



SUCCESS STORY

**TOPIC NUMBER: N093-168, N101-005,
N04-007**

**SBIR INVESTMENT:
\$899,895**

**PHASE III FUNDING:
\$13,328,597**



TARGET LOCALIZATION WITH DRIFTING SONOBUOYS

Through the SBIR program, Signal Systems Corporation (SSC) developed a unique approach that uses drifting sonobuoys to help the fleet gain critical information in operational environments.

Signal Systems Corporation

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THE CHALLENGE

Anti-submarine warfare (ASW) search and localization of threat submarines is often performed from an airplane. Sonobuoys are deployed in the ocean; acoustics are used to locate a target; and useful information such as position, speed, and direction are relayed to the aircraft. As these activities are conducted at higher altitudes, traditional methods for sensor location, such as visual or radio frequency (RF) techniques, become less accurate. The Navy identified the need for novel approaches, including new algorithms with drifting sonobuoys, to form a more accurate tactical picture for fleet operations.

THE TECHNOLOGY

Signal Systems Corporation (SSC) proposed an innovative approach of sonobuoy and target localization through an algorithm that provides absolute target geo-location without visual, RF or GPS inputs. SSC aimed to reduce the cost of executing high altitude ASW, lessen the precision requirements for sonobuoy delivery, and provide a solution for sensor and target localization in GPS-denied environments. The technology promises better target classification, improved search performance and improved target localization by integrating this new technology with SSC's field-level processing technology.

THE TRANSITION

SSC is continuing to evolve these technologies. SSC executed two Phase III contracts to make iterations of this technology, and several others, developed through SBIR. What ultimately arose from these contracts was not only the algorithm, but the adjunct prototype processor SSC developed in tandem that flies on the aircraft. Since it is not easy to manipulate an aircraft's infrastructure, SSC's product uses a laptop that is brought on the aircraft to perform development and demonstration tests.

THE NAVAL BENEFIT

Advancing new concepts and finding new ways to perform airborne ASW is essential in order to provide a more accurate common operating picture. There is a need to reduce the time it takes for operators to gain a clear understanding of the threat submarine; however, accuracy cannot be sacrificed. With new algorithms, including the kind developed by SSC, the time it takes an operator to understand the target location and classification can be reduced. This equates to critical information being shared in real-time. The portable hardware created by SSC has been used by the Navy to test multiple technologies, resulting in time and money savings by allowing for stand-alone system testing rather than needing to integrate into existing platform systems.

THE FUTURE

Leveraging its successful work with sonobuoys, SSC was also awarded another Phase III contract to use current sonobuoy systems to investigate environmental characteristics; it is important to the Navy to be able to make these measurements quickly and whenever needed. SSC will use currently available sonobuoys in order to conduct these environmental measurements and to help provide information which will determine the most effective way to conduct airborne ASW operations.

"The ongoing research, development, test, engineering, and acquisition for advanced technology maturation of techniques for target localization using drifting sonobuoys and unique signal processing are critical to the success of the fleet's airborne antisubmarine warfare (ASW) operations and training missions."

Benjamin Harrison, , Air ASW Systems Program Office (PMA-264)