Department of the Navy SBIR/STTR Transition Program

Pending SYSCOM Review

Topic # N04-044

Airdroppable High Speed, Low Signature Craft

Maritime Applied Physics Corporation

WHO

SYSCOM: NAVSEA

Sponsoring Program: Program Executive Office Unmanned and Small Combatants (PEO USC), PMS 406 - Unmanned Maritime Systems

Transition Target: Littoral Combat Ship (LCS)

TPOC:
(202)781-3829

Other transition opportunities:
Manned and unmanned missions, such as,
- Rescue craft/boats
- Counter narcotic and border security missions
- Amphibious Ship deployment of recon forces, unmanned boat lane clearance, relays, and pre-assault beach preparation
- Seal Team applications
- Para Rescue deployments from aircraft
- Opportunities exist for Foreign Military Sales.

Notes: The figure represents MAPC's Unmanned Diesel Greenough Advanced Rescue Craft (UD-GARC) travelling at 40 knots.

WHAT

Operational Need and Improvement: The U.S. Navy needs to field cost-effective unmanned surface vehicles (USVs) to enhance Naval and Joint capability to support: Conventional Warfare campaigns, Irregular Warfare, Homeland Defense, and the Global War on Terror. USVs need to be automated to reduce communication/data exchange requirements, and have the potential, and demonstrated ability, to reduce risk to manned forces, to provide the force multiplication necessary to accomplish missions, and to perform tasks which manned vehicles cannot. They will deploy and retrieve payloads, gather, transmit, or act on all types of information, and engage targets.

Specifications Required: The requirements for the USV include: Diesel propulsion, a speed of 34+ knots (as a function of displacement and propeller pitch), a range of 400+ nautical miles, a payload of 1000 lbs, and on-station endurance of 1-5 days (as a function of range, payload, and mission package electrical load).

Technology Developed: MAPC developed the UD-GARC autonomous systems for Machinery, Electrical, and Autopilot components, enabling high reliability during high endurance missions. Additional technologies developed USVs include:
- Bow latch for unmanned launch and recovery
- Automated towed parafoil for extended line of sight communications and USV control
- Counter-rotating diesel propulsion system enables high efficiency propulsion yielding high endurance, range, and payload
- Self-righting option with inflatable buoyancy on mast

Warfighter Value: - Reliable, semi-expendable USV
- Communications (COMMS) relay, Force Protection,Enhanced standoff, Anti-Submarine Warfare (ASW), Mine Warfare (MIW), Intelligence, Surveillance, Reconnaissance (ISR) for the U.S. Navy.
- Small enough to carry in significant numbers aboard the LCS, Expeditionary Fast Transport (EPF), and other ship classes.

WHEN

Contract Number: N00178-17-C-9003 **Ending on:** January 1, 2019

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Convert manned GARC to diesel unmanned variant	Low	Demonstrate unmanned diesel GARC	5	April 2018
Install TALONS-S on UD-GARC and demonstrate comms relay	Med	Command and control UD-GARC via a comms link 50 n. mi from naval vessel	6	November 2018
Operational Fleet Demonstration	Low	UD-GARCs perform and complete various missions in an operational setting	8	December 2019

HOW

Projected Business Model: MAPC currently has the capability to internally manufacture up to 200 of these craft per year. MAPC has delivered 32 manned variants of the gasoline-engine GARC to the US ANG for use in Pararescue airdrop missions. Our business model includes continued design, development, and manufacturing of Unmanned Surface Vessels for U.S. Navy and other customers.

Company Objectives: MAPC is working with three prime contractors to supply UD-GARC craft that would carry their advanced mission packages and deploy from US Navy ships. MAPC's objective is to become a preeminent supplier of Navy USVs in sizes below 9 meters.

Potential Commercial Applications: Commercial unmanned surveying for hydrographic applications,
Surveying of shallow water subsea cable runs,
High-endurance, Open-ocean oceanographic data collection
Remote sensing in the offshore oil and gas industry,
Search and rescue functions for life guard units,
Nuclear power plant waterborne security,
Foreign Military Sales, and
State and local port security and marine police applications.

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