

NAVY Transition Assistance Program

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N07-204 - Maritime Applied Physics Corporation

USV At-Sea Refueling

NEED & CUSTOMER REQUIREMENT

Need: A reliable fuel connection to refuel a USV without placing a sailor aboard while underway in various sea states. This capability also provides the ability to fuel USVs at the mission site, thus releasing the LCS or other host platform to conduct independent missions. A USV may also be fully fueled after launch, above platform launch & recovery weight restrictions, to obtain maximum USV operating range.

Value to the Warfighter: Provides rapid refueling capability for USVs in the water in various sea states with no spillage, reduces manning requirements, improves crew safety and allows the maximum fuel to be provided to USVs to extend the mission duration and distance from the host platform. The technology also enables USV fueling from almost any manned or unmanned host platform.

Operational Gap: Launching a USV fueled to less than full capacity reduces its endurance to complete its mission, thus increasing the frequency of time and manpower intensive launch and recovery sequences from host platforms.

Customer Specifications: To provide a reliable connection and fuel transfer capability in at least Sea State 3 with a goal of Sea State 4. The proposed technique must prevent fuel spillage at any point during the operation. The proposed solution must not include temporary manning of the USV and it must not add significantly to the weight of the host platform or USV.

Technology Description: Improves on a COTS dry-break fueling connector design. The connection is made by a crewmember prior to launch, and the new hardware enables remote disconnection without risk of fuel spill. Additional hardware enables connecting the fuel hose without recovering it aboard host platform or putting a sailor aboard the USV.

SPONSORSHIP of original SBIR/STTR Topic

SYSCOM: NAVSEA

Transition Target: USV (PMS 406)

Original Sponsoring Program:
Unmanned Influence Sweep System

TPOC Phone Number:
(850) 235-5142

Note:

The fueling sequence in 4 steps:

TL: Sailor brings fuel hose to USV

TR: Connector engages

BL: Ready to launch and refuel

BR: After fueling is complete, the connector is released remotely and the USV is free to continue mission



TECHNOLOGY DEVELOPMENT MILESTONES (SBIR/STTR)

Milestone	TRL	Risk	Measure of Success	TRL Date
Remote disconnection of coupling	3	Low	demonstrate in lab	July 2009
Prototype manual coupling hardware engagement / disengagement	4	Low	demonstrate in lab	September 2010
Remote engagement of coupling	4	Low	demonstrate in lab	January 2011
On water system testing	5	Low	demonstrate underway in Patapsco River	June 2011
At sea demo of USV remote refueling from Navy host platform	6	Moderate	demonstrate at sea in operational conditions	December 2011

Open contract: N00024-10-C-4130 ending 14 JAN 2011

TECHNOLOGY TRANSITION OPPORTUNITIES (PHASE III)

Other Potential Applications: Initial target platform: LCS-2
others: LCS-1, DDG-51, DDG-1000, LPD-17, LSD-41

Business Model: MAPC is capable of producing and fielding the system. We currently produce the watercraft launch and recovery system for LCS-2, so the refueling system is a logical enhancement to that contract. It can also be sold to shipbuilders or DoD as a standalone system for other host platforms.

Objective: Seeking partnerships with primes and the USV acquisition community to test and transition our in water refueling technology to the LCS and other host platforms using USVs.