Department of the Navy SBIR/STTR Transition Program

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NAVSEA #2021-0421

Topic # N192-108

Composite Structures for Missile Systems

Pacific Engineering, Inc

WHO

SYSCOM: NAVSEA

Sponsoring Program: PEO IWS 3L

Transition Target: Cruiser-Destroyer (CRUDES) platforms with MK 41 Vertical Launch Systems

TPOC:
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Other transition opportunities: Navy platforms with vertical launch systems can benefit from hybrid composite/metal uptake hatches and/or cell hatches. The corrosion resistant, heat resistant, durable, low-maintenance, and weight saving materials will save the Navy money and increase ship availability. Ticonderoga class CG, DDG-51 class, DDG 1000, unmanned vessels, AEGIS Ashore, and submarines can all benefit from this technology. Our allies and foreign partners will also benefit; they use the same system.

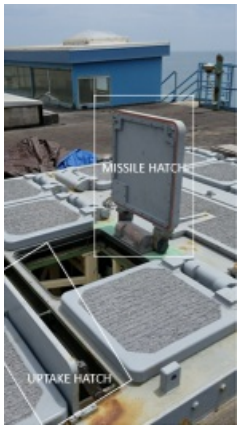

Image courtesy of Pacific Engineering Inc.

WHAT

Operational Need and Improvement: The primary goal of the Small Business Innovation Research (SBIR) Phase II is to resolve a major maintenance problem with corrosion and availability for the weapon system. Currently, replacement is required during each availability at great expense which drives up sustainment costs.

Specifications Required: Reduce weight, meet shock and ballistics requirements, and reduce sustainment costs.

Technology Developed: Composite technology using specific resin and fiber selections unique to meet all performance requirements.

Warfighter Value: Preliminary analysis shows that in addition to solving corrosion issues, a weight reduction by 20-30 % while meeting ballistic requirements is achievable.

WHEN

Contract Number: N68335-21-C-0169 **Ending on:** December 14, 2023

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Combine non-metallic components and metals (that will not corrode) using FST qualified resin materials through integrating state-of-the-art additives	Low	Sub Element testing per MIL STD 810	5	June 2021
Develop a ceramic-composite armor system that will meet envelope (Develop a non-metallic armor system that will meet envelope (	Low	Sub Element Ballistic Testing	5	September 2021
Incorporate materials and coatings that will not degrade or distort	Med	Structural and environmental testing complete. Prove out manufacturing processes through assembly	5	June 2022

HOW

Projected Business Model: PEI has the in-house capability to build light weight composite uptake hatches and can transition products to the fleet. PEI will work with prime integrators for insertion of the products into their products which the various programs of record.

Company Objectives: Find ways to reduce weight and improve sustainment costs for defense components while meeting the shock and ballistic requirements and eliminating/reducing corrosion for the uptake hatches. Additionally, leverage other technology gains to provide an evolutionary approach to improving and introduction of products into the fleet.

Potential Commercial Applications: The commercial applications represent a large market. For example, potential breakthroughs in meeting ballistic protection requirements opens up the commercial market significantly across the entire protection realm. There is direct application to many of the armored vehicles used by the US Military. Additionally, corrosion resistance and weight savings for components can be applied across the military.

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