

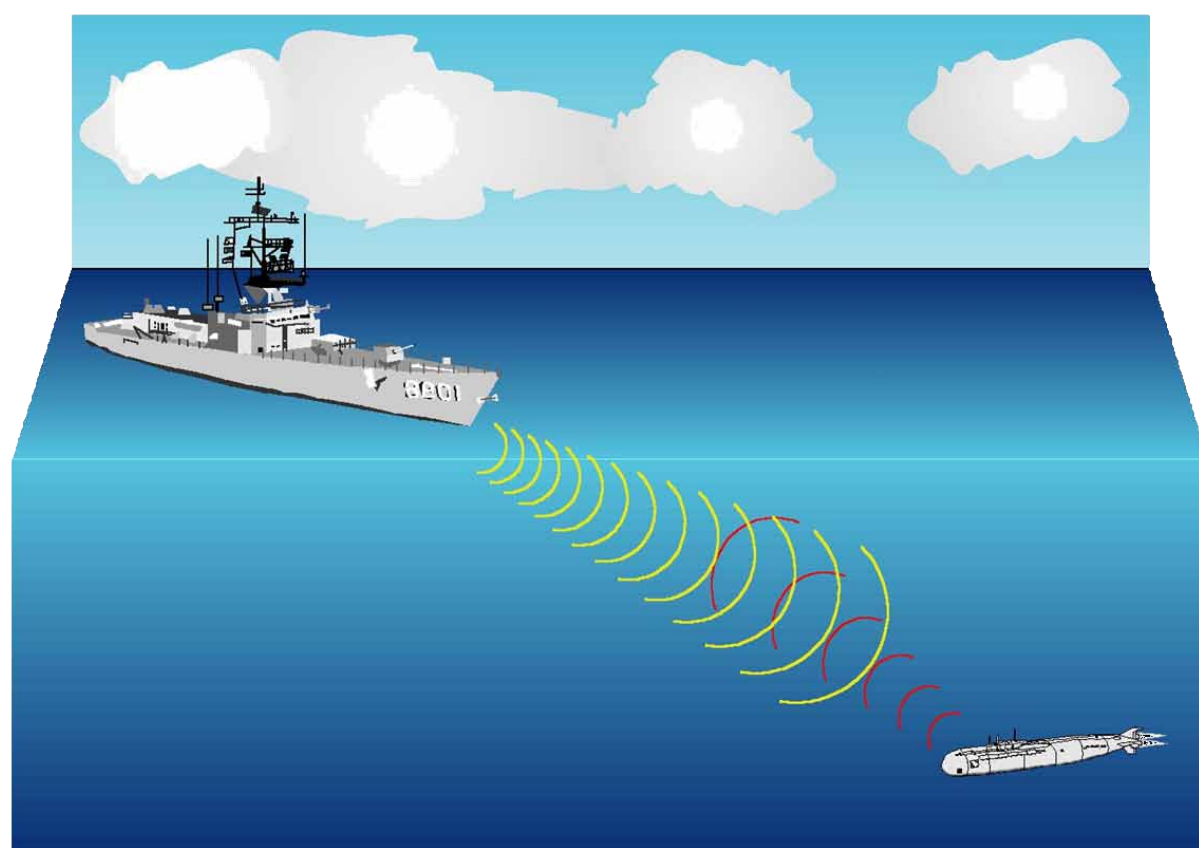


NAVY

Hawaii-Southern California Training and Testing EIS/OEIS

Importance of Training and Testing with Active Sonar

Modern diesel-electric submarines operate on batteries and air independent propulsion, making them quiet and hard to detect in a noisy ocean environment. Although active sonar currently is the only effective way to detect, track and target submarines under all ocean conditions, U.S. Navy vessels use active sonar sparingly because sonar can reveal the sending vessel's location.



What is Sonar?

Active **S**ound **N**avigation and **R**anging is a technology that uses sound energy waves to detect and locate submerged objects, such as submarines and mines. It is a method or device for "seeing" objects underwater, allowing their identification, tracking and targeting.

Passive Sonar

- ◆ "Listens" for sound waves using underwater microphones
- ◆ Indicates the presence, character and movement of an object
- ◆ Is ineffective at determining distance
- ◆ Does not put any sound energy in the water

Active Sonar

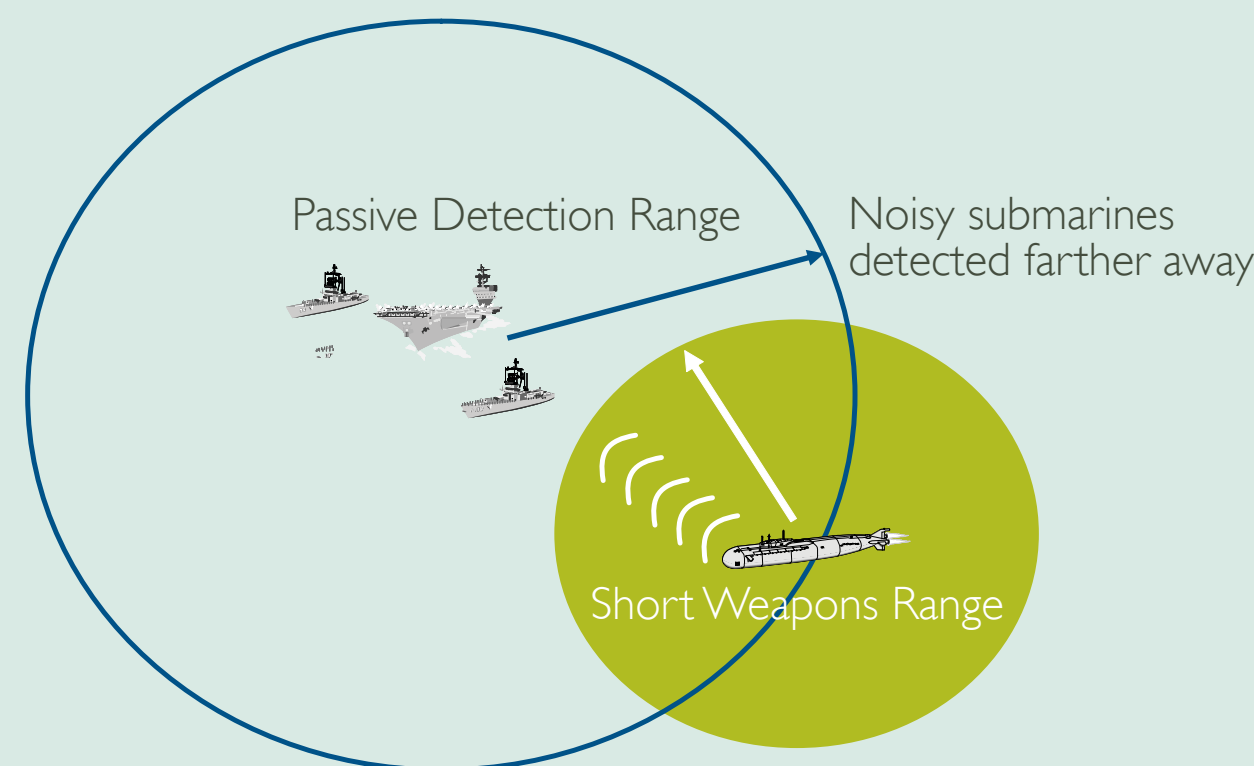
- ◆ Can locate objects underwater
- ◆ Sends out a pulse of energy, often called a "ping," that travels through the water, reflects off objects and returns to a receiver on the ship
- ◆ Determines range, distance and movement of an object
- ◆ Able to locate objects too quiet to be detected using passive sonar

Protecting the marine environment of Hawaii and Southern California is an important goal for the Navy. The Navy follows procedures and implements protective measures to care for the marine environment.

Sonar is used to:

- ◆ Identify, track and target submarines
- ◆ Determine water depth
- ◆ Locate underwater mines

Then - 1970s
Previous generation noisy submarines could be detected by passive sonar before they approached U.S. vessels.



Present Day

The larger detection range of active sonar allows Sailors to detect quiet submarines before they are close enough to attack.

