

**The potential threats to maritime forces are expected to become increasingly sophisticated over the next few years. Project SEA 1448 Phase 2, the ANZAC Class Anti Ship Missile Defence (ASMD) upgrade, is aimed at improving the combat power of our Navy and its ability to handle these threats. Commander David Mann, Deputy Director Surface Combatants within Maritime Development Branch, provides an update.**

Among these potential threats are emerging anti-ship missiles, which will herald deadly combinations of sea skimming supersonic speed, radical terminal manoeuvre, and advanced radar seeker heads that have leading edge decoy discrimination. The threat posed by these missiles, which can be launched from the surface, sub-surface and air, has induced the need for significant improvements to capabilities of our surface combatants that will enable them to defend themselves and mission essential units.

The ASMD upgrade was approved by Government as two distinct project phases, which have been amalgamated into a confederate program now simply termed 'ANZAC ASMD'. The program is being controlled by the Defence Materiel Organisation, while acquisition and ship integration effort is being provided by the ANZAC Ship Integrated Material Support Program Alliance (ASIPA) – a partnership between the Commonwealth, Tenix and Saab Systems.

The first phase will introduce key improvements to sensors, including improved detection and indication of low-level aircraft and anti-ship missiles when close to land via the Sagem Infra-Red Search and Track system (IRST), as well as improvements to the command and control system that will facilitate reduced reaction times for detection and engagement of anti-ship missiles.

While the first phase will provide key support functions, it is the delivery of the second phase that will radically alter the combat power and physical appearance of the class. The major activity in this phase is the redesign of both masts of the frigate and the integration of the Phased Array Radar and Missile Fire Control Illuminator. These two new radar systems are being provided by CEA Technologies, a Canberra-based research and design house.

Since achieving Government approval in 2005, CEA have produced a number of test bed systems to further develop radar performance models, prove production methodology, and finalise the design that will be integrated into the new ANZAC mast structure. CEA have also successfully demonstrated the CEAFAR active phased array

in initial through-air testing in December 2007, and the full scale production model is in the final stages of build before installation in the mock mast structure, which is currently located on the roof of the company headquarters at Fyshwick in Canberra.

CEAFAR will offer significant enhancements over conventional radars to provide three-dimensional target indication and tracking of supersonic anti-ship missiles, while the CEAMOUNT active phased array radar will provide mid-course guidance and terminal illumination for the Evolved Sea Sparrow Missile. This will provide the ANZAC frigates with multiple channels of fire, and enable more than one missile to be controlled in flight at a time.

The phased array technology will be integrated into a new version of the ANZAC class Combat Management System (CMS) provided by Saab Systems Australia. This software will offer improved missile firing performance from within a multi function display console. In addition to the upgrade of the CMS and the introduction of the phased array system into the ANZAC class, the Project is also taking the opportunity to upgrade the Operations Room by integrating new large screen displays and additional consoles.

In recent times, the ASMD training facility at the ANZAC System Support Centre at HMAS Stirling in Western Australia has been fitted with a single IRST and 10 new SAAB Systems Mk3E multi-function consoles. These new consoles have undergone initial integration with the IRST and the existing simulators within the building. The training load for operations teams will be split between this facility and the training system at HMAS Watson in Sydney.

In May 2008, the project successfully completed the first of two Critical Design Reviews for the overall ASMD System. This technical review proved that the supporting studies, combat system design, and integration activities were meeting the master schedule. ASMD Installation into the first ship (currently HMAS Perth) is due to begin in January 2010, with at-sea trials completing in early 2011 and an extended trial period in July 2011. The overall project strategy for ASMD is focused on proving this new capability in the sea environment followed by installation into the remaining ships.

The ANZAC ASMD project is an important capability enhancement program that will draw on the skills of an experienced production and project management alliance in the ASIPA. Equally important, the major systems at the core of this project are being designed and supplied by local defence industry. It will provide the ANZAC class with an enhanced capability for self protection, as well as the ability to protect escorted ships, forming an integral part of the Australian Defence Force's future maritime task group.

# ANZAC Anti Ship DEFENCE

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# C Class Ship Missile UPGRADE

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