Department of the Navy SBIR/STTR Transition Program

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NAVSEA #2025-047

Topic # N231-031
Underwater Cavitating Jetting Antifouling System
Boston Engineering Corporation

WHO

SYSCOM: NAVSEA

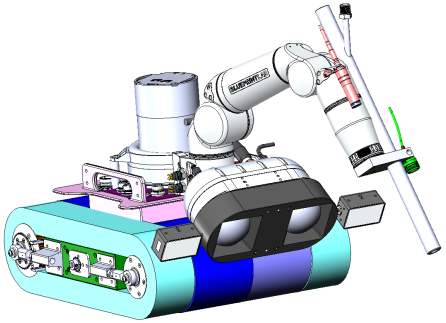
Sponsoring Program: NAVSEA PEO IWS 5.0

Transition Target: NAVSEA PEO IWS 5.0

TPOC: (301) 227-5622

Other Transition Opportunities: PEO Subs, PEO Ships, NAVFAC, Commercial Shipping, Cruise Industry

Notes: This platform is the underwater variant of a commercial above-water version. The design of both of these platforms is highly modular, enabling the use of any number of work packages or sensors above or below water.



Boston Engineering Corporation

WHAT

Operational Need and Improvement: Acoustic receive arrays mounted to the contours of Navy submarines and surface combatants provide detailed understanding of the undersea environment and the entities within that environment. However, these sensitive surfaces can easily become fouled by biological growth during deployment. This biofouling causes sound energy to impinge on the sonar arrays, clouding sonar images and effectively reducing array sensitivity. Hull-conformal acoustic arrays, often coated with anti-fouling materials, can cover large areas of the hull of a submarine or surface combatant. Using current practice, this results in a need to manually clean large, fouled surface areas, which comes with a concomitant risk to divers.

Specifications Required: The technology must replace the level of biofouling removal currently achieved by Navy diver personnel. The system requires a level of autonomy, allowing cleaning of the acoustic arrays with minimal human intervention.

Technology Developed: Boston Engineering is developing an underwater suction-adhering crawling robot. The platform will use a robotic arm to replicate the fidelity of a human diver to match or exceed the cleaning ability. Additionally, localization will allow the system to eventually achieve autonomous cleaning of the arrays, enabling a bespoke cleaning schedule based on environmental conditions.

Warfighter Value: This technology enhances safety of the Warfighter by removing diver personnel from the water, instead allowing the hull-conformal acoustic arrays to be cleaned from the relative safety of a boat or potentially pierside. Additionally, with an "on-demand" cleaning ability, the nation's fleet can stay in peak condition ready to immediately shift back to operations with maximum effectiveness.

WHEN

Contract Number: N00024-25-C-S044 **Ending on:** Feb 18, 2027

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Robotic Arm/Water Jet Integration	Medium	Cavitating water jet fidelity testing for antifouling effectiveness	6	3rd QTR FY26
Localization of platform that meets or exceeds diver capability	Medium	Underwater imaging system demonstration	5	1st QTR FY26
Underwater stereo camera system to assist in visualization from topside/through turbidity	Medium	Underwater imaging system demonstration	5	1st QTR FY26
Crawler with suction adherence while traversing hull	Low	Cavitating water jet fidelity testing for antifouling effectiveness	6	3rd QTR FY26

HOW

Projected Business Model: Boston Engineering Corporation's business model is flexible to meet the needs of the Navy in order to get this technology into the hands of the Warfighter. The company will work with government stakeholders to determine most beneficial route: equipment sales, leasing model, etc.

Company Objectives: Boston Engineering's mission statement "Improving the Way People Work and Live Through Innovative Product Design and Novel Engineering" translates perfectly to our mindset regarding the Warfighter. We want to help the Navy, and DoD as a whole, accomplish their mission in the safest, most efficient way possible to keep the nation protected.

Potential Commercial Applications: The technology developed during this program has clear applications in the commercial sector. The biofouling process has highly negative effects on virtually any vessel or structure exposed to water. This biofouling causes serious damage and hinders performance. Commercial shipping and the cruise industry are two likely customers for an autonomous solution. Smaller variant(s) of the platform may be useful for fishing or private boats. Boston Engineering also designs solutions with modularity and interoperability in mind, so the same platform could be used with any number of sensor or work package, greatly enhancing the use cases.

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