

Topic: N141-041

Pacific Engineering, Inc.

Adaptable Universal Composite Canister for Virginia Payload Modules

Pacific Engineering, Inc. is developing an Adaptable Universal Composite Canister (AUCC) System for the Virginia Payload Module (VPM). This design is adaptable, permitting the packaging of a wide variety of underwater deployable payloads (UUVs, UAVs, etc.) while providing the required common hosts services within a shock mitigation environment. This modular approach permits a variety of missions through deployment of an assortment of payloads without requiring that the submarine return to port, thereby increasing the number of roles that a submarine can perform. In addition to lowering the costs of launching payloads, the AUCC enhances mission capability by permitting rapid loading and integration. As an added benefit, the AUCC will permit Team Sub to field and evaluate other payloads which could be deployed via the VPM.

Technology Category Alignment:

Modularity

Materials & Manufacturing Processes

Weapons Technologies

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SYSCOM: NAVSEA

Contract: N00178-17-C-8002

Department of the Navy SBIR/STTR Transition Program

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NAVSEA #18-555

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Adaptable Universal Composite Canister for Virginia Payload Modules
Pacific Engineering, Inc.

WHO

SYSCOM: NAVSEA

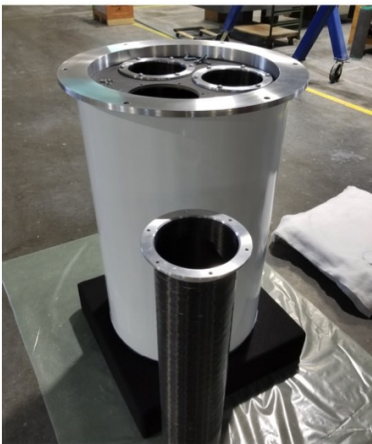
Sponsoring Program: PEO-SUBS

Transition Target: Virginia Class
Submarine PMS-450

TPOC:
(540)653-3639

Other transition opportunities: PEI Encapsulation technology can be applied to many Navy programs, such as shells and components for Unmanned Undersea Vehicles, structures for Dry Combat Submersibles and components for torpedoes.

Notes: Enables Virginia Class Submarines to carry and deploy a wide range of Unmanned Undersea Vehicles and payloads



PEI Mock-up of "Mini-MAC" concept with continuous outer
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WHAT

Operational Need and Improvement:

The primary objective of this SBIR Phase II effort, is to develop an Adaptable Universal Composite Canister (AUCC) System for the VPM. This canister design will be adaptable to permit the packaging of a variety of payloads, thereby increasing the number of roles that a submarine can perform. This modular approach will permit a variety of missions through deployment of an assortment of payloads without requiring that the submarine return to port. The canister system will cost-effectively accommodate a variety of underwater deployable payloads (UUVs, UAVs, etc.) while providing the required common hosts services within a shock mitigation environment. In addition to lowering the costs of launching a variety of payloads, we believe that the AUCC will enhance mission capability by permitting rapid loading and integration. As an added benefit, the AUCC will also permit Team Sub to field and evaluate other payloads which could be deployed via the VPM.

The AUCCS-VPM design will also develop a concept for the required interface capabilities between combat systems, ship services and payload providers. This will ensure connectivity between the various payloads and the AN/BYG-1 Combat Control System on the submarine.

Specifications Required:

Meet MIL-DTL-901E Shock and Vibration Requirements, Submarine Material Requirements

Technology Developed:

Encapsulation Methods using Composite Canisters

Warfighter Value:

Enables a larger family of Payloads to be deployed from Virginia Class submarines

WHEN

Contract Number: N00178-17-C-8002 **Ending on:** December 30, 2019

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Candidate Payload Study	N/A	3 viable payload candidates	6	September 2018
Material Development	Low	Material test results	6	October 2018
Develop Manufacturing Processes	Med	Filament winding and bonding process	6	December 2018
Shock Survivability Analysis	Med	Preliminary Shock Analysis	6	June 2019
Combat System Interface	Med	Preliminary System Design	6	October 2019
Canister Design	Med	Preliminary Design Completed	6	December 2019

HOW

Projected Business Model: PEI will be the OEM and fabricate for LRIP and full production AUCC and composite canisters for the payloads at our 35,000 sq ft composite manufacturing plant in Lincoln NE

Company Objectives: Develop a concept for an Adaptable and Universal Composite Canister (AUCC) system for the Virginia Payload Module
Lower the overall cost of launching payloads by accommodating a variety of underwater deployable payloads (UUVs, UAVs, etc.)

Provide a standardized electronics interface between the Common Weapon Launcher (CWL) and the AUCC payloads

Potential Commercial Applications: unmanned undersea vehicles, launchers, torpedoes

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