Department of the Navy SBIR/STTR Transition Program

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NAVSEA #2024-0374

Topic # N211-064
Low Cost Deepwater Delivery Vehicle
TRITON SYSTEMS, INC.

WHO

SYSCOM: NAVSEA

Sponsoring Program: NAVSEA

Transition Target: NAVSEA

TPOC: (401) 832-5133

Other Transition Opportunities: Commercial sensor deployments to the seafloor including acoustic monitoring for offshore wind, marine species monitoring, and seafloor seismic monitoring

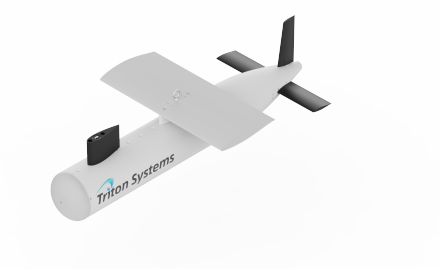

Image courtesy of Triton Systems

Notes: The DART glider delivery system provides budget friendly capability for the precise deepwater deployment of modular, ad-hoc payloads. The glider's PVC hull and a limited cycle buoyancy engine drive costs low enough to be considered disposable.
DART is a part of Triton System's family of extremely low-cost uncrewed systems. All vehicles are "build-to print" designs, using low-cost manufacturing processes and non-aerospace materials. This enables competitive bidding and surge manufacturing capabilities.

WHAT

Operational Need and Improvement: A huge variety of oceanographic, biologic, and environmental sensors are deployed to better understand ocean behavior and support Naval activities. Despite widespread use, no low-cost method for precise deployment of subsea sensors exists. For $10,000 plus sensor cost, DART performs deployment missions which currently range from $0.5M to $10M depending on payload and mission details.

Specifications Required: The delivery system should be low-cost and able to accommodate a variety of payload weights and form factors. Glider navigation should be sufficient for payload placement with low target location uncertainty for deep-water deployments. Logistics should include efficient deck stowage and ease of deployment.

Technology Developed: Triton Systems developed the DART glider for delivery of payloads to the deep ocean floor at extended standoff distances, high accuracy, and low cost. The DART architecture is based on cargo/passenger aircraft design, providing easy cargo integration (due to high passive stability and high control authority), and large payload capacity. A low aspect ratio parasol wing provides sufficient lift for large payloads and allows the vehicle to be stowed efficiently on deck. The modular payload compartment and easily adjustable ballast allows for quick integration of large or ad-hoc payloads.

Warfighter Value: The DART delivery system reduces deepwater sensor placement costs by several orders of magnitude. The vehicle is low enough in cost to be single use; however, the vehicle can be deployed and reconfigured repeatedly if the warfighter chooses. The system is two-man deployable, with or without the use of an overhead crane, and quickly configurable, greatly reducing the logistical costs for sensor deployment.

WHEN

Contract Number: N68335-23-C-0621 **Ending on:** Sep 05, 2024

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Initial prototype build and testing	N/A	Proper trim/ballast, subsystem verification	4	1st QTR FY23
Full scale glide test	Low	Glide slope, passive vehicle stability	5	1st QTR FY23
Gen-II prototype build and test	Low	Integration of variable ballasting, navigation sensors and next generation BEM and control servos	6	3rd QTR FY24
At-sea navigation with Gen-II prototype	Medium	Navigational accuracy, performance in relevant environment, delivery of representative payload to the ocean floor	6	4th QTR FY24
Deep water performance testing with Gen-III prototype	Medium	Delivery accuracy, system reliability	7	3rd QTR FY25
Navy testing of payload delivery	Medium	Successful payload delivery and vehicle recovery	8	2nd QTR FY26

HOW

Projected Business Model: Triton Systems will conduct testing and Low-Rate Initial Production (LRIP) in-house. Pending the scale of Navy demand, Triton will leverage existing partnerships to license production of the DART design. To commercialize beyond initial Navy needs, we envision providing variants of DART to commercial offshore service forms.

Company Objectives: Triton Systems aims to integrate DART with other low-cost uncrewed vehicles in its portfolio. Triton will license technology to partners or expand manufacturing capabilities to meet demand.

Potential Commercial Applications: Low cost and relative ease of use makes the DART system well suited to commercial users. Triton has existing partnerships with offshore service providers such as JASCO (mammal monitoring) and Blue Ocean Monitoring (seafloor seismic). Leveraging these relationships will establish a user base in commercial seafloor sensor placement.

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