



**Calhoun: The NPS Institutional Archive**  
**DSpace Repository**

---

NPS Scholarship

Publications

---

2018-04

## MDUSV MCM Mission

Gallup, Shelley

Monterey, California. Naval Postgraduate School

---

<https://hdl.handle.net/10945/60515>

---

This publication is a work of the U.S. Government as defined in Title 17, United States Code, Section 101. Copyright protection is not available for this work in the United States.

*Downloaded from NPS Archive: Calhoun*



Calhoun is the Naval Postgraduate School's public access digital repository for research materials and institutional publications created by the NPS community. Calhoun is named for Professor of Mathematics Guy K. Calhoun, NPS's first appointed -- and published -- scholarly author.

**Dudley Knox Library / Naval Postgraduate School**  
**411 Dyer Road / 1 University Circle**  
**Monterey, California USA 93943**

<http://www.nps.edu/library>



## Mine Counter Measure (MCM) Systems

The future Navy MCM mission rests with the Littoral Combat Ship (LCS) and the suite of mine systems that it will employ. But the Sea Hunter Medium Displacement Unmanned Surface Vehicle (MDUSV) has the potential to play an important role in MCM both within and external to the Mine Threat Area (MTA). The Table at right lists the LCS MCM systems and identifies those that may be directly or indirectly employable by the MDUSV.

Even with the simplifications outlined below, many questions need to be answered to determine the feasibility and CONOPS for employing these systems from the MDUSV.

LCS MCM Systems Employable by MDUSV

System	Employable by MDUSV?		Comments
	MDUSV in MTA	MDUSV external to MTA	
<b>Mine Detection</b>			
<b>COBRA</b>	No	Yes	Requires installation of Fire Scout landing pad on MDUSV
<b>AN/AQS-20</b>	Yes	Yes (host CUSV)	Requires RT data transmission to remote operator
<b>AN/AQS-24</b>	Yes	Yes (host CUSV)	Requires RT data transmission to remote operator
<b>Knifefish</b>	NA	Yes	Requires post mission data transmission to remote analyst
<b>ALMDS</b>	No	No	Manned airborne platform
<b>Mine Clearing</b>			
<b>UISS</b>	Yes	Yes (host CUSV)	For MTA operations, is MDUSV sufficiently hardened?
<b>SMNS AN/SLQ-60</b>	Yes	Yes (host CUSV)	The AMNS is replaced with the surface version (SMNS). Remote operator requires an RT data feed.



MDUSV Testing a High Temperature Superconducting (HTS) MCM System

## Constraints on the MCM Mission

In exploring how the MDUSV may contribute to the MCM mission, the LCS MCM systems listed above, and how they may be supported by the MDUSV, will be considered. Simplifying and constraining assumptions to make this task more manageable are listed below:

- Only a single MDUSV will be employed in the MCM operation.
- Only the MCM mission is addressed, not mine laying and not Intelligence Preparation of the Environment (IPOE) missions.
- Only near future MCM missions are addressed. The MDUSV will be assumed to be configured as it currently exists or with relatively minor modifications.
- It will be assumed the mission is of short duration, of the order days not weeks. This avoids the issue of how the MDUSV would refuel and maintain the various MCM systems.

- It is assumed that the mission will be conducted in a Global Positioning System (GPS) enabled environment.
- The MDUSV will host the Common Unmanned Surface Vessel (CUSV). The CUSV would be deployed by a MDUSV external to the Mine Threat Area (MTA), move into the MTA, and in turn, would deploy mine detecting or mine clearing systems.



MDUSV with the TALONS deployed. A potentially important communications link for MCM missions



**Researcher:** Dr. Shelley Gallup  
Graduate School of Operational and Information Sciences

**Topic Sponsor:** N96- Warfare Systems, Surface Warfare Directorate

**NRP Project ID:** NPS-17-N089-B  
Operational Vignettes for MDUSV