Topic: N132-142

San Diego Composites, Inc.

TRIDENT II REPLACEMENT CLOSURE

Closures protect payloads from surrounding environments during underwater launch. San Diego Composites, Inc. (SDC) has developed a replacement technology and modified design that utilizes readily available, low cost, off-the-shelf materials, and an optimized design to improve manufacturability and reduce cost of the existing design. SDC is an aerospace and defense company with in-house capabilities to develop and produce products and systems and stands ready to complete development and work with the prime contractor and the U.S. Navy to qualify, integrate, and transition the replacement technology into the current design.

Technology Category Alignment:

Ground and Sea Platforms
Protection, Sustainment, and Warfighter Performance
Readiness
Structures and Protection
Undersea Weapons

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SYSCOM: SSP
Contract: N00030-15-C-0043

Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N00030-15-C-0043

Department of the Navy SBIR/STTR Transition Program

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WHO

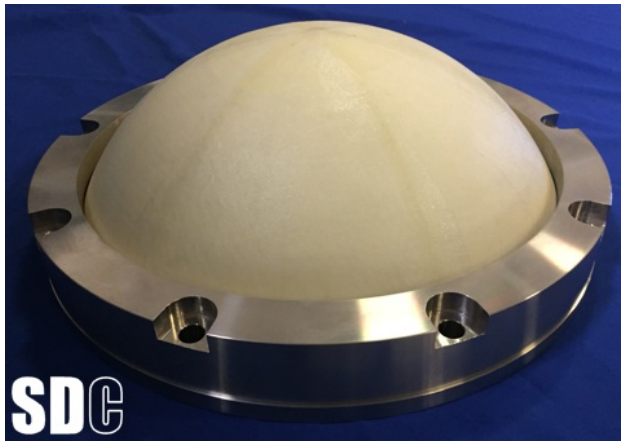
SYSCOM: SSP

Sponsoring Program: Strategic Systems Program (SSP)

Transition Target: Trident II (D-5) Strategic Weapons System

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Other transition opportunities: The technologies utilized in this replacement design are directly applicable to other current underwater launched systems, as well, as systems outside of the underwater realm, including land-based, ship-based and aboard Unmanned Aerial Vehicles (UAVs). The design is tailorable and scalable to varying size payloads.



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Notes: San Diego Composites, Inc. (SDC) manufactured a replacement subscale prototype subassembly (shown above) and successfully conducted operational tests to demonstrate MRL5 and TRL5.

WHAT

Operational Need and Improvement: Closures protect payloads from surrounding environments during underwater launch. San Diego Composites, Inc. (SDC) has developed a technology that utilizes readily available, low cost, off-the-shelf materials, to improve manufacturability and reduce cost of an existing design. SDC is an aerospace and defense company with in-house capabilities to develop and produce products and systems and stands ready to complete development and work with prime contractor and the U.S. Navy to qualify, integrate, and transition the technology into the current design.

Specifications Required: The closure must survive all operational requirements for an underwater launch system.

Technology Developed: Several technologies contributed to the success of SDC's replacement design. First, SDC identified a readily available, low cost, off-the-shelf material to replace a legacy material. Second, SDC developed an optimized structural design. Lastly, SDC developed an alternative joint configuration to replace the current joint design in order to improve manufacturability and reduce cost.

Warfighter Value: Due to the replacements designs low cost materials and improved manufacturability, SDC estimates that the replacement design subassembly cost is less than the current system subassembly.

WHEN

Contract Number: N00030-15-C-0043 **Ending on:** March 1, 2018

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Phase I Completed with Prototype Closure Test	Low	Prototype Test in Lab Environment	TRL4	July 2015
Phase II Preliminary Design Review	Low	Prototype Pressure Test in Relevant Environment	TRL5	June 2017
Phase II Critical Design Review	Med	Prototype Pressure Test in Relevant Environment	TRL5	August 2017
Phase II Option Completed with Full Scale Fabrication	Med	Prototype Pressure Test in Relevant Environment	TRL5	March 2018

HOW

Projected Business Model: SDC is an aerospace and defense company with in-house capabilities to develop and produce products and systems and stands ready to complete development and work with the prime contractor and the U.S.Navy to qualify, integrate, and transition the replacement technology into the current design. Upon completion of the Phase II program, SDC's replacement design will achieve TRL 5 (follow on testing will achieve TRL 6) and MRL 8. Follow on development effort will focus solely on testing and qualification of the design. Since the test apparatus and procedures to qualify the structure already exist, raising to TRL8 is feasible in a limited time frame. At the completion of the follow on development effort, SDC will be ready to begin low rate initial production (LRIP).

Company Objectives: SDC is an employee owned company with a staff that is committed to providing high quality materials and structures technology, product development, testing services, and production to the aerospace and defense community. The closure program is part of SDC's Missile Canister product area. SDC's other main product areas include Missile Systems, Propulsion Systems, Aircraft System, and Space Systems. SDC's objective of participating in the Navy STP and FST is to inform government agencies and primes of this closure technology and SDC's capabilities with a goal to further advance the closure technology for platform integration and to initiate future collaborative efforts based on the government's and industry's needs. SDC is AS9200 RevC certified and an approved supplier to most major prime contractors and looks forward to continuing to be a valuable teaming partner for the government, prime contractors, and other small businesses.

Potential Commercial Applications: In the commercial sector, the replacement closure technologies are applicable to any underwater system that uses a closure to protect and also allow for release of equipment. One example is research vessels that deploy underwater buoys or sensors. Technologies utilized in the Phase II one-time-use replacement closure are also applicable to reusable closures.

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