



ATLANTIC FLEET TRAINING AND TESTING

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INTRODUCTION

The U.S. Navy conducts training and testing activities in many areas around the world, including the Atlantic Ocean and the Gulf of Mexico. Training and testing activities are generally conducted in designated military areas and ranges located in these waters that together comprise the Atlantic Fleet Training and Testing (AFTT) Study Area (see Figure 1).

The Navy has prepared an analysis to assess potential environmental impacts from its training and testing activities and to support issuance of authorizations, permits, and consultations, including those required under the Endangered Species Act and the Marine Mammal Protection Act. The AFTT Draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) has been prepared in accordance with the National Environmental Policy Act (NEPA) and Executive Order 12114, Environmental Effects Abroad of Major Federal Actions. Conducting this analysis is important because it allows the Navy to identify and consider the potential environmental effects of its actions.

The Study Area includes only the at-sea components of the range complexes and testing ranges, with the exception of the Narragansett Bay, lower Chesapeake Bay, St. Andrew Bay, and pierside locations. The remaining inland waters, airspace, and land-based portions of the range complexes are not a part of the Study Area and will be or already have been addressed under separate NEPA documentation.

The Navy's Study Area for the Atlantic Fleet Training and Testing EIS/OEIS is a larger area compared to previous environmental documents completed in this region. The Navy is consolidating analyses of activities in various training and testing areas into a single, comprehensive document to better reflect the area in which the Navy operates.

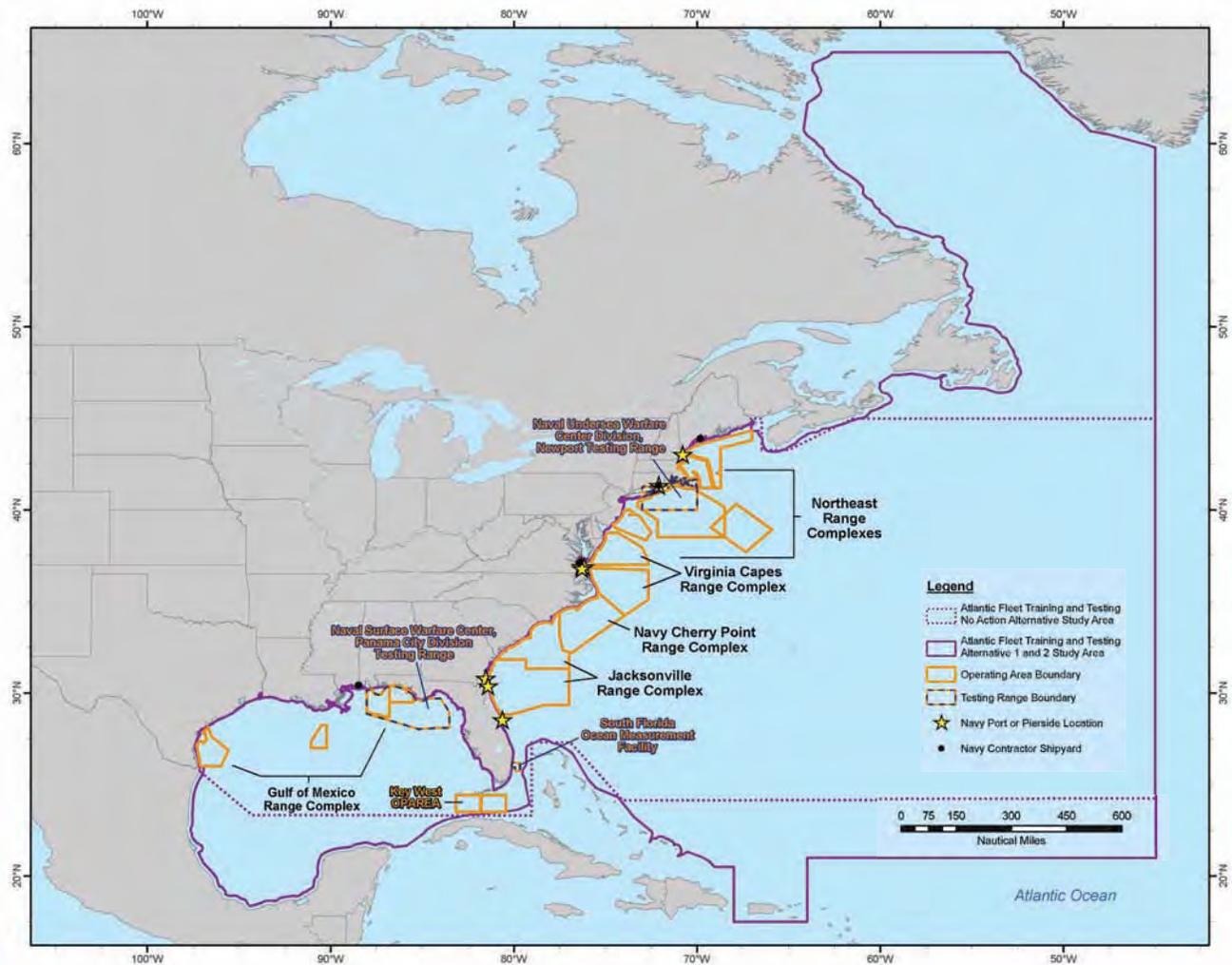


Figure 1. Atlantic Fleet Training and Testing (AFTT) Study Area. The Study Area is in the western Atlantic Ocean and encompasses the waters off the east coast of North America and the Gulf of Mexico. The Study Area covers approximately 2.6 million square nautical miles of ocean area, and includes designated Navy operating areas and special use airspace. Navy pierside locations and port transit channels where sonar maintenance and testing occur, and bays and civilian ports where training and testing occur are also included in the Study Area.

Training and Testing to Support the Way We Fight

Due to the dynamic social, political, economic, and environmental issues that occur in today's world, naval forces must be ready for a variety of military operations – from large-scale conflicts to maritime security to humanitarian assistance and disaster relief.

Most Navy training and testing activities occur in designated air, land, and ocean areas where Sailors can safely train with aircraft, vessels, and sophisticated systems, such as weapons, sensors, and related equipment. In these areas, the Navy can practice real-life situations and provide feedback on how well personnel perform. This training allows Sailors to gain an in-depth understanding of the individual limits and capabilities of the equipment and systems.

Working in the real world also helps the Navy's research, development, test, and evaluation community to develop and improve weapons systems. These activities may include testing of torpedoes, unmanned vehicles, sonar systems, or similar activities that are critical to the success of undersea warfare. Test and evaluation of naval systems in varying marine environments ensures reliability and availability of systems from laboratory concept through the entire life cycle as a deployable asset.

Military training and testing activities must be as realistic as possible to provide Sailors with the experiences necessary for success and safety. Navy range complexes, test ranges, and operating areas within the Study Area have these realistic environments, with sufficient sea and airspace vital for safety and mission success.

Importance of the AFTT Study Area

The AFTT Study Area has unique attributes, including location, proximity, environment, and size, that make it an ideal training and testing venue.

- **Location near Homeports of Naval Forces:** The AFTT Study Area is located near a number of major Navy homeports having a high concentration of key naval organizations, commands, vessels, and infrastructure including:
 - » New London, Connecticut
 - » Norfolk, Virginia
 - » Kings Bay, Georgia
 - » Jacksonville, Florida
- **Proximity to Other Ranges:** Within the Study Area is a series of Navy training range complexes and testing ranges. The combined capabilities of the ranges and their proximity to each other are needed to support multiple aspects of integrated, major training events.
- **In-transit Locations:** The transit areas linking the critical range complexes provide ample opportunity for ships and aircraft to conduct valuable en route training and testing activities.
- **Environment:** The Navy needs to train and test in a variety of ocean environments, including littoral areas (nearshore or shallow water), and the open ocean, to be prepared for deployment. Navy at-sea ranges are essential for air, surface, and subsurface and amphibious training activities, and for a wide range of testing activities.

Realistic training and testing ensure Sailors maintain the highest level of readiness and capability. Diverse training ensures personnel are able to react swiftly and decisively to a wide range of potential situations, from combat to civilian evacuations and humanitarian or disaster relief.



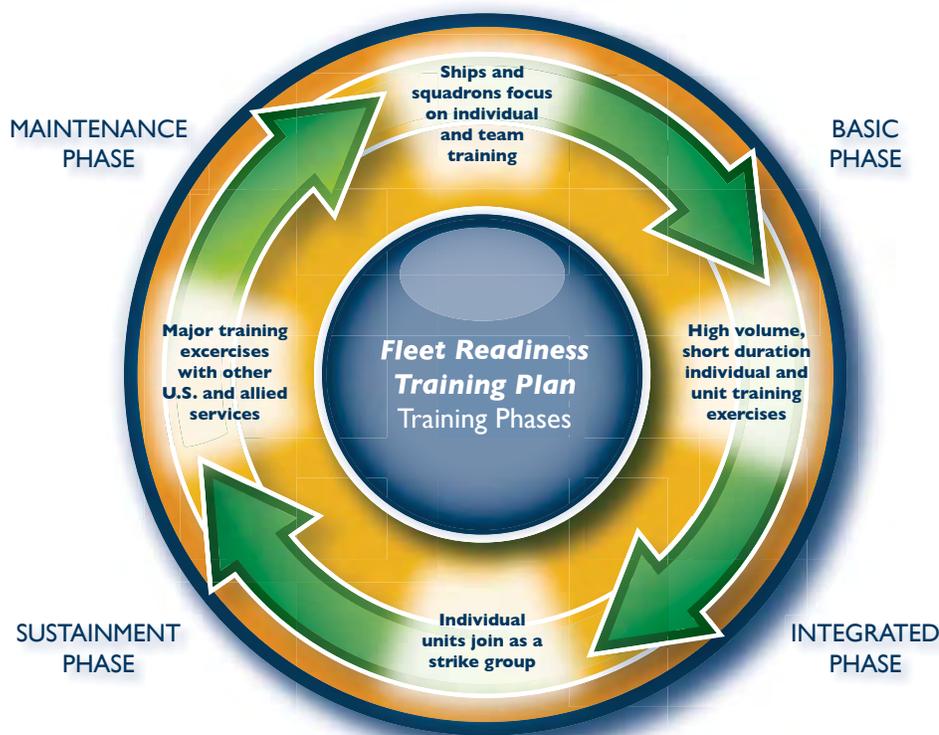


Figure 2. *Fleet Readiness Training Plan.* Navy training ensures Sailors are fully prepared to accomplish the Navy mission and vital skills are maintained during and following deployment.



Training Activities in the AFTT Study Area

Navy training activities occur in a cycle of four phases: basic, integrated, sustainment, and maintenance.

- **The Basic Phase** consists of training exercises performed by individual ships and aircraft. Characterized mostly as unit level training, fundamental combat skills are learned and practiced.
- **The Integrated Phase** combines units into strike groups of multiple ships and aircraft. This phase concludes when the strike group is certified for deployment.
- **The Sustainment Phase** continues strike group training activities to maintain skills after certification for deployment. Sustainment phase activities provide groups with additional training, as well as the ability to evaluate new and developing technologies and tactics.
- **The Maintenance Phase** begins after military forces return from deployment and involve minor repair or major overhaul, depending on the system and its age.

All of the skills necessary to conduct these activities safely and effectively are challenging to achieve and difficult to maintain without constant practice. While simulators provide early skill repetition and enhance teamwork, there is no substitute for training in a realistic environment.

The setting and environmental conditions of the Atlantic Fleet Training and Testing Study Area provide the Navy with a range of training opportunities involving varying degrees of complexity and diversity. The proximity of the training areas to naval homeports allows Sailors to train nearby, reducing time away from their homes and families and improving their quality of life, as well as reducing fuel costs and emissions.



Testing Activities in the AFTT Study Area

Testing activities conducted in the Study Area are important for maintaining military readiness. The U.S. Department of Defense constantly researches and develops new and emerging technologies. Eventually these technologies must be tested and evaluated before use by the fleet. The Navy uses a number of different testing methods, including computer simulation and analysis, in the development of ships, submarines, aircraft, and systems.

Although simulation is a key component in the development of vessels, aircraft, and systems, it does not provide all the critical data on how they will perform or whether they will be able to meet performance and other specification requirements in the environment in which they are intended to operate. For this reason, vessels, aircraft, and systems must undergo at-sea testing in the development process.

Navy vessels, aircraft, and systems must be tested and evaluated within the broadest range of operating conditions available because Sailors must be capable of performing varying missions within the wide range of conditions that exist worldwide. Access to unique range attributes, such as diverse marine conditions that simulate a threatening environment, allows vessels, aircraft and system components to be tested and improved before deployment. Navy personnel must be assured that vessels, aircraft, and systems will meet performance specifications in the real-world environment.

Navy testing activities generally fall within the following categories:

- **The Pre-System Acquisition Phase** includes identifying an equipment or system need; developing and refining a recommended concept to meet the need; and conducting basic and applied scientific research, technology development, and testing.
- **The System Acquisition Phase** involves engineering and manufacturing development; product demonstration, testing, and evaluation; and ultimately system production and deployment.

- **The System Sustainment Phase** includes system upgrades and maintenance; follow-on testing and evaluation activities; and redeployment or disposal.

Because sonar is critical to the Navy's ability to defend against adversary submarines and anti-ship mines, it is necessary to conduct scientific research, evaluate new sonar systems, and maintain the operational capability of current systems.

Some testing activities are similar to training activities, however, the purpose of the activity differs. For example, Sailors may fire a torpedo to practice the procedure, while researchers may fire a torpedo to assess the technology or to ensure that the torpedo meets performance specifications. Testing activities occur at sea and may occur independently or in combination with training activities. Selected activities also occur in ports.



Figure 3. *Life Cycle of Naval Systems.* Research, development, test, and evaluation of naval ships, aircraft, and systems ensure their reliability and availability for their full life cycle – from concept to prototype to production to delivery of a deployable asset to the fleet.

Conducting testing activities in the dynamic marine environments within the Atlantic Fleet Training and Testing Study Area allows for accurate evaluation of vessels, aircraft, and systems before use by Sailors during deployment.



MEETING FUTURE TRAINING AND TESTING REQUIREMENTS

Proposed Action

The Navy's Proposed Action is to conduct training and testing activities primarily within existing range complexes and testing ranges along the east coast of the United States, the Gulf of Mexico, and select Navy pierside locations, port transit channels, and the lower Chesapeake Bay. These activities may include the use of active sonar and explosives. The Proposed Action also includes sonar maintenance and gunnery exercises conducted concurrently with ship transits, which may occur outside Navy range complexes and testing ranges. The Proposed Action also includes pierside sonar testing conducted as part of overhaul, modernization, maintenance, and repair activities at Navy piers, as well as new construction and overhaul at Navy-contracted shipbuilder locations.

The Proposed Action would ensure the Navy accomplishes its mission to maintain, train, and equip combat-ready military forces capable of winning wars, deterring aggression, and maintaining freedom of the seas. This mission is achieved by conducting realistic training and testing activities within the Study Area. The Navy's Proposed Action and alternatives have been evaluated in the Draft EIS/OEIS for potential environmental impacts.

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Through the AFTT EIS/OEIS process, the Navy will:

- Reassess the environmental analysis of Navy at-sea training and testing activities contained in six separate EISs/OEISs and various environmental planning documents and consolidate these analyses into a single environmental planning document. This reassessment will support reauthorization of permits under the Marine Mammal Protection Act and the Endangered Species Act. The six EIS/OEIS documents, completed with public input between 2009 – 2011, to be consolidated are:
 - » Atlantic Fleet Active Sonar Training EIS/OEIS
 - » Virginia Capes Range Complex EIS/OEIS
 - » Navy Cherry Point Range Complex EIS/OEIS
 - » Jacksonville Range Complex EIS/OEIS
 - » Naval Surface Warfare Center Panama City Division Mission Activities EIS/OEIS
 - » Gulf of Mexico Range Complex EIS/OEIS
- Incorporate the training activities occurring on the Undersea Warfare Training Range (USWTR) as contained in the USWTR EIS.
- Adjust baseline training and testing activities from current levels to the level needed to support Navy training and testing requirements beginning January 2014. As part of the adjustment, the Navy proposes to account for other activities and sound sources not addressed in the previous analyses.
- Analyze the potential environmental impacts of training and testing activities in additional areas (areas not covered in previous documents) where training and testing historically occurs, including Navy ports, naval shipyards, Navy-contractor shipyards, and the transit channels serving these areas.
- Update the at-sea environmental impact analyses in the previous documents to account for force structure changes, including those resulting from the development, testing, and use of weapons, platforms, and systems that will be operational before 2019.
- Implement enhanced range capabilities.
- Update environmental analyses with the best available science and most current acoustic analysis methods to evaluate the potential effects of training and testing activities on the marine environment.

The Navy is preparing the Atlantic Fleet Training and Testing EIS/OEIS to support issuance of federal regulatory permits and authorizations, to re-evaluate impacts from historically conducted activities, and to update activities based on evolving requirements.



Phase I and Phase II of the Planning Program

In 2000, the Navy completed a thorough review of its environmental compliance requirements at sea and instituted a policy designed to comprehensively address these requirements. This At-Sea Policy directed the Navy to develop a programmatic approach to environmental compliance for ranges and operating areas within its areas of responsibility. To meet this requirement, the Navy developed a phased plan to achieve comprehensive environmental planning and compliance for Navy training and testing activities at sea.

Phase I was accomplished by the preparation and completion of individual or separate environmental documents for each of the Navy's range complexes, operating areas, or testing ranges.

Phase II is designed to cover training and testing activities previously analyzed in Phase I, and also to analyze additional geographic areas including pierside locations and transit corridors.

Evaluating Alternatives

The National Environmental Policy Act (NEPA) requires federal agencies to evaluate a range of reasonable alternatives to achieve the purpose of and need for the Proposed Action. Two "action" alternatives (Alternative 1 and Alternative 2) that meet the Navy's purpose and need are currently under consideration. Analysis of a "no action" alternative is also required. The Navy developed these alternatives based on the levels and types of training and testing activities needed to meet evolving requirements.

No Action Alternative

Under the No Action Alternative, the Navy would continue training and testing activities, as defined by existing Navy environmental planning documents. The baseline testing activities also include those testing events that have historically occurred in the Study Area and have been subject to previous environmental analysis pursuant to NEPA and Executive Order 12114. Analysis of the No Action Alternative serves as a baseline from which to compare the potential impacts of the action alternatives.

Alternative 1

Alternative 1 consists of the No Action Alternative, plus adjustments to the Study Area boundaries and the locations, type, and level of training and testing activities from baseline, as necessary to support current and planned Navy training and testing requirements. Alternative 1 includes adjustments necessary to support all current and proposed Navy at-sea training and testing activities.

Alternative 1 includes:

- Activities occurring on the range complexes and the testing ranges, as well as activities occurring within the Study Area outside of the range complexes and testing ranges
- Mission requirements associated with force structure changes, including those resulting from the development, testing, and introduction of new ships, aircraft, and weapons systems into the fleet

Alternative 2 (Preferred Alternative)

Alternative 2 includes all activities in Alternative 1 plus the establishment of new range capabilities, modifications of existing capabilities, adjustments to types and levels of training and testing activities, and establishment of additional locations to conduct activities within the Study Area.

Resources Analyzed

For each alternative, the Navy analyzed the potential impacts on the following resource areas from training and testing activities.

- Sediments and water quality
- Air quality
- Marine habitats
- Marine mammals
- Sea turtles and other marine reptiles
- Birds
- Marine vegetation
- Marine invertebrates
- Fish
- Cultural resources
- Socioeconomics
- Public health and safety

The National Marine Fisheries Service is a cooperating agency on the development of the EIS/OEIS.



What is Sonar?

Sonar, an acronym for **S**ound **N**avigation and **R**anging, uses sound energy waves to detect and locate submerged objects, such as submarines and mines. There are two types of sonar:

Passive sonar is a sound-receiving system that “listens” for sound waves generated by man-made or biological sources using underwater microphones that receive, amplify, and process underwater sounds. Passive sonar does not put any sound energy in the water. Passive sonar can indicate the presence, character, and movement of a submarine if it is loud or operating at high speed. Passive sonar is less capable than active sonar of detecting quiet submarines operating in areas where background noise levels are elevated, such as coastal waters. Although improvements in passive sonar are continually being researched, passive sonar currently is less effective than active sonar at detecting quiet, modern submarines.

Active sonar is the most effective means available for locating objects underwater. Active sonar sends out a pulse of energy, often called a “ping,” that travels through water, reflects off an object, and returns to a receiver on the ship. Skilled technicians can use the reflected sonar pulse to determine the range, distance, and movement of an object. Common active sonars include echo sounders, such as depth sounders and fish finders, side-scan sonar, and military sonar (ship-mounted and/or sonobuoys).

Active sonar has the ability to locate objects that are too quiet to be detected using passive sonar technology. This makes active sonar invaluable for detecting modern, very quiet submarines. Active sonar is also effective for locating underwater mines. Although active sonar is the most effective way to detect quiet objects, such as submarines, Navy vessels use active sonar sparingly because sonar pulses can reveal a sending vessel’s location, compromising the mission and safety.

For this EIS/OEIS, active sonar is categorized into four frequency ranges:

Low-frequency: <1 kHz

Mid-frequency: 1-10 kHz

High-frequency: >10, up to 100 kHz

Very high-frequency: >100, up to 200 kHz

Need for Sonar Training and Testing

More than 300 extremely quiet, modern submarines are operated by more than 40 nations worldwide, and these numbers are growing. These quiet, difficult-to-detect submarines, as well as in-water mines and torpedoes, are threats to global commerce, national security, and the safety of military personnel. As a result, anti-submarine warfare is a top war-fighting and training priority for the Navy.

Navy anti-submarine warfare training and testing activities include the use of active and passive sonar systems and small explosive charges (used as sound sources), which prepare and equip Sailors for countering threats. The development of anti-submarine detection and weapons systems is also a priority for the United States.

Sonar Training

Sonar proficiency is a complex and difficult skill that requires constant training in realistic conditions at sea. Lack of realistic training could jeopardize the lives of Sailors in real-life combat situations. This training cannot be duplicated with simulators or other artificial means.

Sonar Systems Testing

Scientific research, acquisition, maintenance, and repair of sonar systems require at-sea and pierside testing to deliver combat-ready systems to naval forces. Conducting scientific research on new sonar technology and acquiring new systems is necessary to equip and maintain combat-ready forces capable of winning wars. At the same time, maintaining and upgrading existing sonar systems to ensure their continued reliability requires periodic testing and evaluation.

With advances in warfare technology, modern submarines using batteries and air-independent propulsion technology are extremely quiet and hard to detect in the noisy ocean environment. Currently, active sonar is the most effective method of detecting these submarines.



Uses of Sonar Systems

The Navy uses sonar systems and other acoustic sensors in support of a variety of mission requirements. Various sonar systems used include:

- **Surface Ship and Submarine Sonar Systems:** Ship-mounted passive or active sonar is used to detect, locate, and track other surface ships and submarines.

- **Aircraft Sonar Systems:** Active and passive sonobuoys are expendable devices containing a transmitter and a hydrophone that are dropped into the water by helicopters and fixed-wing aircraft to locate submarines. Dipping sonar is also used to locate submarines, but consists of recoverable devices lowered into the water by cable from a helicopter.
- **Exercise Torpedoes:** Recoverable, non-explosive torpedoes are equipped with sonar that helps the torpedoes find targets when deployed by surface ships, aircraft, and submarines.
- **Mine Warfare:** Sonar systems are used to detect, locate, and characterize moored and bottom mines, and are deployed by helicopter, unmanned vehicle, submarine, or ship.
- **Safety, Navigation, Communications, and Oceanographic Systems:** Sonar systems are used to gauge water depth; detect and map objects, navigational hazards, and the ocean floor; and transmit communication signals.

Training and Testing in a Noisy Environment

Sound levels in the ocean are not constant, varying with location and time. Many sources contribute to the ocean's overall noise level. Those sources include shipping, mineral extraction, fishing, recreational boating, breaking waves, marine life, storm events, and other man-made and natural sounds.

The ocean is generally noisier in coastal areas, where many natural and man-made sounds exist. Coastal waters present a complex environment of varying depths, coastal boundaries, tides and currents, weather patterns, and significant biological and commercial activities.

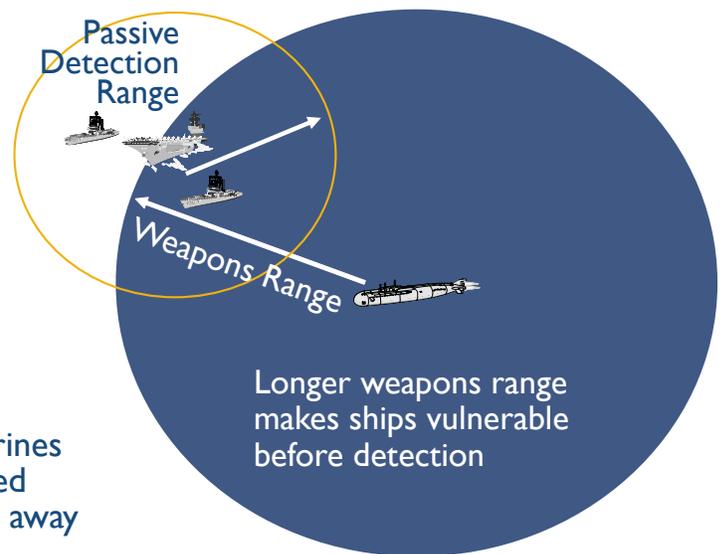
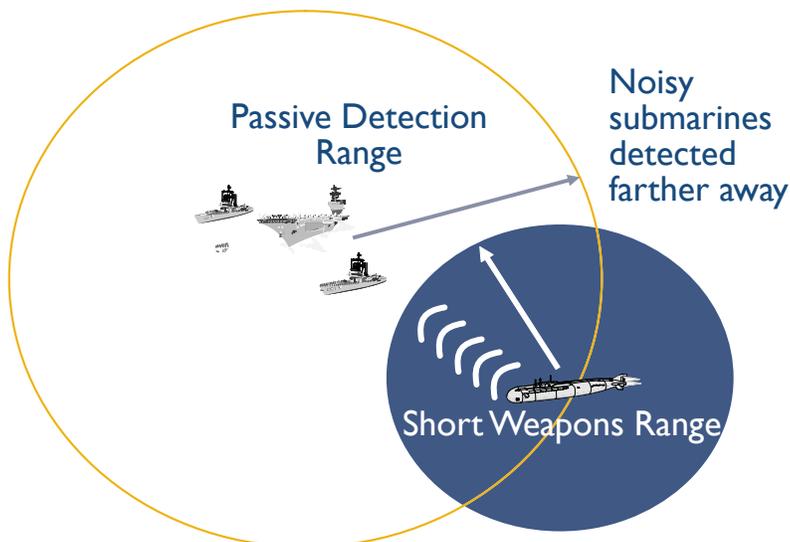
Coastal waters contain 80 percent of all ocean life and support many human activities, including commercial shipping ports, fishing fleets, and oil exploration and drilling. These activities bring significant noise to the coastal environment and, combined with complex oceanographic features, create an extremely challenging and varied environment for sonar technicians. This complex environment is typically where most nations' submarines operate today.

Sonar: Then and Now

In response to devastating Allied shipping and human losses from U-boat attacks during World War I, the Navy began using sonar to locate submerged objects. Today, sonar is used not only to identify, track, and target submarines, but also to determine water depth and locate underwater mines. With advances in warfare technology, diesel-powered submarines operating on batteries and air-independent propulsion systems are extremely quiet and hard to detect in the noisy ocean environment. These modern submarines are relatively inexpensive and used by many nations around the world, posing a challenge for the Navy to locate, identify, and track them.

Then – 1970s

Submarines of the previous generation were noisy and could be detected with passive sonar before they came close enough to deploy short-range weapons against a vessel.



Present Day

Modern, quiet submarines can approach close enough to deploy long-range weapons before entering the passive sonar detection range of U.S. vessels. Active sonar's longer detection range is needed for Sailors to detect a submarine before it is close enough to attack.



Training and Testing with Explosives

Training with explosives under real-life conditions is necessary for the readiness of military personnel who may be called to respond to emergencies and national security threats. Operating in a high-stress environment, including the use of and exposure to high-explosive ordnance, for such activities as detonating enemy mines, provides an opportunity for Sailors to practice the critical tasks and coordination essential to survival and success. Practicing these skills is necessary to ensure accuracy and instill confidence in military personnel.

Training and testing with explosives significantly enhances the safety of U.S. forces by improving combat readiness, equipment reliability, and personal safety. Testing with explosives is necessary to fully ensure the effectiveness of these devices. To the extent possible, simulators and other available technologies are used when training and testing. Simulation, however, cannot completely replace training and testing in a real-world environment.

Types of Explosives

The Navy currently trains and tests with explosives primarily within established operating areas, and would continue to do so under the Proposed Action. The types of explosives (ordnance and munitions) used by the Navy are generally described in the table below.

Types of Explosives	Uses During Training and Testing
Projectiles	Fired primarily during gunnery exercises
Missiles/Rockets	Launched to ensure accurate and reliable strikes or detonations
Bombs	Dropped from aircraft on land and water targets; majority of bombs used in Study Area are non-explosive
Mines	Deployed during a small percentage of mine warfare tests to evaluate and confirm the system's ability to neutralize a mine under real-world conditions
Ship Shock Charges (underwater explosives)	Send shock waves through a ship's hull to simulate a near miss in order to determine a ship's survivability during combat
Demolition Charges	Detonated by Navy divers during some activities
Torpedoes	Equipped with explosive warheads and required for some training and testing activities
Sonobuoys	Composed of explosive charges as the active sound source; employed during some anti-submarine warfare activities instead of electrically produced sounds



THE NAVY'S ONGOING MITIGATION MEASURES AT SEA

The coastal and sea areas off the east coast of North America and the Gulf of Mexico are critically important to the people who live here. They are places where people make their living and engage in recreation. These areas are also home to a large variety of marine vegetation and animals, including whales, porpoises, seals, turtles, fish, and seabirds.

Protecting the marine environment is an important goal of the Navy. In its commitment to the Atlantic and Gulf coasts and surrounding areas, and in compliance with existing laws, permits, and authorizations, the Navy follows strict guidelines and employs measures to protect marine species and reduce potential effects while training and testing at sea.

The Navy's Ongoing Protection of Marine Species

While training and testing at sea, the Navy strives to protect the marine environment by conducting activities in strict compliance with applicable environmental laws. In coordination with National Marine Fisheries Service (NMFS), the Navy has developed measures to reduce the potential impacts of training and testing activities on the ocean environment. Personnel on Navy ships are required and are thoroughly trained to follow these procedures.

The Navy reduces its effects on the marine environment by employing measures to protect marine life while training and testing at sea.

Pre-exercise monitoring

Many marine mammals vocalize underwater, and marine mammals, sea turtles, and other species are visible when they are not submerged under water. Before certain activities are conducted, the area is scanned visually and, when possible, monitored acoustically to detect the presence of marine species.

Posting highly trained Lookouts

Navy personnel undertake extensive training to qualify as a Lookout in accordance with the Navy's Lookout Training Handbook. All Lookouts must review Marine Species Awareness Training material, approved by NMFS. For specified activities and platforms, Navy Lookouts visually observe for the presence of marine species within mitigation zones. The Navy uses all available sensors and optical systems during mid-frequency active sonar training to identify the potential presence and location of marine mammals.

Establishing mitigation zones for marine species

A mitigation zone is designed to reduce potential impacts on marine species from certain training and testing activities. Mitigation zones are unique to each specific activity and are measured as the radius from a source. The Navy visually observes each radius to help reduce impacts on marine species. If a specific marine species is detected within the mitigation zone, the activity will cease until the animal is thought to have exited the mitigation zone.

Conducting safe navigation

While in transit, Navy vessel operators are alert at all times for objects in their path, use extreme caution, operate at a speed consistent with mission and safety, and take proper action if there is a risk of collision with a marine animal.

Reporting sightings

The Navy works closely with NMFS, including monitoring efforts during some training and testing activities, coordinating with the agency in the event of a stranding, and completing required annual reporting of Navy training and testing activities.

Integrated Comprehensive Monitoring Program

In coordination with NMFS, the Navy has developed an Integrated Comprehensive Monitoring Program to assess the effects of training and testing activities on marine species and investigate population trends in marine species distribution and abundance in locations where Navy activities occur.

Objectives:

- Monitor Navy activities for compliance with environmental laws
- Identify and document coincidence of marine animals with Navy activities
- Assess the effectiveness of the Navy's mitigation measures
- Document trends of habitat use in areas where Navy trains and tests
- Monitor for potential behavioral and physiological effects
- Assess new technologies for monitoring and mitigation
- Evaluate and adapt management strategies based on program outcomes

Techniques:

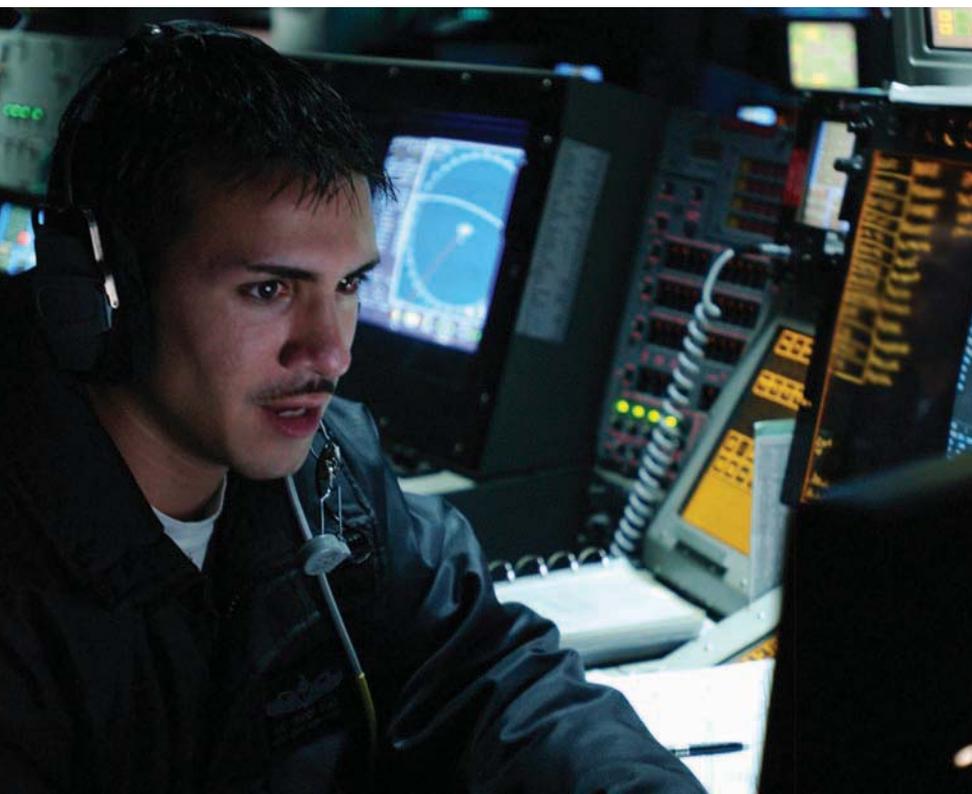
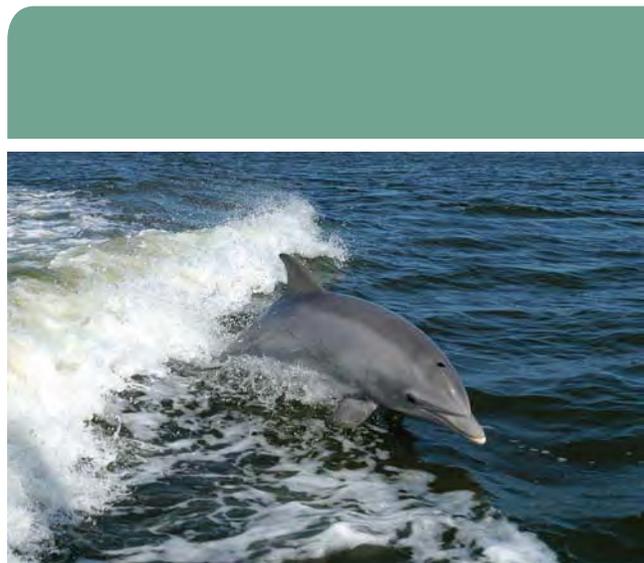
- Visual monitoring
- Acoustic monitoring
- Photo-identification, tagging, and biopsy
- Oceanographic and environmental data collection



Funding Independent Research

The Navy strives to be a world leader in marine species research and has provided more than \$100 million over the past five years to universities, research institutions, federal laboratories, private companies, and independent researchers around the world to increase the understanding of marine species physiology and behavior. This research helps the Navy to:

- Better understand marine species distribution and location of important habitat areas
- Refine its methods to detect and monitor marine species before and during training and testing activities
- Add to its understanding of the effects of underwater sound on marine mammals, sea turtles, fish, and birds
- Develop improved tools to model and estimate potential effects of underwater sound
- Develop new programs to safeguard marine protected species



Sharing Data and Findings

Scientists at the Naval Sea Systems Command Naval Undersea Warfare Center in Newport, Rhode Island, have been recognized for innovative work in leading the development and application of passive acoustic methods and technologies for the study of the behavior of marine mammals exposed to man-made sound. Navy scientists led a team of researchers to develop and implement prototype tools at the Atlantic Undersea Test and Evaluation Center in the Bahamas. The study of marine mammal behavior and the application of these tools resulted in the discovery of beaked whales at this location. Data are being shared with researchers around the world and used to develop a beaked whale model for long-term monitoring of populations, an effort of critical importance to the Navy and scientists.



Applying the Latest Science and Technology

Previous models used “area density” approaches in which acoustic footprints were computed and then multiplied by animal densities to calculate exposures. Based on recommendations resulting from a review conducted by the Center for Independent Experts, sponsored by NMFS, the Navy refined its process to account for additional factors, such as three dimensional sound field propagation, simulated scenarios (versus individual sources), and animal dive profiles.

The new model, Navy Acoustic Effects Model (NAEMO), is now used to estimate the potential acoustic effects of proposed Navy training and testing activities on marine mammals and sea turtles and is comprised of seven components:

- **Scenario Builder** defines where an activity would occur, a description and duration of the activity, and what vessels, ships, and systems (platforms) would be participating with all associated sound sources. Platforms are either stationary or can be moved through the area in either a defined track or random straight line movement.
- **Environment Builder** accounts for the oceanographic environment, including bathymetry, sound speed profiles, wind speeds, and bottom properties. Seasonal averages are created for the sound speed profiles and wind speeds from historical average values.
- **Acoustic Builder** generates acoustic propagation data based on the Scenario Builder file.
- **Marine Species Distribution Builder** distributes marine species as simulated animals, or animats, within the modeling environment in cells based on the bathymetry and relevant descriptive data. The sizes of cells and density of the animats within each cell vary by species and location.
- **Scenario Simulator** executes the simulation and records the sound received by each animat in the area for every sound emission; it incorporates the scenario definition, sound propagation data, and animat distribution data, ultimately providing raw data output for each simulation. Within each scenario, multiple ship track iterations are run to provide a statistical set of raw data results.
- **Post Processor** provides the computation of estimated exposures over threshold criteria from each of the raw data files produced by the Scenario Simulator.
- **Report Generator** enables the user to assemble a series of simulation results created by multiple post-processing runs and produce a combined result. Multipliers can be applied to each scenario to compute the effects of conducting them multiple times.

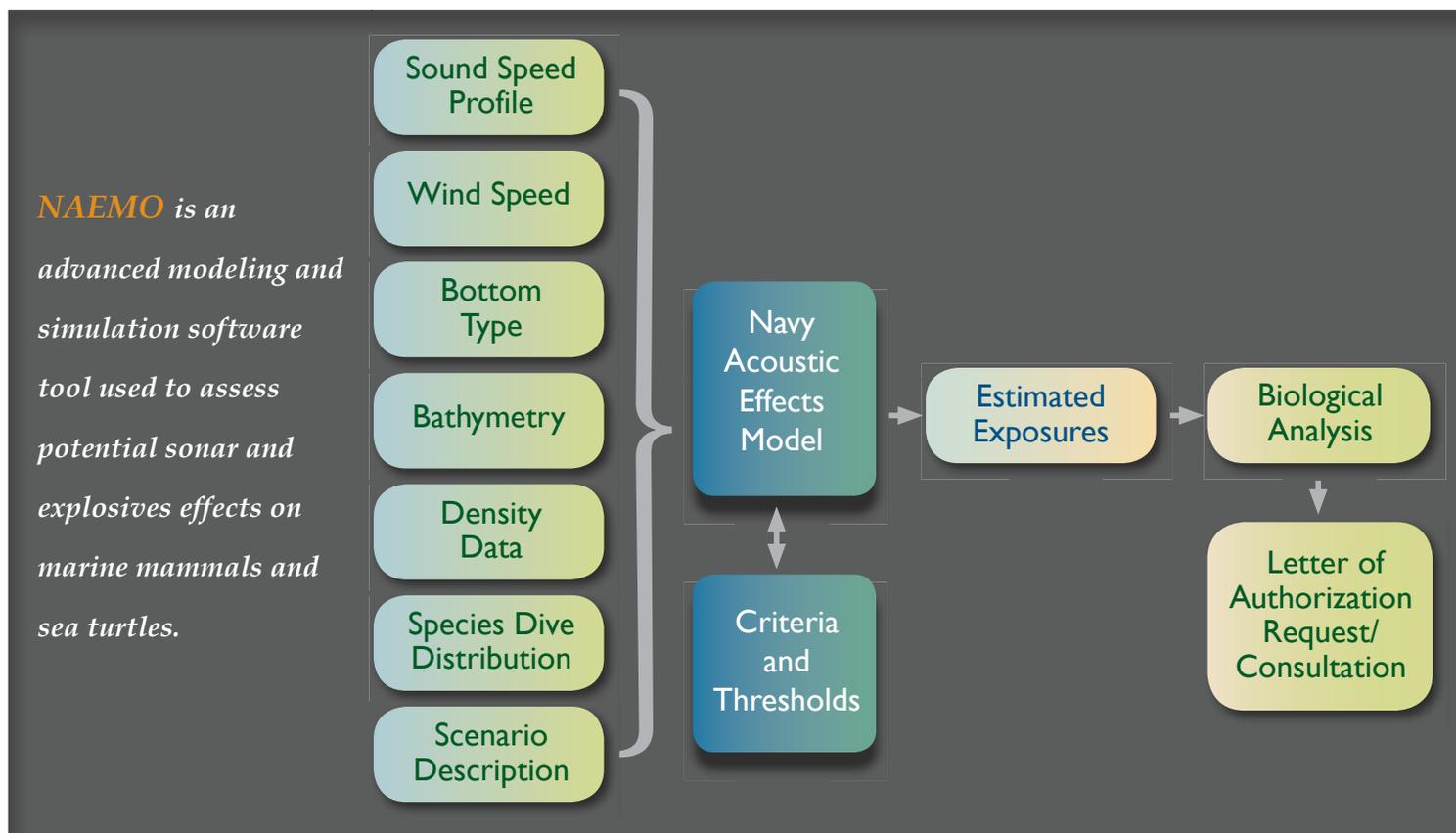


Figure 4. Navy Acoustic Effects Model (NAEMO).

ENVIRONMENTAL STEWARDSHIP PROGRAMS

For more than 230 years, the Navy has been operating on, over, and within the world's oceans. These waters are the Navy's home as well as its workplace. The Navy is committed to caring for the environment as it trains personnel and tests new technologies to defend the United States.

The Atlantic and Gulf coasts and lower Chesapeake Bay are invaluable and the Navy takes an active interest in their protection. Examples of the Navy's successful environmental programs within the AFTT Study Area are described below.

Protecting the North Atlantic Right Whale

The Navy has taken a proactive role throughout the AFTT Study Area in the protection of the North Atlantic right whale. The Navy implements procedures to monitor for and avoid right whales, and has established communication networks to track and avoid them. The Navy participates in a number of cooperative efforts aimed at protecting right whales, including the following:

- Conducting comprehensive crew training to spot whales and providing annual reminders to personnel about the right whales' seasonal migration (generally October 15 through April 15).
- Publicizing whale sightings through an early warning system to increase awareness among ocean users.
- Contributing to the cost for National Marine Fisheries Service overflights of the waters off Georgia and northern Florida to locate and relay information about migrating whales.
- Creating and managing the Right Whale Data Fusion Center, which provides a central location for multiple parties to report whale sightings or other right whale issues.
- Participating in the Southeastern U.S. Implementation Team for the Recovery of the North Atlantic Right Whale and the Northeast Implementation Team, which advise the National Oceanic and Atmospheric Administration of efforts to recover endangered species and the implementation of the North Atlantic Right Whale Recovery Plan.

Helping Marine Species

When 21 stranded pilot whales were discovered along the shores of Cudjoe Key, Florida, hundreds of volunteers responded, including participants in the Marine Mammal Stranding Network (MMSN) and 22 Seabees from the Navy's Construction Battalion Maintenance Unit-202 in Key West. According to Robert Lingenfelter, President of the Marine Mammal Conservancy in Key Largo, Florida, "These rescue efforts depend on a chain of command structure that the Seabees understand. Their training enables them to respond immediately to direction. We cannot succeed without volunteers and we could not have done what we did without the Seabees' help."

Helping the Gulf

In 2010, Deepwater Horizon exploded and caught fire in the Gulf of Mexico. Five days later, after discovering that the well continued to leak significant amounts of oil, the U.S. Coast Guard formally requested support from Naval Sea System Command's Supervisor of Salvage and Diving (SUPSALV). Within four hours of the request for resources, trucks loaded with SUPSALV's oil spill response equipment were en route to the Gulf Coast. The first trucks arrived before the spill was declared a "Spill of National Significance."

The Navy's presence in the Gulf spanned from April through October 2010 and accounted for the skimming, collection, and disposition of approximately one million gallons of oil and the provision of a significant amount of technical and engineering support to response efforts. The magnitude and duration of this spill response was unprecedented for the Navy's oil spill response community. At the peak of recovery operations, SUPSALV's Navy skimmers collected more than 1,600 barrels in a single day.

Environmental Protection at Sea

The Navy continues to implement and improve programs to reduce a vessel's environmental footprint while training and testing. Some of these programs include:

- Managing invasive (non-native) species
- Recycling fuel
- Ensuring no plastic is discharged while at sea
- Disposing of solid waste in an environmentally responsible manner
- Conserving energy, installing new technologies, and using energy from renewable sources



PUBLIC ACCESS AND SAFETY

Sharing the Sea

The Atlantic and Gulf coasts and bays within the AFTT Study Area are used by many people for commercial and recreational purposes. Tourism, shipping, and commercial fishing play a significant role in the regional economy. Recreational activities, including boating, sport fishing, and diving also contribute to the economy and quality of life.

These areas are also important to the Navy as they provide critical realistic training to Sailors and Marines. To ensure public safety during specific exercises, Navy training and testing activities could briefly limit public access to a portion of coastal and ocean areas.

On the occasions when access to ocean areas must be limited, the Navy provides advance notice of temporary closures and warnings through Notices to Mariners and Notices to Airmen. These advance notifications allow for planning and safety.

Public Safety Measures

For decades, the Navy has shared the use of ocean and coastal areas of the Atlantic and Gulf coasts and the bays within the AFTT Study Area with those who rely on marine resources for their livelihood and recreation. The Navy understands the concerns of commercial and sport fishermen, maritime businesses, and marine recreationists and takes steps to conduct its activities in a manner that is compatible with ocean and airspace users to the extent possible. However, for the public's safety, the use of certain ocean areas must be temporarily limited during some training and testing activities.

The Navy adheres to standard operating procedures, which have been refined over years of experience, to ensure public health and safety. The Navy provides advance notice of area closures and access limitations to the U.S. Coast Guard, which helps the public plan accordingly and increases safety. This information is accessible to the public on the Coast Guard's Local Notice to Mariners website at www.navcen.uscg.gov. The published notices advise the public to allow them to adjust their routes. Temporary access limitations (usually lasting several hours) occur during training or testing activities for the safety of commercial and recreational users.

If civilian vessels are within a limited access area at the time of a scheduled activity, Navy personnel will proceed with the activity and avoid the vessels if it is safe and possible to do so. In some instances, where safety requires exclusive use of a specific area, civilian vessels in the area will be asked to relocate to a safer area for the duration of the activity.

It is the U.S. military's policy to observe every precaution in the planning and execution of all training and testing activities for the safety of the public. Some standard operating procedures include:

The Navy strives to be a good neighbor by maintaining access to public areas whenever possible and ensuring safety at all times.



- Ensuring that impact areas and targets are clear prior to beginning potentially dangerous activities
- Cancelling or delaying activities if there is any doubt about the safety of the public
- Notifying the public in advance of the location, date, and time of potentially dangerous activities
- Implementing temporary or permanent access restrictions to training and testing areas
- Notifying the U.S. Coast Guard, Federal Aviation Administration, and interested parties of upcoming training and testing events
- Conducting thorough environmental and safety reviews for all test systems before tests are conducted on range sites

Thorough environmental and safety reviews are conducted for all test systems before tests are conducted on a testing range. Prior to going into the water, most systems go through land-based testing and many have been tested in smaller fresh water areas or tanks. After an initial review, modifications are made, as needed, to minimize the potential impacts on public safety and the natural environment.

Public Access in the AFTT Study Area

Ocean areas throughout the Atlantic Fleet Training and Testing Study Area are accessible to the public for recreational and commercial purposes. The Navy is committed to ensuring public safety during training and testing activities to minimize risk to personnel, ocean users, and commercial and recreational enthusiasts. To protect public safety, access to certain ocean areas must be temporarily limited during certain training and testing activities.



DRAFT EIS/OEIS IMPACT ANALYSIS

The Navy has prepared a Draft EIS/OEIS to assess the potential environmental effects of its Proposed Action to conduct training and testing activities. The Navy evaluated the potential effects on the human, natural, and cultural environment from each of the alternatives. The information below includes a brief summary of the potential effects on environmental resources from the Proposed Action. For more detailed information about possible effects from Navy training and testing activities, please refer to the Draft EIS/OEIS, available at www.AFTTEIS.com.

Environmental Analysis

The overall approach to the environmental analysis in the Draft EIS/OEIS includes:

- Identification of resources for analysis
- Resource-specific analysis of environmental impacts from individual and multiple stressors
- Examination of potential population-level impacts on marine species
- Cumulative impacts analysis
- Consideration of mitigation measures to reduce identified potential impacts

There are multiple components to a Navy activity that may interact with the environment; these components, or the action of the components, are called “stressors.” All Navy activities and the resulting stressors were examined to determine which could impact a resource. Not all stressors affect every resource, nor do all proposed activities produce all stressors. Stressors include, but are not limited to:

- Acoustics (impulsive and non-impulsive sound)
- Energy
- Physical disturbance and strike
- Entanglement
- Ingestion
- Accessibility
- Secondary (habitat and prey)

Potential Environmental Effects

Marine Mammals

Sonar and other active acoustic sources, explosives sources, and vessel strikes may adversely affect some Endangered Species Act (ESA)-listed marine mammals and under Marine Mammal Protection Act (MMPA) may result in mortality (no mortality from sonar) or Level A or Level B harassment of marine mammals. Remaining stressors are not expected to result in mortality or Level A or B harassment; and may affect, but are not likely to adversely affect, ESA-listed marine mammals.

Sea Turtles

Sonar and other active acoustic sources, explosives sources, and vessel strikes may adversely affect some sea turtles species. Remaining stressors may affect, but are not likely to adversely affect, or will have no effect on ESA-listed sea turtles. Although individual sea turtles may be impacted, no population-level impacts are anticipated. Vessel and aircraft noise may affect, but are not likely to adversely affect, the American crocodile. Remaining stressors will have no effect on the American crocodile. Sonar and other active acoustic sources, vessel noise and aircraft noise may affect, but are not likely to adversely affect, the American alligator. Remaining stressors will have no effect on the American alligator.

Fish

Explosives sources may adversely affect Atlantic and Gulf sturgeon, and smalltooth and largemouth sawfish. Remaining stressors may affect, but are not likely to adversely affect, or will have no effect on ESA-listed fish species. For non ESA-listed fish species, some stressors may result in injury or mortality to a small number of individuals; no population-level impacts are anticipated. The majority of potential impacts are short-term behavioral and physiological responses.

Birds

All stressors analyzed may affect, but are not likely to adversely affect, or will have no effect on ESA-listed bird species. Under the Migratory Bird Treaty Act regulations applicable to military readiness activities, these activities would not result in a significant adverse effect on migratory bird populations.

Marine Vegetation

All stressors analyzed will have no effect on ESA-listed Johnson seagrass. For non ESA-listed vegetation, potential impacts are not expected to result in detectable changes to marine vegetation growth, survival, or propagation and are not expected to result in population-level impacts. The use of underwater explosives and military expended materials may have an adverse effect on Essential Fish Habitat (EFH) by reducing the quality and quantity of marine vegetation that constitute EFH or Habitat of Particular Concern (HAPCs).

Marine Invertebrates

Military expended materials strikes, seafloor device strikes, and secondary stressors may affect, but are not likely to adversely affect, ESA-listed elkhorn and staghorn



corals and their critical habitat. All other stressors will have no effect on ESA-listed species or critical habitat. For non ESA-listed invertebrates, potential impacts include short-term behavioral or physiological responses and are not expected to result in population-level impacts. The use of explosives, other non-impulsive sources, and military expended materials may have an adverse effect on EFH by reducing the quality and quantity of sedentary invertebrate beds or reefs that constitute EFH or HAPCs.

Marine Habitats

Explosives sources, military expended material strikes, and seafloor device strikes could impact marine habitats by localized disturbance of the seafloor; cratering of soft-bottom sediments, and structural damage to hard-bottom habitats. Impacts on soft-bottom habitats could be short term, and impacts on hard-bottom habitats could be long term. The use of explosives on or near the bottom and military expended materials may have an adverse effect on EFH by reducing the quality and quantity of non-living substrates that constitute EFH or HAPCs.

Public Health and Safety

Because of the Navy's standard operating procedures, impacts on public health and safety would be unlikely.

Socioeconomics

Impacts from the Proposed Action on socioeconomic resources would be short term and temporary, and therefore, negligible.

Cultural Resources

Submerged prehistoric sites on the continental shelves in the Gulf of Mexico Large Marine Ecosystem could be adversely affected. Acoustic (explosive) and physical stressors could adversely affect submerged prehistoric sites and unrecorded submerged historic resources.

Air Quality

The Proposed Action would result in minor local emissions of criteria air pollutants and hazardous air pollutants. These emissions would result in no change to the attainment status of local air basins and would not impact public health.

Sediments and Water Quality

The Proposed Action could result in local, short-, and some limited long-term changes in sediments and water quality.



Cumulative Effects

The aggregate impacts of past, present, and other reasonably foreseeable future actions are expected to result in impacts on some marine mammal and all sea turtle species in the Study Area. The No Action Alternative, Alternative 1, or Alternative 2 would contribute to cumulative impacts, but the relative contribution would be low compared to other actions such as injury from bycatch, commercial vessel ship strikes, entanglement, ocean pollution, and other human causes.

The data presented in the Draft EIS/OEIS indicate that the incremental contribution of the No Action Alternative, Alternative 1, or Alternative 2 to cumulative impacts on sediments and water quality, air quality, marine habitats, birds, marine vegetation, marine invertebrates, fish, socioeconomic resources, and public health and safety would be negligible. When considered with other actions, all alternatives may contribute to cumulative impacts on submerged prehistoric and historic resources, if such resources are present in areas where bottom-disturbing training and testing activities take place. All alternatives would also incrementally contribute to greenhouse gas emissions.



NEPA PROCESS AND COMMUNITY INVOLVEMENT

The National Environmental Policy Act

Before U.S. federal agencies proceed with major federal actions, they must consider the potential effects their proposed activities may have on the human, natural, or cultural environment. An environmental analysis is mandated by the National Environmental Policy Act (NEPA) of 1969. NEPA requires federal agencies to examine the potential environmental effects of their actions to allow for more informed decision-making.

An Environmental Impact Statement (EIS) is a detailed public document that provides an assessment of the potential effects a federal action may have on the environment. The Navy's analysis under NEPA extends through the U.S. territorial sea (from shore to 12 nautical miles). An Overseas Environmental Impact Statement (OEIS) is prepared to comply with Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, of 1979, which requires federal agencies to consider the potential effects of their actions on the physical environment outside the United States, its territories and possessions.

Community Involvement

Community involvement is a critical part of the NEPA process and there are a number of opportunities for the public to participate throughout the EIS/OEIS development. In May and June 2012, the Navy is holding five open house public meetings to inform the public about the Proposed Action and to receive public comments on the adequacy and accuracy of the analysis presented in the Draft EIS/OEIS. During each open house, informational poster stations and project team representatives are available to provide the public with an opportunity to learn more about the NEPA process, the Proposed Action and alternatives currently under consideration.

Government agencies, elected officials, organizations, and individuals are encouraged to participate and comment in any of the following ways:

- Submit oral or written comments at the public open house meetings
- Submit comments via the project website at: www.AFTTEIS.com
- Mail comments to:

Naval Facilities Engineering Command Atlantic
Attn Code EV22 (AFTT EIS Project Managers)
6506 Hampton Blvd.
Norfolk, VA 23508-1278

All comments must be postmarked or received online by **July 10, 2012**, to be considered in the development of the Final EIS/OEIS.

For More Information

Informational materials and project documents are available on the project website at www.AFTTEIS.com and at 28 libraries. A full listing of the library locations is included on the project website.

The Navy has prepared the Atlantic Fleet Training and Testing Draft EIS/OEIS to assess the potential effects on the environment from current and ongoing Navy training and testing activities, as well as from potential increases in training and testing activities as the Navy plans for the future. The EIS/OEIS also gives the Navy the opportunity to review its procedures to ensure that the benefits of recent scientific and technological advances are applied toward minimizing environmental effects.



Public involvement is a fundamental part of the development of the Atlantic Fleet Training and Testing EIS/OEIS. The Navy welcomes and appreciates your comments.



For more information about the AFTT EIS/OEIS, visit www.AFTTEIS.com.



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NEPA Process and Timeline

The public participates in the NEPA process by helping to identify environmental issues and potential alternatives during the scoping period and by evaluating the analysis of the Proposed Action and alternatives during the public meetings and comment period. All public comments are considered, and the Navy will not proceed with the Proposed Action until the NEPA process is complete.

The table below describes the steps of the NEPA process and identifies the opportunities for public involvement.

Milestone	Description	Schedule
Notice of Intent (NOI) to Prepare an EIS/OEIS	Publication of the NOI in the Federal Register starts the initial public involvement phase. Notices are also published in local newspapers.	July 15, 2010
Scoping Period	<p>The scoping process actively involves the public and other agencies in identifying the environmental issues to be addressed in the EIS/OEIS and other potential alternatives to accomplish the purpose and need.</p> <p>The scoping period for this EIS/OEIS provided for five open house scoping meetings and a 60-day public comment period.</p> <p style="text-align: center;">Opportunities for Public Review and Comment</p>	July 15, 2010 – Sept. 14, 2010
Draft EIS/OEIS	The Draft EIS/OEIS presented the analysis of potential environmental impacts for the Proposed Action and each of the identified alternatives, including a no action alternative. Public comments received during the scoping period were considered in the development of the Draft EIS/OEIS. A notice announcing availability of the Draft EIS/OEIS was published in the Federal Register and local newspapers. The Draft EIS/OEIS was filed with the U.S. Environmental Protection Agency and made available to interested parties.	May 11, 2012
Public Meetings and Comment Period	<p>NEPA regulations require a minimum of 45 days for the public to comment on the analysis presented in the Draft EIS/OEIS. Comments may be submitted at public meetings, via U.S. mail or on the project website during the 60-day comment period.</p> <p>Five open house public meetings have been scheduled throughout the AFTT Study Area. For dates, and locations, visit www.AFTTEIS.com.</p> <p style="text-align: center;">Opportunities for Public Review and Comment</p>	<p>Comment Period: May 11, 2012 – July 10, 2012</p> <p>Public Meetings: May 30, 2012 – June 12, 2012</p>
Final EIS/OEIS	The Final EIS/OEIS is an update to the Draft EIS/OEIS and includes responses to all comments received during the public meetings and comment period. A notice announcing availability of the Final EIS/OEIS will be published in the Federal Register and local newspapers. The Final EIS/OEIS will be filed with the U.S. Environmental Protection Agency and made available to interested parties.	Summer 2013
30-Day Wait Period	Regulations provide for a 30-day wait period after the Final EIS/OEIS is published before the agency may take final action.	Summer/Fall 2013
Record of Decision	After the 30-day wait period, the Office of the Assistant Secretary of the Navy (Energy, Installations and Environment) will select an alternative and issue a Record of Decision. A notice of the Record of Decision is published in the Federal Register and local newspapers and made available to interested parties.	Fall 2013

Complete
 In Progress
 Next Steps

Welcome to the U.S. Navy's open house public meeting

Navy representatives are available at each poster station to provide information and answer your questions. There will be no formal presentation.

Open House Public Meeting: 4 – 8 p.m.

