



# NORTHWEST

## Training and Testing Environmental Impact Statement/ Overseas Environmental Impact Statement

### Naval Surface Warfare Center, Carderock Division, Southeast Alaska Acoustic Measurement Facility

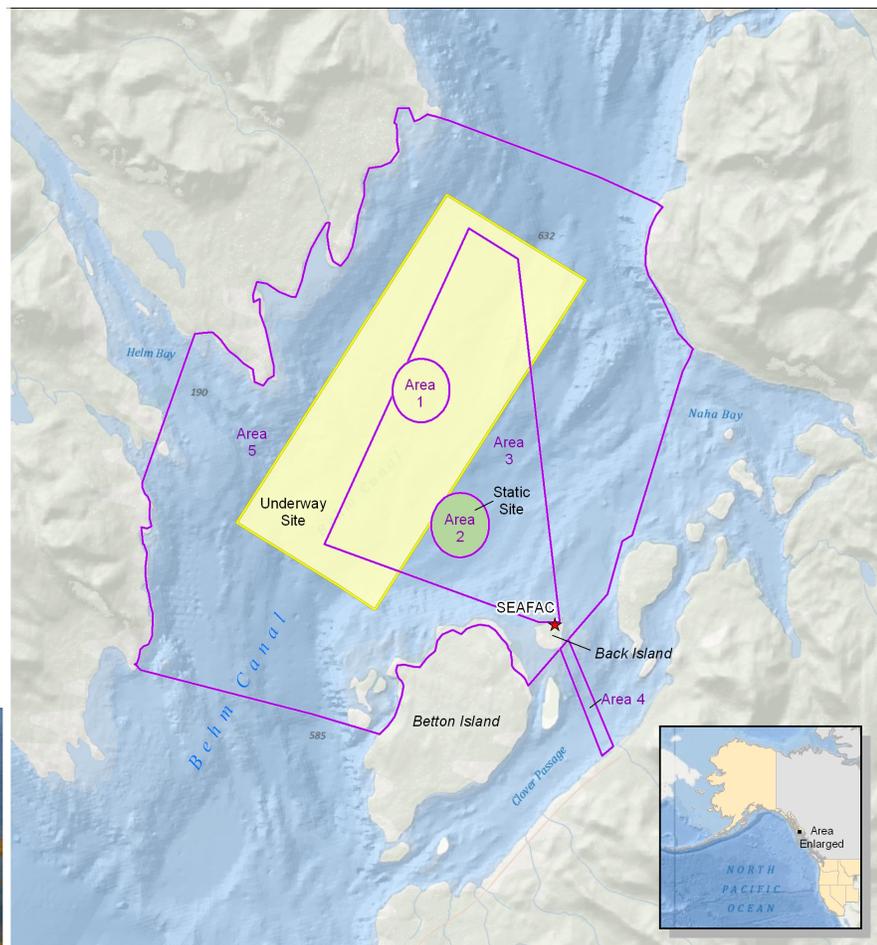
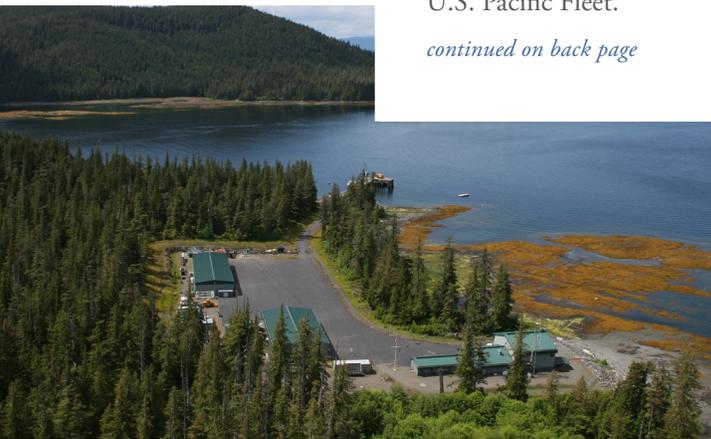
The U.S. Navy passively measures sound generated by vessels to assess vulnerability and develop quieting measures at the Southeast Alaska Acoustic Measurement Facility, the Navy's primary acoustic measurement facility in the Pacific Ocean.

Since March 1992, the U.S. Navy has conducted research, development, test and evaluation activities ("testing activities") at the Naval Surface Warfare Center, Carderock Division, Southeast Alaska Acoustic Measurement Facility (SEAFAC), located in the Western Behm Canal near Ketchikan, Alaska (see Figure 1).

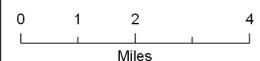
SEAFAC is the Navy's only West Coast facility for measuring sound generated by vessels, called "acoustic signatures." All measurements are passive in nature with no active emissions. These measurements enable the Navy to identify the sources of sound on the vessel (typically a submarine or surface ship), assess its vulnerability and develop quieting measures. The testing activities conducted at SEAFAC assist in maintaining the United States' superiority in submarine stealth technology, preserving submarines' tactical advantage and protecting its survivability against threats. Stealth is reduced with the use of active acoustics, which reveals a submarine's position. Measuring the output of mid-frequency active sonar is therefore not conducted at SEAFAC. Activities conducted at SEAFAC are primarily for the U.S. Pacific Fleet.

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*The Navy's Southeast Alaska Acoustic Measurement Facility provides an ideal acoustic measurement site for vessels because of low levels of ambient noise and minimal noise interference.*



- Legend
- ★ Southeast Alaska Acoustic Measurement Facility (SEAFAC)
  - Restricted Area
  - Underway Site
  - Static Site



Projection: WGS84, UTM 9N

Sources: ESRI, ManTech



The Navy's Southeast Alaska Acoustic Measurement Facility is celebrating its 20th anniversary of the first acoustic measurement trial conducted at the facility.

**Figure 1.** The Southeast Alaska Acoustic Measurement Facility consists of three major components in Western Behm Canal: the Underway Measurement Site, the Static Site, and the Back Island Operations Center and supporting facilities.

SEAFAC provides an ideal acoustic measurement site for Navy and other military and civilian vessels because of low levels of surrounding (ambient) noise and minimal noise interference. SEAFAC consists of the following components:

- Underway Measurement Site
- Static Site
- Back Island Operations Center and supporting facilities

These components are within the restricted areas of Behm Canal. The areas are restricted to ensure vessel safety (submarine, surface ship and civilian craft), reduce sound from non-participating vessels and protect the Navy's sensitive in-water acoustic instruments and associated cables.



## Public Safety Measures

The location of the Southeast Alaska Acoustic Measurement Facility (SEAFAC) in Behm Canal, an isolated glacial fjord, provides ample room to maneuver in a low ambient noise environment, which is ideal for navigation safety and acoustic measurements.

For in-water testing activities conducted at SEAFAC, the Navy works with the U.S. Coast Guard to maintain law enforcement and safety. Prior to testing activities, the Navy informs Canadian authorities of submarines transiting Canadian waters en route to Ketchikan, Alaska. Other established notification procedures inform the Coast Guard, the Federal Aviation Administration, mariners, fisheries, the media and local agencies of upcoming testing activities.

## ACOUSTIC MEASUREMENTS AT SEAFAC

Submarines are critical assets used by the Navy to defend the United States and its interests, and the stealth of a submarine is of the utmost importance. SEAFAC ensures the highest level of stealth by measuring the precise level of sound emitted from a submarine.

The Navy uses in water sensors (hydrophones) to passively acquire acoustic signatures into an electronic format to allow for real-time analysis and evaluation of shipboard systems.

SEAFAC has two sites to acquire these acoustic signatures: the Underway Measurement Site and the Static Site. The data acquired at both sites are relayed to the Operations Center where Navy scientists and engineers process the signatures, analyze the results and determine the source of the sound, which occurs real-time.

### Underway Measurement Site

The Underway Measurement Site acquires the signature of the ship while it is moving through the water. Measurements during movement ensure that propulsion and flow noises can be captured. The measurement process is slow and takes about 30 minutes to conduct 6 minutes of data acquisition for every single measurement. The remainder of the time is spent repositioning the ship for the next measurement. Typically, a submarine will spend two to five days conducting underway testing.

### Static Site

At the Static Site, suspension barges lower the submarine on cables to hold it in a stable position. The Submarine can be suspended at various depths to evaluate how sea pressure affects the acoustic signature. The Static Site primarily measures the signature of rotating equipment onboard the vessel. The vessel does not have to maneuver so the testing can be conducted more rapidly. Also, better communication lines exist between the vessel and the Operations Center, therefore, the testing is more controlled and efficiently conducted. Typically, the submarine will spend one to seven days conducting Static Site testing.

