <ul style="list-style-type: none"> • New explosive mitigation requirements that prohibit detonation of explosive sonobuoys within 3 NM of the Southeast North Atlantic Right Whale and Rice's Whale mitigation areas. This is an existing requirement for the Northeast North Atlantic Right Whale Mitigation Area. • New physical disturbance and strike requirements to avoid conducting vessel propulsion testing events in the mitigation areas, to the maximum extent practical. This requirement is in effect year-round for the Rice's Whale and Martha's Vineyard North Atlantic Right Whale mitigation areas, and from November 15 to April 15 in the Southeast North Atlantic Right Whale Mitigation Area.

Table 5.8-1: Summary of New or Modified Mitigation Requirements (continued)

<i>Category</i>	<i>New or Modified Mitigation Requirements for this Supplemental EIS/OEIS</i>
Dynamic North Atlantic Right Whale Mitigation Area	This Supplemental EIS/OEIS includes a new physical disturbance and strike mitigation requirement that during propulsion testing in the mitigation area, to the maximum extent practical, Lookouts will be provided recent whalemap.org sightings data to help inform visual observations.

Notes: dB = decibel; EIS = Environmental Impact Statement; lb. = pound; NM = nautical mile; OEIS = Overseas Environmental Impact Statement; U.S. = United States; yd = yard

5.9 MITIGATION CONSIDERED BUT ELIMINATED

Mitigation measures that were considered but eliminated for not meeting the appropriate balance between being environmentally beneficial and practical to implement are described in Table 5.9-1.

Table 5.9-1: Mitigation Considered but Eliminated

Mitigation Considered	Not Sufficiently Beneficial	Impractical			Assessment Summary
		Criterion 1: Safety	Criterion 2: Sustainability	Criterion 3: Mission	
1. Mitigating for navigation sonar		X			Shutting down or powering down active sonar used for safety of navigation would present unacceptable safety risks to personnel and equipment.
2. Activity-based mitigations for long-duration acoustic sources			X		Long-duration active sonar sources, such as low-level sources used by Office of Naval Research for acoustic and oceanographic research, are deployed in remote locations for long time spans (e.g., 1 year). Adding visual observers would require substantial additional resources (i.e., personnel and equipment) in excess of what is available, and associated increases in operational costs.
3. Activity-based mitigations for acoustic sources not under positive control	X				Activity-based mitigations for active sonar sources not under positive control would not be effective because these types of sources could not be powered down or shut down in response to a sighting after they are deployed.
4. Activity-based mitigations for high-altitude aircraft	X				Visual observations by Lookouts positioned in aircraft operating at high altitudes would not be effective due to the vertical distance between the mitigation zone and observation platform.
5. Activity-based mitigations for manned escort vessels for all use of unmanned platforms			X		Unmanned platforms are remotely controlled or designed to operate independently, oftentimes in remote locations or for long time spans. Adding escort vessels (when they are not already participating in an event) for the purpose of activity-based mitigation would require substantial additional resources (i.e., personnel and equipment) in excess of what is available, and an associated increase in operational costs.
6. Adding third-party marine species observers to conduct visual observations for additional event types		X	X	X	Adding third-party visual observers to observe additional event types (i.e., beyond ship shock trials) would require substantial additional resources in excess of what is available (i.e., berthing and space availability), and an associated increase in operational costs. The use of third-party observers presents security clearance issues, as well as national security concerns due to the requirement to provide advance notification of specific times and locations of platform movements and activities (e.g., vessels using active sonar). Events may occur simultaneously and in various locations throughout the Study Area, and some may last for a long period of time (e.g., weeks). Event timetables may be based on free-flow development of tactical situations and cannot be precisely fixed to accommodate arrival of third-party aircraft or vessels. Pre-event surveys to clear areas prior to an event begins would be ineffective for the purpose of real-time mitigation (e.g., the location of a moving animal in proximity to the mitigation zone would change, animals could move in or out of the event area after surveys have been completed). For offshore events, the length of time observers would spend on station would be limited due to aircraft fuel restrictions. Increased safety risks would be associated with offshore surveys and the presence of civilian aircraft or vessels in the vicinity of events (e.g., sea space conflicts, airspace conflicts, proximity to explosives).
7. Requiring active sonar mitigation for marine mammals swimming at the bow, alongside the vessel, or directly behind the vessel	X			X	Marine mammals (e.g., dolphins) intentionally bow-riding, swimming alongside to wake-ride, or pursuing underway vessels would be out of the main active sonar transmission axis. Furthermore, implementing mitigation for animals persistently located within an active sonar mitigation zone (due to their intentional pursuit of underway vessels) would have the same types of impacts on mission requirements as increasing mitigation zone size, which is described in row 15 of this table.

Table 5.9-1: Mitigation Considered but Eliminated (continued)

Mitigation Considered	Not Sufficiently Beneficial	Impractical			Assessment Summary
		Criterion 1: Safety	Criterion 2: Sustainability	Criterion 3: Mission	
8. Adding additional Lookouts or observation platforms		X	X	X	The number of required Lookouts and observation platforms is based on resource availability (e.g., crews, platforms, and equipment), safety considerations (i.e., space restrictions, sea space or airspace conflicts), and duty assignments (e.g., requiring additional personnel or reassigning duties). Adding vessels or aircraft to observe a mitigation zone would result in sea space or airspace conflicts with the event participants. For explosives, weapon firing, or ordnance deployment, this would increase safety risks due to the presence of additional vessels or aircraft within the vicinity of explosives, intended impact locations, or projectile paths. Sea space and airspace conflicts would either require participating platforms to modify their flight plans or vessel movement tracks (which would reduce event realism) or force the added observation platforms to position themselves a safe distance away from the activity area (which would not be effective). However, additional personnel on platforms conducting the events, or on additional participating platforms, will serve as part of the Lookout Team for all acoustic, explosive, and physical disturbance and strike stressor mitigation categories as described in Section 5.6 (Activity-Based Mitigation).
9. Developing additional weapon firing mitigation zones	X				Weapon firing noise from weapon systems other than large caliber guns (which are deck-mounted on surface ships with a muzzle that extends over the water) would not expose marine mammals or sea turtles to potentially injurious levels of underwater sound.
10. Developing a mitigation zone for non-explosive vessel-deployed mines	X				Mitigation zones for non-explosive vessel-deployed mines is not warranted because of the extremely low potential for physical strike of a marine mammal or sea turtle from a mine deployed so close to the water surface (by vessels that are implementing vessel movement mitigation for marine mammals and sea turtles), or below the surface for submarine-deployed mines.
11. Developing mitigation zones around aerial targets	X				Mitigation zones for explosive and non-explosive weapon firing is not warranted for ordnance fired against air targets because there is no potential for direct impact because the detonations occur in air, and the potential for projectile fragments to co-occur in space and time with a marine mammal or sea turtle at or near the surface is extremely low.
12. Developing mitigation zones for surface-to-surface missiles and rockets	X		X	X	Mitigation zones apply to missiles and rockets deployed from aircraft because aircraft can fly over the intended impact area prior to commencing firing. Mitigation would not be effective for vessel-deployed missiles and rockets (without requiring additional observation platforms) because of the distance between the firing platform and target location. It would not be possible for vessels to conduct close-range observations due to the length of time (and associated operational costs and event delays) it would take to complete observations and then transit back to the firing position (typically around 15 or 75 NM each way, depending on the event).
13. Establishing a minimum pre-event or post-event observation duration for additional events			X	X	Some events have established minimum time requirements for observations prior to the initial start of an event or after completion of an event, while the time requirements for other events must remain more general to accommodate dynamic event schedules or other operational factors. Requiring minimum pre-event or post-event observation durations would have the same types of impacts on mission requirements as increasing the mitigation zone size as described in row 15 of this table.
14. Using developmental mitigation technologies for mitigation	X				As described in Section 5.5 (Monitoring, Research, and Adaptive Management), the Action Proponents plan to continue investing in research on and development of mitigation technologies, such as infrared, thermal detection, unmanned aerial vehicles, passive acoustic range instrumentation, and automated detection software or sensors. The development of any associated mitigation measures will be undertaken in coordination with NMFS through the adaptive management process.

Table 5.9-1: Mitigation Considered but Eliminated (continued)

Mitigation Considered	Not Sufficiently Beneficial	Impractical			Assessment Summary
		Criterion 1: Safety	Criterion 2: Sustainability	Criterion 3: Mission	
15. Increasing mitigation zone sizes, or extending the post-sighting wait periods beyond 10 or 30 minutes		X	X	X	<p>Increasing mitigation zone sizes or post-sighting wait periods would potentially increase the number of instances and the total length of time activities would be ceased or delayed. This would significantly diminish realism in a way that would prevent activities from meeting intended objectives and decrease the ability to complete events as required and on time. This would have implications for fuel restrictions (e.g., need for aircraft to go off station to refuel), personnel fatigue, range scheduling (e.g., sea space and air space conflicts), and operational costs. Multiple refueling events could double (or more) event length, which would decrease the ability for Lookouts to safely and effectively maintain situational awareness of the event area. For events with multiple participants, degrading the training or testing value of one event element degrades the value of all other elements. For active sonar events, requiring additional or lengthier power downs or shutdowns would create fundamental differences in how active sonar would be used in training versus real-world missions. For example, additional power downs or shutdowns would prevent sonar operators from developing and maintaining awareness of the tactical picture. Without realistic training in conditions analogous to real-world missions, sonar operators cannot become proficient in effectively operating active sonar. Sonar operators, vessel crews, and aircrews would be expected to operate sonar during real-world missions in a manner inconsistent with how they were trained. Diminishing proficiency or eroding capabilities presents significant risk to personnel safety during real-world missions and impacts the ability to deploy with required levels of readiness necessary to accomplish tasking by Combatant Commanders or other national security tasking.</p> <p>For events involving explosives, weapon firing, or ordnance deployment, requiring additional or lengthier delays or shut downs would cause a significant loss of training or testing time, reduce the number of opportunities crews have to fire or deploy ordnance on a target, decrease realism, impede the ability for crews to train and become proficient in using weapons or systems, prevent development of the ability to react to changes in the tactical situation or respond to incoming threats, cause significant delays to training or testing schedules, prevent units from meeting individual training and certification requirements, prevent units from deploying with the level of readiness necessary to accomplish their missions, and impede the ability of program managers and weapons system acquisition programs to meet testing requirements per required acquisition milestones or on an as-needed basis to meet operational requirements. For SINKEX, events involving explosive sonobuoys deployed in a large field, explosive torpedo events, and medium- or large caliber gunnery events), visual observations within the margin of increased mitigation zone size would be unsafe and ineffective unless additional observation platforms were allocated. Mission-essential safety protocols require all event participants (including Lookouts) to maintain focus on the activity area for safety of the public, personnel, and equipment. Mitigation zone sizes are correlated with the activity area; therefore, an increase in mitigation zone size would not meet the safety criteria. For example, when air-to-surface medium-caliber gunnery events involve fighter aircraft descending on a target, or rotary-wing aircraft flying a racetrack pattern and descending on a target using a forward-tilted firing angle, maintaining focused attention on the activity area is paramount to aircraft safety. Vessel movement mitigation for marine mammals is based on guidance from NMFS and the USFWS. A mitigation zone size is not specified for sea turtles to allow flexibility based on vessel type and mission requirements (e.g., small boats operating in a narrow harbor). For towed in-water devices, mission and safety requirements determine the operational parameters (e.g., course) for towing platforms. Because these devices are towed and not self-propelled, they generally have limited maneuverability and are unable to make immediate course corrections. For example, a high degree of pilot skill is required when rotary-wing aircraft are deploying in-water devices, safely towing them at relatively low speeds and altitudes, and recovering them. The aircraft can safely alter course to shift the route of the towed device in response to a sighted marine mammal or sea turtle up to a certain extent (i.e., up to the size of the mitigation zone) while still maintaining the parameters needed for stable towing. However, the aircraft would be unable to further alter its course to more drastically course-correct the towed device without decreasing towing stability, which would have implications for safety of personnel and equipment.</p>

Table 5.9-1: Mitigation Considered but Eliminated (continued)

Mitigation Considered	Not Sufficiently Beneficial	Impractical			Assessment Summary
		Criterion 1: Safety	Criterion 2: Sustainability	Criterion 3: Mission	
16. Implementing additional mandatory vessel speed restrictions beyond what is described in Section 5.7 (Geographic Mitigation), such as within Dynamic Management Zones, Slow Zones, and Seasonal Management Areas		X	X	X	<p>As described in Section 5.6.2 (Mitigation Specific to Vessels, Vehicles, and Towed In-Water Devices), vessel movement mitigation involves maneuvering to maintain a specified distance from marine mammals and sea turtles, which may include reducing speed. As described in Section A.1.7 (Standard Operating Procedures), vessels used under the Proposed Action are required to operate in accordance with applicable navigation rules. In addition, vessels transit at speeds optimal for fuel conservation, to maintain schedules, and to meet mission requirements. Vessel captains use the totality of the circumstances to ensure the vessel is traveling at appropriate speeds in accordance with navigation rules. Depending on the circumstances, this may involve adjusting speeds during periods of reduced visibility or in certain locations (e.g., locations with other vessel traffic). NMFS implements various vessel speed management areas (e.g., Seasonal Management Areas, Slow Zones, Dynamic Management Areas) off the U.S. East Coast to reduce the likelihood of North Atlantic right whale vessel strikes. The vessel speed management areas overlap extensive areas of sea space that overlap or are located in proximity to OPAREAs, testing ranges, ports, and pier-side locations that are instrumental to training and testing in the Study Area (e.g., Naval Station Norfolk, Naval Station Mayport). Under the regulations, the vessel speed management area speed restrictions are not mandatory for Federal agencies, such as the Action Proponents. Instead, the Action Proponents have developed vessel speed mitigation to protect North Atlantic right whale and manatees within geographic mitigation areas as described in Section 5.7.7 (Inshore Manatee and Sea Turtle Mitigation Areas), Section 5.7.10 (Northeast North Atlantic Right Whale Mitigation Area), and Section 5.7.14 (Southeast North Atlantic Right Whale Mitigation Area). Additionally, vessels may reduce speeds to maneuver and maintain distance from sighted marine mammals anywhere in the Study Areas as described in Section 5.6.2 (Mitigation Specific to Vessels, Vehicles, and Towed In-Water Devices).</p> <p>Beyond these requirements, for training, additional vessel speed restrictions would be impractical to implement because vessel operators need to train to operate vessels safely and proficiently as they realistically would during real-world missions, including being able to react to changing tactical situations and evaluate system capabilities. For example, during training activities involving flight operations from an aircraft carrier, the vessel must maintain a certain wind speed over the deck to launch or recover aircraft. Depending on wind conditions, the aircraft carrier itself must travel at a certain speed to generate the wind required to launch or recover aircraft. Additionally, operating vessels at speeds that are not optimal for fuel conservation or mission requirements would be unsustainable due to increased time on station and operational costs. Seasonal vessel speed restrictions would result in vessels being unable to meet all of their requirements during their limited time available to be underway based on the complex logistical considerations involved with maintaining individual vessel and deployment schedules. For testing and research, the Action Proponents need to test the full range of their vessels and vessel-deployed system capabilities to ensure safety and functionality in conditions analogous to real-world missions, and before full-scale production or delivery to the fleet. For example, the Action Proponents conduct propulsion testing specifically to test the functionality of vessel propulsion systems, including maneuvering, full-power runs, and endurance runs. During this event, vessels must operate across the full spectrum of capable speeds to accomplish the primary testing objectives.</p>
17. Additional geographic mitigation for active sonar in areas with certain bathymetric features				X	<p>The Action Proponents select locations for certain active acoustic activities based on water depths that are ideal for acoustic propagation research, seafloor types, or bathymetric phenomena (e.g., Hudson Canyon) that are of particular interest for ocean acoustic research and realism of military readiness activities. Shifting events to alternative or sub-ideal locations to avoid certain bathymetric features (e.g., shelf breaks, underwater canyons) would preclude ready access to the environmental and oceanographic conditions needed to meet mission objectives.</p>

Table 5.9-1: Mitigation Considered but Eliminated (continued)

Mitigation Considered	Not Sufficiently Beneficial	Impractical			Assessment Summary
		Criterion 1: Safety	Criterion 2: Sustainability	Criterion 3: Mission	
18. Additional restrictions on major training exercises		X		X	Major training exercises may require large areas of the littorals, open ocean, and nearshore areas for realistic and safe anti-submarine warfare training. Event locations may have to change during an exercise or during exercise planning based on assessments of unit performance or other conditions, such as weather and mechanical issues, which precludes the ability to develop additional restrictions on event location or timing.
19. Restricting training activities to certain established locations		X		X	Modern sensing technologies make training on a large scale without observation more difficult. A foreign military's continual observation of U.S. military training in predictable geographic areas and timeframes would enable foreign nations to gather intelligence and subsequently develop techniques, tactics, and procedures to potentially and effectively counter U.S. military operations. Other activities may be conducted on a smaller and more localized scale, with training or testing at discrete locations that are critical to certain aspects of readiness. Threats to national security are constantly evolving, and the Action Proponents require the ability to adapt training to meet these emerging threats. Restricting access to broad-scale areas of water would impact the ability for training to evolve as threats evolve. Eliminating opportunities to train in myriad at-sea conditions would put U.S. forces at a tactical disadvantage during real-world missions. This would also present a risk to national security if potential adversaries were to be alerted to the environmental conditions within which training has been prohibited.
20. Restrictions on explosives and non-explosive stressor use near additional types of seafloor resources				X	Implementing additional mitigation for other activities or types of seafloor resources would not allow the Action Proponents to continue meeting their mission requirements to successfully accomplish readiness objectives due to restrictions on ready access to a significant portion of the Study Area.
21. Prohibiting activities in areas with low historic use for training or testing				X	The frequency at which an area is used for training or testing does not necessarily equate to its level of importance for meeting an activity objective or collectively contributing to meeting mission requirements. Some infrequently used areas are critical for a particular event.
22. Additional seasonal restrictions for training and testing based on species occurrence or density		X	X	X	Training and testing schedules are based on national tasking, the Optimized Fleet Response Plan and other training plans, Department of Homeland Security strategic goals, evolving geopolitical world events, forecasting of future testing requirements, deployment schedules, maintenance schedules, acquisition schedules, and emerging requirements. The Action Proponents require flexibility in the timing of their use of active sonar and explosives in order to meet mission and deployment schedules. Vessels, aviation squadrons, and testing programs have a limited amount of time available for training and testing. Variables such as maintenance and weather must be accounted for when scheduling event locations and timing. Event locations may have to change during an event or during pre-event planning based on assessments of unit performance or other conditions, such as inclement weather (e.g., hurricanes) and mechanical issues. This precludes the ability to completely prohibit events from occurring seasonally within areas delineated by marine species occurrence or seasonal densities.
23. Restricting active sonar based on time of day or visibility (e.g., weather conditions)				X	Although the majority of active sonar use occurs during the day, the Action Proponents may have a nighttime training requirement for some systems. Training in both good visibility (e.g., daylight, favorable weather conditions) and low visibility (e.g., nighttime, inclement weather conditions) is vital because environmental differences between day and night and varying weather conditions affect sound propagation and the detection capabilities of sonar. Temperature layers that move up and down in the water column and ambient noise levels can vary significantly between night and day. This affects sound propagation and could affect how sonar systems function and are operated.

Table 5.9-1: Mitigation Considered but Eliminated (continued)

Mitigation Considered	Not Sufficiently Beneficial	Impractical			Assessment Summary
		Criterion 1: Safety	Criterion 2: Sustainability	Criterion 3: Mission	
24. Blanket geographic restrictions within certain regions or areas (e.g., distances from shore)		X	X	X	<p>Blanket expansions on the scope or size of mitigation areas would encroach upon the primary water space where military readiness activities are scheduled to occur. The Action Proponents select locations for their events based on proximity to training ranges, available airspace, unobstructed sea space, aircraft emergency landing fields, target storage and deployment locations, systems command support facilities, and areas of historical use that provide critical known bathymetric features and consistency for comparative data collection. Requiring the Action Proponents to shift activities to alternative locations or farther offshore would have significant impacts on safety, sustainability, and the ability to meet mission requirements within limited available timeframes. For example, certain surface-to-surface and air-to-surface small, medium, and large caliber gunnery activities and missile and rocket activities, must be conducted in proximity to the target storage depot at Mayport, Florida, because the associated targets (e.g., remotely controlled jet ski targets) are limited by how far offshore they can safely be employed and controlled based on distance, weather, and sea state. Certain training activities, such as deployment certification exercises that involve integration with multiple warfare components, require large areas of the littorals and open ocean for realistic and safe training. Similarly, the testing community is required to install and test systems on platforms at the locations where those platforms are stationed. Testing associated with new construction ships must occur in locations close to the shipbuilder facilities for reasons associated with construction schedule, proximity to testing ranges and facilities, and safety. Additionally, the testing community has a need for rapid development to quickly resolve tactical deficiencies within locations supported by existing infrastructure and support facilities. Logistical support of range testing can only efficiently and effectively occur when the support is co-located with the testing activities. Some types of pierside and at-sea testing must occur in proximity to naval shipyards or contractor shipyards.</p> <p>Nearshore areas also serve as critical training and testing locations for certain explosive activities. For example, the explosive ordnance disposal training location off the coast of Virginia is vital due to its existing target setup, ideal bottom structure, and good bottom depth to safely train divers with explosives. Explosive ordnance disposal teams can be required to deploy with a 3-week notice, which presents a need to constantly train to maintain readiness for real-world missions. Relocating this activity to a location without these features would increase safety risks and diminish the effectiveness of training events.</p>
25. Implementing active sonar ramp-up	X			X	<p>Implementing active sonar ramp-up procedures during training or testing under the Proposed Action would not be representative of real-world missions and would significantly impact realism. For example, during an anti-submarine warfare exercise using active sonar, ramp-ups would alert opponents (e.g., target submarines) to the transmitting vessel's presence. This would defeat the purpose of the training by allowing the target submarine to detect the searching unit and take evasive measures, thereby denying the sonar operator the opportunity to learn how to locate the submarine. Additionally, based on the source levels, vessel speeds, and sonar transmission intervals that will be used during typical active sonar activities under the Proposed Action, ramp-up would likely be an ineffective mitigation measure for the active sonar activities conducted under the Proposed Action.</p>
26. Reducing annual active sonar hours, replacing active sonar with passive sonar, or modifying active sonar sources for training				X	<p>Passive sonar and other available sensors are used in concert with active sonar to the maximum extent practical. Training with active sonar is essential to national security. Active sonar is the only reliable technology for detecting and tracking potential enemy diesel-electric submarines. Equipment power levels are set consistent with mission requirements. Active sonar signals are designed explicitly to provide optimum performance at detecting underwater objects (e.g., submarines) in a variety of acoustic environments. The ability to effectively operate active sonar is a highly perishable skill that must be repeatedly practiced during realistic training. The Action Proponents must train in the same mode and manner in which they conduct real-world missions. Anti-submarine warfare training typically involves the periodic use of active sonar to develop the "tactical picture," or an understanding of the battle space (e.g., area searched or unsearched, identifying false contacts, and</p>

Table 5.9-1: Mitigation Considered but Eliminated (continued)

Mitigation Considered	Not Sufficiently Beneficial	Impractical			Assessment Summary
		Criterion 1: Safety	Criterion 2: Sustainability	Criterion 3: Mission	
26. Reducing annual active sonar hours, replacing active sonar with passive sonar, or modifying active sonar sources for training (continued)					understanding the water conditions). This can take from several hours to multiple days and typically occurs over vast areas with varying physical and oceanographic conditions (e.g., bathymetry, topography, surface fronts, and variations in sea surface temperature). Sonar operators train to avoid interference and sound-reducing clutter from varying ocean floor topographies and environmental conditions, practice coordinating their efforts with other sonar operators in a strike group, develop skill proficiency in detecting and tracking submarines and other threats, and practice the focused endurance vital to effectively working as a team in shifts around the clock until the conclusion of the event. Active sonar signals are designed explicitly to provide optimum performance at detecting underwater objects (e.g., submarines) in a variety of acoustic environments. The Action Proponents train with various active sonar signals, including up-sweeps and down-sweeps, to accurately replicate operational scenarios. Reducing training realism by restricting the signal used would ultimately prevent units from deploying with the required level of readiness necessary to accomplish their missions and impede the Navy's ability to certify forces to deploy to meet national security tasking. Likewise, testing program requirements include test parameters designed to accurately determine whether a system meets its operational and performance requirements. Reducing realism by restricting the signal used would impact the ability of researchers, program managers, and weapons system acquisition programs to effectively test systems and platforms (and components of these systems and platforms) before full-scale production or delivery to the fleet. For these reasons, modifying or limiting the sonar signal as mitigation is impractical to implement as it would result in degraded realism of training and testing. The Action Proponents use active sonar only when it is essential to the mission. For example, as described in Section 2.4.2.1 (Training), for this Supplemental EIS/OEIS, the Action Proponents are using a representative level of activity (rather than a maximum tempo of training activity in every year), which has reduced the amount of mid-frequency active sonar hours estimated to be necessary to meet training requirements relative to the 2018 Final EIS/OEIS.
27. Replacing active sonar training with synthetic activities (e.g., computer simulated training)				X	The Action Proponents currently use, and will continue to use, computer simulation to augment training whenever possible. Simulators and synthetic training are critical elements that provide early skill repetition and enhance teamwork; however, they cannot replicate the complexity and stresses faced during real-world missions to which the Action Proponents train under the Proposed Action (e.g., anti-submarine warfare training using surface ship hull-mounted mid-frequency active sonar). Just as a pilot would not be ready to fly solo after simulator training, operational Commanders cannot allow personnel to engage in real-world missions based merely on simulator training.
28. Restricting active sonar training during surface ducting conditions				X	Surface ducting occurs when water conditions, such as temperature layers and lack of wave action, result in little sound energy penetrating beyond a narrow layer near the surface of the water. Submarines have long been known to take advantage of the phenomena associated with surface ducting to avoid being detected by active sonar. Training with active sonar in these conditions is a critical component of readiness because sonar operators need to learn how sonar transmissions are altered due to surface ducting, how submarines may take advantage of them, and how to operate sonar effectively under these conditions. Avoiding military readiness activities during surface ducting conditions, reducing power, shutting down active sonar based on environmental conditions, or implementing other sonar modification techniques (e.g., sound shielding) for the purpose of mitigation would affect a Commander's ability to develop the tactical picture. It would also prevent sonar operators from training in conditions analogous to those faced during real-world missions, which is described in row 15 of this table. The ocean conditions contributing to surface ducting change frequently, and surface ducts lack uniformity, may or may not extend over a large geographic area and can be of varying duration, making it difficult to determine where to reduce power and for how long. As noted by the U.S. Supreme Court in <i>Winter v. Natural Resources Defense Council Inc.</i> , 555 U.S. 7 (2008), because surface ducting conditions occur relatively rarely and are unpredictable, it is especially important for the Action Proponents to be able to train under these conditions when they occur.

Table 5.9-1: Mitigation Considered but Eliminated (continued)

Mitigation Considered	Not Sufficiently Beneficial	Impractical			Assessment Summary
		Criterion 1: Safety	Criterion 2: Sustainability	Criterion 3: Mission	
29. Requiring use of active acoustic monitoring devices		X	X	X	During Surveillance Towed Array Sensor System low-frequency active sonar (which is not part of the Proposed Action), the Navy uses a specially designed adjunct high-frequency marine mammal monitoring active sonar, or “HF/M3.” HF/M3 can only be towed at slow speeds and operates like fish finders used by fishermen. Installing the HF/M3 adjunct system on tactical sonar ships used under the Proposed Action would have implications for safety and mission requirements due to impacts on speed and maneuverability, as well as excessive additional operating costs.
30. Requiring mitigation based on passive acoustic detections of marine mammals			X	X	When platforms with passive acoustic monitoring capabilities are already participating in an event, sonar technicians will alert Lookouts to passive acoustic detections of marine mammals as described in Section 5.6 (Activity-Based Mitigation). Significant logistical constraints (e.g., personnel and equipment availability, operational costs) make diverting equipped platforms or constructing and maintaining new passive acoustic monitoring systems impractical. The fluidity and nature of military readiness activities (e.g., fast-paced and mobile readiness evolutions) make it impractical for passive acoustic devices to be used as precise real-time indicators of marine mammal location for mitigation (e.g., active sonar power downs or shutdowns, ceasing use of explosives) without an accompanying visual sighting. Implementing mitigation for animals located outside of the mitigation zone (which could occur due to imprecise localizations or relative movements of animals and the mitigation zone) would have the same types of effects on mission requirements as increasing the mitigation zone size, which is described in row 15 of this table.
31. Reducing explosive counts or NEW, or substituting with non-explosives				X	Activities that involve explosives are inherently different from those that involve non-explosive ordnance. For example, critical components of an explosive Bombing Exercise Air-to-Surface include the assembly, loading, delivery, and assessment of the explosive bomb. Explosive bombing training exercises start with ground personnel, who must practice the building and loading of explosive munitions. Training includes the safe handling of explosive material, configuring munitions to precise specifications, and the loading of munitions onto aircraft. Aircrew must then identify a target and safely deliver fused munitions, discern if the bomb was assembled correctly, and determine bomb damage assessments based on how and where the explosive detonated. An air-to-surface bombing exercise using non-explosive ordnance can train aircrews on valuable skills to locate and accurately deliver munitions on a target; however, it cannot effectively replicate the critical components of an explosive activity in terms of assembly, loading, delivery, and assessment of an explosive bomb. Reducing the counts or sizes of explosives would impede the ability for the Action Proponents to train and become proficient in using explosive weapon systems (which would result in a significant risk to personnel safety during real-world missions), and would ultimately prevent units from meeting individual training and certification requirements (which would prevent them from deploying with the required level of readiness necessary to accomplish missions) and impede the ability to certify forces to deploy to meet national security tasking. For testing, the Action Proponents need to test the full range of their platforms, weapon systems, and components to ensure safety and functionality in conditions analogous to real-world missions, and before full-scale production or delivery to the fleet.
32. Adopting mitigation implemented by foreign military units				X	Mitigation is carefully developed for and assessed by each individual unit based on their own assessment of mitigation benefits and practicality of implementation. Readiness considerations differ based on each nation’s strategic reach, global mission, country-specific legal requirements, and geographic considerations. The Action Proponents will implement mitigation that has been determined to be effective at avoiding impacts from the Proposed Action and practical to implement. Many of these measures are the same as, or comparable to, those implemented by foreign navies. For example, most navies implement some form of mitigation to cease certain activities if a marine mammal is visually observed in a mitigation zone (Dolman et al., 2009). Some navies also implement geographic mitigation. The Action Proponents will implement several mitigation measures and environmental compliance initiatives that are not implemented by foreign navies, such as providing extensive support for scientific monitoring and research and complying with stringent reporting requirements.

Table 5.9-1: Mitigation Considered but Eliminated (continued)

Mitigation Considered	Not Sufficiently Beneficial	Impractical			Assessment Summary
		Criterion 1: Safety	Criterion 2: Sustainability	Criterion 3: Mission	
33. Additional reporting requirements		X	X	X	The Action Proponents developed their reporting requirements in conjunction with NMFS to be consistent with mission requirements and balance the usefulness of the information to be collected with the practicality of collecting it. The Action Proponents' activity reports and incident reports are designed to verify implementation of mitigation; comply with current permits, authorizations, and consultation requirements; and improve future environmental analyses. Additional reporting would be ineffective as mitigation because it would not result in modifications to training activities or further avoidance or reductions of potential impacts. Lookouts are not trained to make species-specific identification and would not be able to provide detailed scientific data if more detailed marine species observation reports were to be required. Furthermore, the Action Proponents do not currently maintain a record management system to collect, archive, analyze, and report every marine species observation or all vessel speed data for every event and all vessel movements. For example, the speed of Action Proponent vessels can fluctuate an unlimited number of times during training or testing events. Developing and implementing a record management system of this magnitude would be unduly cost prohibitive and place a significant administrative burden on vessel operators and activity participants. Burdening operational Commanders, vessel operators, and event participants with requirements to complete additional administrative reporting would distract them from focusing on mission-essential tasks. Additional reporting requirements would draw event participants' attention away from the complex tactical tasks they are primarily obligated to perform, such as driving a warship or engaging in a gunnery event, which would adversely impact personnel safety, public health and safety, and the ability to meet mission objectives.
34. Developing mitigation outside the Action Proponent's legal authority				X	The Action Proponents did not develop mitigation outside their legal authority to implement. For example, the Action Proponents do not have legal authority to develop Marine Protected Areas to restrict commercial or recreational fishing, which is a recommendation received through public comments on previous EIS/OEISs.
35. Restrictions on pierside sonar at additional locations				X	Mitigation to implement source level reductions for pierside mid-frequency active sonar activities at additional locations (e.g., at Port Canaveral, Florida) would not be practical to implement due to the type of submarines and sonar systems used during those events.
36. Requiring NMFS Protected Species Observer (PSO) certification for Navy Lookouts	X		X	X	Requiring NMFS PSO certification for Navy Lookouts is impractical and provides insufficient benefit. NOAA's PSO certification requires educational, experiential, and training qualifications, including a background in biological sciences, which are incompatible with the duties and training of a Navy Lookout. Lookouts perform numerous duties beyond observation, including maintaining proficiency in general seamanship and rate-specific skills. Mandating a biological sciences background would drastically reduce the pool of eligible personnel. Furthermore, PSO certification for all Lookouts would create a substantial administrative burden and severely challenge Lookout manning requirements. The Navy operates numerous large vessels (e.g., destroyers, aircraft carriers) and smaller support craft within the Study Area, each with rotating Lookout crews to manage watch rotations, mitigate fatigue, and ensure vigilance. This rotation, coupled with frequent personnel transfers, would necessitate certifying a large number of Lookouts, significantly complicating manning efforts. Additionally, relying on the NMFS PSO application process could create certification delays incompatible with Navy manning and readiness needs.

Table 5.9-1: Mitigation Considered but Eliminated (continued)

Mitigation Considered	Not Sufficiently Beneficial	Impractical			Assessment Summary
		Criterion 1: Safety	Criterion 2: Sustainability	Criterion 3: Mission	
36. Requiring NMFS Protected Species Observer (PSO) certification for Navy Lookouts (continued)					<p>Existing PSO training curricula vary considerably in frequency, cost, length, activity focus, and geographic scope, and are typically conducted by third-party providers. Establishing a separate Navy PSO training program for Lookouts would be unsustainable within the demanding Optimized Fleet Response Plan and negatively impact Navy readiness.</p> <p>Moreover, Navy Lookouts already must complete Lookout Training, which includes marine resource sighting cues and observation techniques, as well as the roles and responsibilities of Lookouts and the official in charge of an activity. In addition to this training, Lookouts complete NMFS-approved Marine Species Awareness Training. Furthermore, the Lookout Training Handbook was updated in 2022 with a thorough Marine Resources chapter covering topics from identifying indicator species to determining direction of travel.</p> <p>The goal of PSO certification is to ensure that PSOs have the appropriate training to safely and effectively perform their required duties to meet the needs of a particular project. The Navy's Lookout training and qualification program already achieves that goal for Navy's at-sea activities. Therefore, the Navy has determined that PSO certification and/or PSO-specific training would not provide sufficient benefit to outweigh the risk to Navy readiness.</p>

Notes: EIS = Environmental Impact Statement; NM = nautical mile; NMFS = National Marine Fisheries Service; OEIS = Overseas Environmental Impact Statement; SINKEX = Sinking Exercise; U.S. = United States; USFWS = United States Fish and Wildlife Service

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