

AN/WLD-1(V)1 Remote Mine-hunting System (RMS)

Executive Summary

- Following suspension of the Remote Minehunting System (RMS) IOT&E in June 2007, the Navy implemented hardware and software improvements to correct deficiencies identified during testing. The Navy conducted additional developmental testing in the summer of 2008.
- After evaluating the results of the 2008 developmental testing, the Navy determined that RMS reliability was insufficient to support the scheduled September 2008 IOT&E. The Navy canceled the IOT&E and, with DOT&E concurrence, Commander, Operational Test and Evaluation Force (COTF) conducted an operational assessment in lieu of the planned IOT&E.
- The Navy intends to focus further RMS development on the Littoral Combat Ship (LCS) and complete IOT&E on the LCS in FY10 or FY11.



System

- RMS is a naval mine detection and identification system.
- RMS includes an unmanned, diesel-powered, semi-submersible vehicle called the Remote Mine-hunting Vehicle (RMV). The RMV tows an AN/AQS-20A variable depth sonar mine sensing subsystem.
- For the current RMS, the Navy launches and remotely controls the RMV from a DDG 51 Flight IIA class ship outfitted with a launch and recovery subsystem. Although the Navy originally outfitted six ships to host the RMS, only one ship retains this capability. The Navy plans to adapt the RMS for use on the LCS as part of the mine warfare mission package.
- A data link subsystem provides continuous, real-time communications between the host ship and the RMV for command and control and transmission of sensor data.
- The RMV is controlled and RMS data is processed, displayed, and recorded using a remote mine-hunting functional segment integrated into the DDG 51 combat system.

Mission

- The host platform Commanding Officer can employ RMS to detect, classify, and identify moored and bottom mines in shallow and deep water, allowing Naval forces to determine whether potential sea routes and operating areas contain mines.
- The Maritime Force Commander can use the organic or “in stride” mine countermeasures capability of an RMS equipped ship to make mine avoidance decisions without waiting for dedicated mine countermeasures ships or helicopters.

Prime Contractor

- Lockheed Martin

Activity

- Following suspension of IOT&E in June 2007, the Navy implemented hardware and software improvements to correct deficiencies identified during testing. The Navy conducted additional developmental testing in the summer of 2008.
- DOT&E approved Change 1 to the RMS Test and Evaluation Master Plan in July 2008. This change provided for the additional developmental testing and a planned resumption of IOT&E in September 2008.
- After evaluating the results of the 2008 developmental testing, the Navy determined that RMS reliability was insufficient to

support the scheduled September 2008 IOT&E. With DOT&E concurrence, COTF conducted an operational assessment in lieu of the planned IOT&E.

Assessment

- The Navy intends to focus further RMS development on the LCS and complete IOT&E on the LCS in FY10 or FY11.
- RMS reliability and availability remain below the requirements established by the Navy. Based on 2008 reliability performance, the current system on the DDG 51

NAVY PROGRAMS

host ship is not likely to support mine-hunting operations without frequent repair or replacement of the RMV.

- Preliminary analysis indicates that, when the RMS is operational, a proficient crew can utilize the system to detect and classify moored mines in deep water. The data also indicates a detection capability in shallower minefields, containing both moored and bottom mines, when the bottom is smooth and the clutter density is low. The RMS is less capable of detecting mines under other conditions.
- The Navy intends to implement a reliability growth program for the RMS. DOT&E strongly endorses this initiative.
- Although the DDG 51 host ship can only carry one RMV, the Navy plans to outfit each LCS with two RMV's. When combined with the planned reliability growth program, this added redundancy may provide adequate operational availability to support extended mine-hunting operations.
- Radiated noise measurements collected during developmental testing indicate that the current RMV may be vulnerable to one current threat mine. The Navy has identified, but not yet

implemented, RMV configuration changes to reduce the RMV acoustic signature.

- DOT&E is working with the Navy to ensure the IOT&E on the LCS will be adequate to fully evaluate effectiveness and suitability.

Recommendations

- Status of Previous Recommendations. The Navy satisfactorily addressed all previous DOT&E recommendations.
- FY08 Recommendations. The Navy should:
 1. Re-evaluate RMS requirements, particularly reliability and availability, to reflect planned operation from the LCS. The Navy should formally revise RMS requirements if necessary.
 2. Revise the RMS Test and Evaluation Master Plan to reflect the Navy's plan to implement a reliability growth program and conduct IOT&E on the LCS.