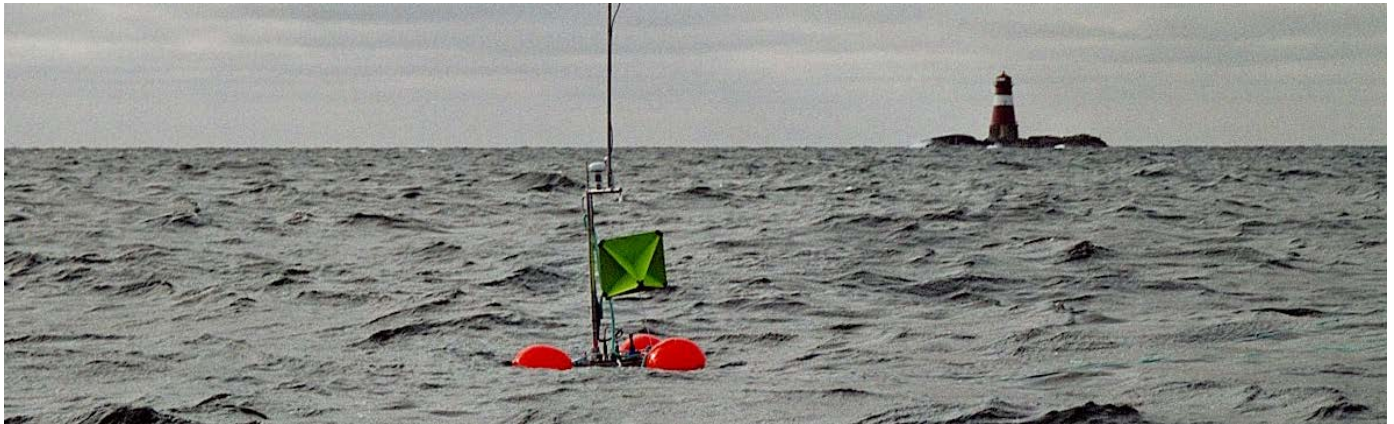


# SONCAT – Sonar Calibration and Training System



## Overview

The *Sonar Calibration and Training System (SONCAT™)* is a true simulated target system for testing sonars at sea.

The system consists of two main parts:

1. A GPS positioned, battery operated buoy, containing all necessary electronics to receive, delay and retransmit an sonar pulse in the frequency band 3kHz – 60kHz, thereby simulating a sonar target.
2. A PC-based, GPS positioned SONCAT Control Station (SCS) for control, display of buoy parameters and logging of the operation.

The two units communicate using a radio link.

The buoy receives a sonar pulse, store it in local memory and retransmit it after an operator-selected *timedelay* with a *doppler shift* and a selected *target strength*.

Range and bearing of the ship radar can also be checked combining the radar reflector echo with the GPS position of the buoy.

## Applications

- Sonar Performance tests
  - Transmitter level and frequency
  - Receiver sensitivity
  - Target classification
  - Torpedo noise detection
- Sonar operator training
- Sonar intercept test
- Radar bearing and range

## Features:

- Echo repeater
- Signal generator
- Powerful and flexible sonar target
- Small footprint
- Easy deployment
- Cost effective
- Proven system with long track record



*SONCAT Control Station (SCS)*

## Operation

The buoy operates in "Active" or "Passive" mode.

In "**Active mode**" the buoy will wait for a sonar pulse. The sonar pulse is detected by the hydrophone, filtered, amplified, digitized and stored in memory. Receiving time, frequency and level is logged and reported to the SCS together with GPS time and position. After a pre-selected time delay, a pulse is sent back to the sonar ship. This can be the received pulse (echo repeat mode) or a previously recorded or operator defined pulse (stored repeat mode). The transmitted pulse can be modified with doppler and target highlights, and is gain controlled to match a preset Target Strength.

In "**Passive mode**" the buoy will transmit signals either continuously or at predefined intervals. The signals can be ship or torpedo noise for continuously transmission or stored or predefined sonar signals in interval transmission.

## SONCAT Control Station

The SCS is the main interface from the ship to the Sonar Test Buoy. All parameters in the Active Sonar Processor, ASP, are controlled from a Windows-based application program.

Mode of operation, input filter limits, gain values, signal delay, doppler, target strength and expected pulse length are settings done from the SCS.

Time and position when receiving a sonar pulse, calculated distance and bearing to the buoy, received and transmitted source level at the buoy, all parameter settings of the buoy when processing the sonar pulse, battery capacity and some other conditions are displayed on the operator screen at the SCS.

## Instrument buoy

The instrument buoy is ported in a cage with weights and floats, making it stable in the sea. A 2-meter mast is supporting the radio antenna, the GPS receiver and a passive radar reflector.

## Specifications

| SONCAT               |  |
|----------------------|--|
| Frequency range      | 3 – 60 kHz (other options available on request)  |
| Signal levels        | Undistorted receive level: 180dB // 1µPa<br>Min. trig level: 120dB // 1µPa<br>Peak output from buoy (at 18 kHz): 190dB // 1µPa<br>Manual adjustable target strength: -60dB - +20dB |
| Signal pulse         | Pulse length: 10 ms – 15 s<br>Pulse delay: 0.2 s – 60 s<br>Doppler: 0 - ± 90 knots, accuracy < 1 knot<br>Signal shape: Any<br>Passive signal: Any wave file                        |
| Target highlights    | -20dB - +6dB, step 1 dB, 10 ms resolution.<br>10 different settings.   |
| Transducer depth     | 5 – 30 m (other options available on request)  |
| Operating distance   | Up to 10 km radio range (line of sight)  |
| Battery capacity     | 8 hours echo repeat<br>24 hours position transmission (GPS and radio)  |
| Total weight of buoy | 64 kg  |



SONCAT buoy