Department of the Navy SBIR/STTR Transition Program

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NAVSEA #2024-0018

Topic # N211-033
Wireless Sensing to Improve Submarine Machinery Health Monitoring
BH Technology, LLC

WHO

SYSCOM: NAVSEA

Sponsoring Program: PEO SUB, SUB 073

Transition Target: Columbia Class Program Office, PMS 397L, SEA O5P

TPOC: (301) 227-5777

Other Transition Opportunities: PEO SHIPS, Constellation Class (FFG-62)

https://www.defense.gov/Multimedia/Photos/igphoto/2003271034/

Notes: BH Technology (at www.BHSensors.com) was founded in 2003 to disrupt the sensor and sensing technology industry. We develop, engineer and license effective, efficient and economical sensing and sensing system solutions. We engineer our technology to deliberately meet demanding military requirements. Our sensors are being used in applications ranging from submarines and aircraft carriers to missile and weapons systems. They are qualified for military standards covering shock, vibration, temperature, and EMI/EMC. More importantly, their construction allows for quick adaptation to meet specific needs.

WHAT

Operational Need and Improvement: The U.S. Navy does not currently employ autonomous continuous based machinery monitoring and predictive maintenance systems aboard fleet platforms. Current manual methods, although broadly effective, may be infrequent, labor intensive, prone to measurement error and may delay actionable information to decision makers. The Navy is seeking a broad range of emerging technologies that take advantage of commercial advances in sensor development, Internet of Things (IoT), and data analytics as applied to machinery data to develop digital twins that allow for Condition Based Maintenance (CBM) of assets. Monitoring the current and expected future states of these systems will allow the Navy to more effectively maintain their platforms through an increased awareness of system health.

Specifications Required: Small, de-mountable and compact product with wireless connectivity to existing NAVY platform infrastructure. Multi-discipline sensing capability including, but not limited to, vibration, current, and voltage. Current and Voltage sensing is noninvasive so that opening junction boxes or exposing internal cable wiring is not required. The product dimensions are 2in x 2in x 1in and will fit in the palm of a hand.

Technology Developed: BH Technology has developed a solution that can wirelessly monitor and transmit shipboard machinery data to provide an easy means of collecting data on an operational platform to enhance machinery health monitoring.

Warfighter Value: This product will reduce the current time-consuming task of shipboard visual inspections and manual data gathering on all equipment. Instead, the product will autonomously collect and transmit relevant data, reducing manual labor and data recording errors, as well as allow the sailors to inspect only when and if a piece of equipment has been flagged with a concern or issue.

WHEN

Contract Number: N68335-22-C-0666 **Ending on:** Sep 25, 2023

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Prototype 1	Low	Product developed	5	4th QTR FY23
Prototype 1 Testing	Low	Product tested on operational systems of interest (requires exercise of Phase II OPTION)	6	2nd QTR FY24
Prototype 2	Medium	Product developed with Sponsor updates (requires exercise of Phase II OPTION)	7	4th QTR FY24
Prototype 2 Testing	Medium	Product tested onboard vessel for an extended duration (requires exercise of Phase II OPTION)	8	1st QTR FY25

HOW

Projected Business Model: BH Technology anticipates the NAVY's requirement for large quantities of the product. We are interested in partnering with Defense Primes such as Huntington Ingalls Industries and/or General Dynamics for licensing, manufacturing, and direct sales channel development of our product and technology. We have employed this proven business model for our other products that have already transitioned to the fleet.

Company Objectives: BH Technology's objective is to design, develop, qualify, transition, and deploy this reliable and effective system for condition-based maintenance and manpower management through joint collaboration with Defense Primes.

Potential Commercial Applications: Remote monitoring and efficiency enhancement of functional operations ranging from industrial plant operations to mineral, gas, and oil exploration, to sustainable aquaculture resources to alternative energy (i.e., solar, wind, etc.) farms, as well as commercial IoT products, systems, and geographically extended platforms.

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