

Department of the Navy SBIR/STTR Transition Program

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NAVSEA #2021-0458

Topic # N102-182

MGB II

Hydronalix, Inc

WHO

SYSCOM: NAVSEA

Sponsoring Program:

Transition Target:

TPOC:

(619) 553-8547

Other transition opportunities:



WHAT

Operational Need and Improvement: There is a need for an advanced USV platform to support field operations in the area of Mine Countermeasure (MCM) missions. The main key aspects to address are: increase power development for longer mission duration; advance sensor integration; develop an advance software and hardware package to perform high-level autonomous behaviors; external satellite communications; improve hull design; situational awareness and communications data.

Specifications Required: Further development and demonstration of a new generation Mobile Gateway Buoy Two (MGB2) is required. The MGB2 vessel will be capable of providing external power supply, external satellite communications, along with situational awareness data and communications via command and control console, which can be stationed aboard the AFSB, RHIB, or a remote shore site for the ASW and USW CONOPS.

Technology Developed: Initial test and evaluation prototypes demonstrated to military operators since 2015. The MGB platform is a result of several years of research and development that has led to the development of a high efficiency propulsion design, hull form, and navigation system. Key aspects include acoustic modem integration, high definition cameras, autonomy control and interface software, hybrid propulsion system, and line-of-sight and satellite communication systems.

Warfighter Value: Commander Fifth Fleet forces conduct multiple missions using Navy Expeditionary Unmanned Underwater Vehicles (UUVs), unmanned aerial vehicles and other sensor payloads as part of their Intelligence Preparation of the Environment, mine countermeasures (MCM), lost object localization, and other operations. These forces presently deploy from the Afloat Forward Staging Base (AFSB) on 11-meter rigid hull inflatable boats (RHIBs) that maneuver over the horizon. Present operations require the crews to monitor information from the RHIB using a variety of tools. This manned oversight creates several operational security and force protection concerns for the RHIB crew and other assets in the vicinity. There is also a delay in getting recorded data back from the UUV to the AFSB for review and analysis.

WHEN

Contract Number: N68335-20-C-0624

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Heavy Fuel Propulsion Quieting Design	Med	Functional heavy fuel generator	7	TBD
Autonomous Behavior Development and Integration	N/A	Autonomous capability	6	April 2021
Control Software Integration	N/A	Provides reliable communications link for Command and Control (C2)	6	April 2021
System Fabrication, Assembly, and Verification	N/A	Manufactured hull and integrated components	5	December 2020
Acoustic System Integration	N/A	Has an acoustic range of 1,500 m with the deployable transducer to communicate with the UUVs	6	April 2021
Advance Sensor Development and Integration	N/A	Full sensor integration	6	April 2021

HOW

Projected Business Model: The Mobile Gateway Buoy is expected to transition into full production in support of the Navy Expeditionary UUV program. The Navy Expeditionary UUV is used by Navy EOD and MUSD forces for underwater search and mine counter mine operations. One Mobile Gateway Buoy system is anticipated for each 2-3 Navy Expeditionary UUV units in Navy inventory. The market size is estimated to be approximately \$18-20 million for mine counter mine applications and an additional \$15-\$20 million for other U.S. Navy and commercial applications. Our current production facilities and staff are fully capable for full production of Mobile Gateway Buoy systems.

Company Objectives: Successful transition from high end prototype development to manufacturing of smart USV platforms that can be utilized as a tool by military operators. Program goals include delivery and training to USMC operators and field support in international military exercises.

Potential Commercial Applications: The company is aggressively marketing the base MGB USV platform for other applications separate from serving as a communications acoustic relay node. This includes efforts to sell the platform for use with the U.S. Army Space and Missile Defense Command for Hypersonic Missile testing and with USMC for EOD missions in surf zone. The company has recently completed successful initial tests with an all-electric line of sight operated MGB platform. Fleet operators will test the prototypes developed in this program for their performance, including communications range with underwater platforms, ease of use, reliability, launch and recovery, stealth, and service to keep operating. We anticipate an extensive testing out of San Diego and Norfolk, then follow on mission trials out of NSA Bahrain.

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