

AUTONOMOUS NAVAL MINE COUNTERMEASURES

MISSION IN BRIEF

Develop an integrated mine countermeasures system that accomplishes an end-to-end mission from search to disposal using autonomous vehicles.

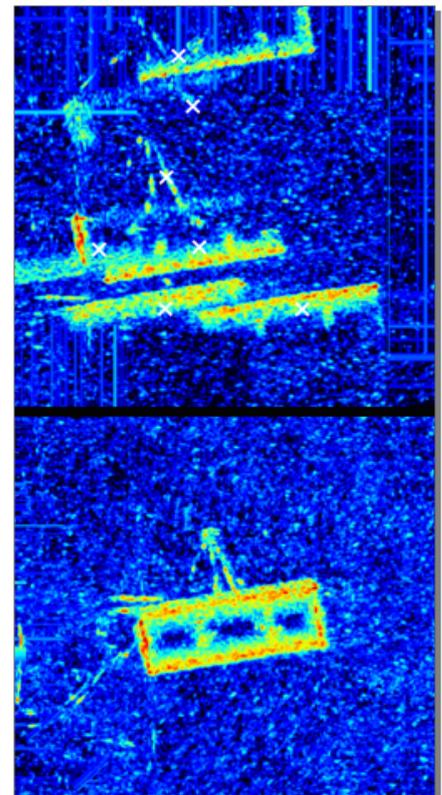
OVERVIEW

The use of autonomous systems to detect, identify and dispose of mines has the potential to transform mine countermeasures from a Cold War legacy focused on time-consuming clearance of mines using a surface ship to a quickly deployable, cost-effective system that is faster and keeps NATO personnel out of harm's way. This transformation is underway today. Autonomous underwater vehicles are routinely used for mine detection; however, the more complex and time-consuming tasks of mine identification and disposal are still conducted by expert personnel, who are either diving or controlling ROVs from a ship.

This programme is organized into three main projects:

- **Autonomous mine search using high-frequency synthetic aperture sonar**, including detection, classification, and localization of the mine, with processing and decision making capabilities on-board the vehicle
- **New concepts for mine disposal**, including expendable low-cost vehicles that would be detonated near the mine or more sophisticated, reusable AUVs that could attach a detonation device to the mine
- **High-resolution low-frequency synthetic aperture sonar**, which investigates new sensing modalities to improve mine hunting capabilities in conditions that are difficult for conventional systems

This programme relies on the Centre's core capabilities in sonar technology (acoustics, signal/image processing, and automatic target recognition), undersea communication, and autonomous vehicle command and control.



Fusing multiple views from varying aspects of a target can be difficult based on navigation data alone (top), but sophisticated algorithms developed at CMRE can bring the target into clearer view (bottom).

CONTACT

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