



SUCCESS STORY

TOPIC NUMBER: N101-014

SBIR INVESTMENT: \$2,296,377

PHASE III FUNDING: \$9,706,013



HIGH GAIN ARRAY OF VELOCITY SENSORS

SeaLandAire Technologies developed an innovative new sonobuoy that will deploy from the P-8A Poseidon and will provide game-changing capability to track and locate enemy subs, and enhance the fleet's anti-submarine warfare (ASW) efforts.

SeaLandAire Technologies, Inc.

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THE CHALLENGE

Sonobuoys are the primary means by which acoustic sensing devices are deployed into the ocean, helping to locate and track submarine targets of interest during anti-submarine warfare (ASW) missions. The majority of current production sonobuoys are packaged in air-deployable, A-sized housings, and are deployed as free-floating acoustic sensors. They provide detection capabilities in a wide range of noise and threat environments, but there are noise environments where improved detection capability is desirable. To provide the improved detection, the Navy sought compatible new designs that take advantage of multiple directional frequency analysis and recording (DIFAR) sensor elements in vertical line arrays with enhanced processing to provide the capability of substantial array gain for a variety of noise and threat environments.

THE TECHNOLOGY

SeaLandAire Technologies, Inc. answered this call and began the development of its Digital DIFAR Vertical Line Array (DDVLA) sonobuoy. The DDVLA sonobuoy is a brand-new type of acoustic sonobuoy that deploys the hydrophones in a vertical line. When deployed from an airplane, these sonobuoys can work in variable ocean depths. In addition to the hardware, software and knowledge products, enhanced signal processing and displays are being developed to support the usability of DDVLA by fleet operators. This will ensure sufficient target detection within range and time constraints, as well as detection threshold requirements.

THE TRANSITION

SeaLandAire Technologies, Inc. was awarded a \$9.7M basic ordering agreement from NAVAIR (N68335-20-G-1049) in 2020. The goal of the Phase III effort is to develop a prototype sensor so the Navy can verify and validate the new design. Once that is accomplished, they are looking to mass produce the technology, and deploy it around the world for ASW missions, providing our Sailors an exponential increase in capability.

THE NAVAL BENEFIT

The DDVLA sonobuoy provides increased acoustic performance in certain ocean environments, necessitating a new type of sonobuoy. SeaLandAire Technologies, Inc. successfully transitioned through several SBIR awards, including Phase I, II and II.5, to improve acoustics of the DDVLA prototype and further develop critical subassemblies toward a production sonobuoy, which includes A-size form factor and reduced cost. By developing an A-size DDVLA sonobuoy at a reasonable cost, the path to provide the Navy a solution that significantly enhances its ASW capabilities may be realized.

THE FUTURE

The design and development of the DDVLA is the first step in the Navy's new sonobuoy product line in active acoustics. DDVLA is the first of its kind; it's not just a new algorithm, it's an entirely new hardware architecture. In July 2022, DDVLA was successfully tested in Key West, Florida, and testing will continue with the goal of validation and mass production. Although this technology was exclusively designed for the Navy, the detection of acoustic signals from the array has potential applications in marine mammal detection, drug interdiction and terrorist security systems. In addition, the Coast Guard may find applicability in coastline and harbor defense.

"DDVLA represents a unique and accelerated transition of the Navy's airborne ASW wide-area search mission to unprecedented levels; the operational impact to DDVLA and its follow-on systems represents a new era of airborne ASW."

Benjamin Harrison, Program Manager, PMA 264 - Air Anti-Submarine Warfare Systems Program Office