



# ATLANTIC FLEET TRAINING AND TESTING

ENVIRONMENTAL IMPACT STATEMENT/  
OVERSEAS ENVIRONMENTAL IMPACT STATEMENT  
for Activities Beginning in 2018



## IMPORTANCE OF TRAINING AND TESTING WITH ACTIVE SONAR AND EXPLOSIVES

Using the best available science and methods of analysis, the U.S. Navy is preparing an Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) to assess the potential environmental impacts associated with conducting naval training and testing activities within the Atlantic Fleet Training and Testing (AFTT) Study Area, including activities that involve the use of active sonar and explosives. Most of these training and testing activities have been previously analyzed and authorized, and are similar to the types of activities that have been occurring in the Study Area for decades.



### WHAT IS SONAR?

Sonar, an acronym for sound navigation and ranging, 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 microphones. Passive sonar does not put any sound energy in the water. It can indicate the presence, character, and movement of a submarine if it is loud or operating at high speed. Despite ongoing research to improve passive sonar, it is no longer adequate for detecting quiet submarines operating in areas where background noise levels are elevated, such as coastal waters.

**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. Skilled technicians 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, and is effective in locating underwater mines. Navy vessels use active sonar sparingly because sonar pulses can reveal a sending vessel’s location, compromising the mission and safety.



## NEED FOR SONAR TRAINING AND TESTING

More than 300 extremely quiet, newer-generation submarines are operated by more than 40 nations worldwide, and these numbers are growing. These difficult-to-detect submarines, as well as torpedoes and underwater mines, are true threats to global commerce, national security, and the safety of military personnel. As a result, defense against enemy submarines is a top priority for the Navy.

**Quiet submarines, torpedoes, and in-water mines are true threats to global commerce and national security. Active sonar is the most effective method of detecting these threats.**

### SONAR TRAINING

To detect and counter hostile submarines, the Navy uses both passive and active sonar. Sonar proficiency is a complex and perishable skill that requires regular, hands-on training in realistic and diverse conditions, such as those provided in the AFTT Study Area. Lack of realistic training will jeopardize the lives of Sailors in real-life combat situations. Sailors use simulators and other advanced technologies; however, simulation cannot completely replace training in a live environment.

### SONAR SYSTEMS TESTING

The Navy needs to research, test, and maintain sonar systems both at sea and pierside to ensure their reliability and availability. Continuing to equip and maintain combat-ready forces requires scientific and technological research, as well as acquiring and testing new sonar systems. Maintaining and upgrading existing sonar systems also requires periodic testing and evaluation.

### 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, such as shipping, mineral extraction, fishing, recreational boating, breaking waves, marine life, and storm events.

Coastal waters contain an abundance of 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 coastal environment is typically where most nations' submarines operate today.

### TRAINING AND TESTING WITH EXPLOSIVES

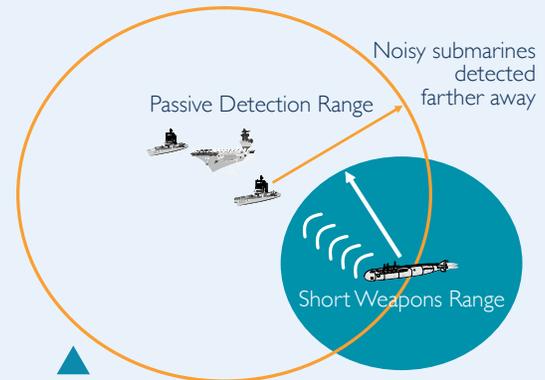
Training and testing with explosives (live ordnance) significantly enhances the safety of U.S. forces in combat, improving readiness and equipment reliability. Training in a high-stress environment, including the use of and exposure to live ordnance, is necessary for Sailors to be ready to respond to emergencies and national security threats.

Testing with live ordnance is essential to ensure that systems function properly in the type of environment they will be used by Sailors. To the extent possible, Sailors use simulators and other available technologies. Simulation, however, cannot completely replace training and testing in a live environment. Limited training and testing with explosives occurs only in established operating areas, and the Navy issues notices to mariners and pilots to ensure public safety.

## SONAR: THEN AND NOW

In response to devastating Allied shipping and human losses from U-boat attacks during World War II, the Navy began using sonar. Today, sonar is used to identify, track, and target submarines; detect mines; and navigate safely.

With advances in warfare technology, newer-generation submarines pose a challenge for the Navy because they are extremely quiet and hard to detect in the noisy ocean environment. The advances in technology and increases in the number of quiet submarines have made it necessary for the Navy to use active sonar, as passive sonar is no longer adequate for detecting them.



### THEN – 1970s

Submarines of the previous generation were noisy and could be detected with passive sonar before they came close enough to attack.



### PRESENT DAY

Using only passive sonar, quiet submarines with longer-range weapons can approach within range of U.S. vessels before being detected. Active sonar's longer detection range is necessary for Sailors to identify, detect, and track a submarine before it is close enough to attack.

