



Wave Gliders for Anti-Submarine Warfare

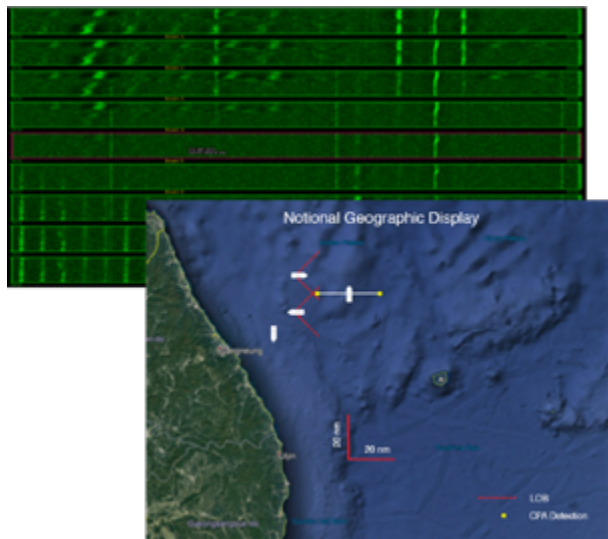
Wave Gliders provide a low-observable, ultra-long-endurance platform for persistent maritime access, surveillance, and communications. Equipped with a hydrophone array and onboard data processing, these platforms become effective sensors in support of Anti-Submarine Warfare (ASW).

Forming a mobile, distributed sensor network, ASW Wave Gliders extend target detection capability hundreds of miles over the horizon. The rapidly deployable solution provides persistent acoustic surveillance, real-time onboard acoustic processing, and cueing of high-value assets like maritime patrol aircraft.

Wave Gliders for Anti-Submarine Warfare

System and Design Capabilities

The ASW Wave Glider solution consists of the Wave Glider uncrewed surface vehicle equipped with an acoustic hydrophone array and acoustic processing software. A variety of acoustic sensors can be used with the ASW Wave Glider, including thin line towed arrays like the KraitArray™ by SEA, Ltd.



Sample Geo tactical situation display and lofargram

Key capabilities of the ASW Wave Glider include the ability to:

- Provide persistent maritime surveillance and acoustic detection of narrowband and broadband targets
- Identify narrowband energy Line of Bearing (LOB) of target relative to an ASW Wave Glider
- Identify target Closest Point of Approach (CPA) to an ASW Wave Glider and calculate the relative speed and bearing
- Identify broadband energy LOB of target relative to an ASW Wave Glider
- Store acoustic data and system status data securely onboard for recall
- Prepare and transmit over-the-horizon (OTH) and line-of-sight (LOS) contact reports
- Relay messages and commands to and from Tactical Situation Displays and Acoustics Data Displays

Concept of Operations

1. **Long-Endurance Persistent Surveillance:** Wave Gliders maintain position in trip wire or hotspot coverage formations, continuously monitoring for acoustic signatures that meet programmed frequency gating and target motion criteria.
2. **Target Detection:** After detecting a target of interest, a track is initiated and a contact report is generated and sent to a human operator for evaluation.
3. **Tracking & Data Recall:** The operator determines whether a more detailed review of the data is warranted, and can ask the Wave Glider for a lofargram, an acoustic snippet that covers the time, frequency and bearing of the acoustic data that generated the contact report.
4. **Validation & Interdiction:** The acoustic data from the ASW Wave Glider allows the operator to validate, or even classify the target, before sending a high-value asset to intercept, reacquire, and engage the target.

