



France's ECA Group will supply six autonomous underwater vehicles for the next phase of MMCM
(Photo courtesy of ECA Group)

THE OCCAR-EA MARITIME MINE COUNTERMEASURES (MMCM) PROGRAMME

The MMCM Programme between the French Navy (Marine Nationale) and the UK's Royal Navy, will develop a prototype/demonstrator of a mine hunting and countermeasure system, which will confirm the feasibility of using unmanned surface and underwater systems, with effective command and control, to detect and dispose of mine threats. The benefits to be demonstrated by the programme are to confirm the systems' ability, comparable with current operational capability delivered through dedicated MCM Vessels (MCMVs) and associated off-board systems, to at least meet current operational performances and fully determine where unmanned systems deliver enhanced performance.

The MMCM solution aims to reduce the global footprint of current capability so it is required to be rapidly deployable through, where possible, modular, containerised systems which are transportable by road, sea, train and air. The programme continues to exploit technological developments within the ongoing MMCM programme. "In fact, the existence of the programme is part of the reason why significant developments are occurring," says the FRUK MMCM programme manager.

The contract to proceed with Stages 2 and 3 (Manufacture and Qualification) of the MMCM programme was recently announced at the Euronaval exhibition in Paris on 20 October 2016.

A key component of demonstrating an end-to end MCM capability is to establish a proven MCM System Readiness Level using unmanned systems in the overall architecture. "It is in this area that the MMCM programme is unparalleled," says the programme manager. "The technology is maturing, but MMCM is the only programme that has sought to develop a complete end-to-end system based on a full user requirement, and to test it in real environmental conditions against realistic MCM operational scenarios."

A key challenge, says the programme manager, is to demonstrate that the capability can be delivered with the necessary level of confidence, including mission survivability, availability and reliability. The MMCM programme enables the challenges to be tested, understood, known, overcome and fully assessed before capability is delivered, enabling confidence to grow in a transition between current and future capability.

The MMCM solution will be able to be deployed and operated from shore or a host platform/mother ship at a stand-off distance from the mine threat. The capabilities of the host vessel are outside the scope of the MMCM programme, although the results of the programme will need to be considered in determining the capabilities of the host vessel and determining whether there remains a role for the traditional MCMV when an end-to-end unmanned MCM solution is proven.

The initial MMCM configuration comprises a USV equipped with a

Towed Synthetic Aperture Sonar T-SAS and ROV with UUVs also being a part of the system (with UUV launch and recovery undertaken from a mother ship or well-found port). The MMCM solution is based on a modular structure to allow adaptation to a change in threat and to allow future upgrades for introducing additional options for sub-system launch and recovery (such as UUVs from the USV).

"A non USV-centric solution for the launch and recovery of all assets has the benefit of avoiding operational single points of failure, increasing operational flexibility (with UUV capability delivered independently of the USV) and reduces complexity and the risk of mission failure," says the MMCM programme manager. "UUV launch and recovery from a USV is certainly possible and in the future multiple launch and recovery options may be necessary within a force component of MCM capability to increase the options for the commander, depending on the operational circumstances."

The MMCM prototype for France is expected to become a first of class system by 2021, with seven further systems considered for a future production contract under the Système de lutte anti-mines future (SLAMF) programme. The MMCM programme will deliver two prototype/demonstrator systems; one for France and one for the UK; and the contract includes an option for a two-year period of in-service support during which the Marine Nationale and Royal Navy will evaluate the delivered systems. The UK demonstrator will inform requirements for the UK's Mine Countermeasures and Hydrographic Capability (MHC) programme. "It should be noted that MMCM will not be fully unmanned as there will still be a need for operators of the solution," says the programme manager, "but these operators will be either ashore (within a portable operations centre) or on board a host vessel (within the command centre) remote from the minefield."