

# RAMICS | RAPID AIRBORNE MINE CLEARANCE SYSTEM



**NORTHROP GRUMMAN**

DEFINING THE FUTURE™



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## The Threat

Mines are perhaps the most attractive weapons available to prevent U.S. naval forces from achieving sea control and power projection ashore. They're cheap, easy to get, easy to deploy, come in a variety of forms and have a potent impact on joint expeditionary warfare. ...And neutralizing mines by hand is not a job for the faint hearted. The U.S. Navy and Northrop Grumman are fielding a system that is a generational leap for clearing mines in a way that has never existed before. This transformation in the Navy's Organic Mine Countermeasures (OMCM) system will meet future requirements for high-tempo operations in a joint warfighting campaign.

## Rapid Airborne Mine Clearance System (RAMICS)

In 2002, Northrop Grumman was awarded the RAMICS contract to provide a rapid response clearance capability against near-surface and surface (floating) moored mines. The result is a low-cost, standoff approach to destroying mines with awesome presence, speed and accuracy.

It uses data from Northrop Grumman's Airborne Laser Mine Detection System (ALMDS) and other discovery capabilities that have located and classified mines or mine-like objects. RAMICS has an 80 percent hardware commonality with ALMDS and provides a significant benefit to the Navy in integrated logistics support and training life-cycle cost savings. Like ALMDS, the system is designed to operate from an MH-60S helicopter and deploy from surface ships and aircraft carriers in a carrier strike group or amphibious strike group.

RAMICS uses a gated electro-optic Laser Imaging Detection and Ranging (LIDAR) sensor for target re-acquisition and a 30mm MK44 Bushmaster II gun for neutralization.

The gun uses a MK 258 Mod I armor-piercing, fin-stabilized tracer round which is stable during flight, and after penetrating the water, supercavitates to greatly reduce drag and improves underwater flight performance. Supercavitation takes place when the tip of the high velocity RAMICS projectile vaporizes the water to steam allowing the projectile to travel through the resulting gas pocket in the water column. The accuracy of the system will destroy the mine with a minimum number of rounds.

The system has undergone a series of tests to confirm projectile depth and lethality. Testing in November 2002 validated the system's operational utility and application to future missions. RAMICS has also demonstrated rated capabilities to penetrate earth, metal and a six foot solid block wall.



## Program Status

RAMICS is in development with system integration and flight on an MH-60S helicopter scheduled for late 2009. The program is managed by the Mine Warfare Program Office (PMS 495) within the Program Executive Office for Littoral and Mine Warfare. The Naval Surface Warfare Center Panama City serves as the Technical Direction Agent and Contracting Office.

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