Department of the Navy SBIR/STTR Transition Program

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ONR Approval #DCN# 43-10617-22

Topic # N193-A03-5
NAVY TECHNOLOGY ACCELERATION - 5. Shared, sensed, distributed undersea and atmospheric simulation environment for use in maritime LVC training at sea - Advanced Technologies (including AR/VR) for Manpower, Personnel, Training, and Education
Arorae Corporation

WHO

SYSCOM: ONR

Sponsoring Program: Office of Naval Research (ONR)

Transition Target: United States Navy (USN) Live and Virtual Constructive (VC) Training Enterprise

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Other Transition Opportunities: PMA-205, PMA-265, Foreign Military Sales (FMS)

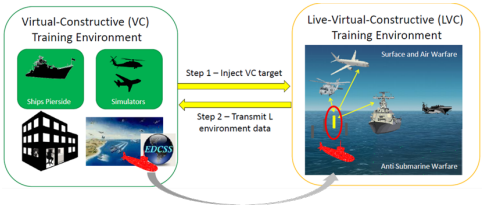

Image courtesy of Arorae Corporation 2022

Notes: With the goal of enabling a common underwater LVC training environment, the Training Sonobouy (TSB) introduces a platform agnostics means to inject simulated underwater targets to Anti-Submarine Warfare (ASW) capability ships and aircrafts, without changes to the platforms themselves. This has the advantage of enhanced LVC training opportunities at a potential overall cost savings to the Navy when including the cost of deploying live ASW targets

WHAT

Operational Need and Improvement: Navy Anti-Submarine Warfare (ASW) capable aircraft cannot receive and process a simulated scenario for combined Live Virtual Constructive (LVC) training; all ASW training requires live targets. The Training Sonobuoy (TSB) was developed to enable constructive underwater target signatures to be included in the actual live sensed data of sonobuoys, via the modification of the Navy standard sonobuoys (to receive and process the LVC scenario) vice modification of the aircraft themselves. This provides a platform agnostics approach to enable LVC ASW training, removing the need and costs involved in deploying and managing live targets. It also enables the opportunity for rapid training enhancements that LVC can bring.

Specifications Required: Navy Interoperability Standard (NIS), Navy Continuous Training Environment (NCTE), AN/SSQ-53 Directional Frequency Analysis and Recording (DIFAR)

Technology Developed: TSB -- a modified AN/SSQ-53 DIFAR buoy -- capable of receiving an LVC scenario over a satellite network and injecting simulated underwater acoustic signatures into the actual live, sensed underwater environment. This device was integrated and tested within the current Navy LVC enterprise to ensure interoperability with the NCTE and will allow combined ASW training during traditionally live training events such as Composite Training Unit Exercise (COMPTUEX).

Warfighter Value: The utilization of TSB will afford the warfighter more opportunities for LVC training, removing the need and potential high costs of deploying and managing live underwater targets. Where the TSB has currently focused on the DIFAR, the concept and design approach can be extended to other types of sonobuoys and weapon deployment for a complete LVC ASW kill chain.

WHEN

Contract Number: N68335-20-F-0550 **Ending on:** May 01, 2022

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Phase I completion	High	Concept developed	2	3rd QTR FY20
First hardware-software integration test at company facility	High	Begin bench testing hardware and software	4	3rd QTR FY21
In-water test in Honolulu	Medium	Constructive signal input into live environment	5	2nd QTR FY22
Final test and demonstration in San Diego	Medium	Validate and demonstrate integrated solution to fleet LVC stakeholders	6	3rd QTR FY22

HOW

Projected Business Model: The business model can take multiple dimensions:
1. Obtain a follow-on Phase II, II.5 or III to further develop the ASW LVC capability, including procuring TSB devices and integration engineering services.
2. License the technology to Original Equipment Manufacturer (OEM) manufacturers for sale through existing sonobuoy procurement contracts

Company Objectives: Develop solutions and demonstrate company capability and expertise in military LVC training.

Potential Commercial Applications: Foreign Military Sales (FMS), Underwater surveillance for both military and non-military use

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