

FACT SHEET - CTD 2006-06 – Rassputin

What is a CTD?

The Defence Capability and Technology Demonstrator (CTD) Program, managed by the Defence Science and Technology Organisation, assists in the improvement of priority Defence capability by providing Australian industry with an opportunity to demonstrate their technology. This enables Defence to assess the potential of the technology to enhance military capability as well as the likely risks associated with acquiring the technology.

Title

RASSPUTIN Mono-static Sonobuoy (RMS)

Objective

The objective of the RMS CTD was to develop and demonstrate an enhanced new sonobuoy type providing improved performance for the detection and localization of quiet submarines. The new buoy supports both active and passive sonar functions by packing integrated transmit and receive arrays, and associated electronics into a single A-size sonobuoy.

Organisations Involved

- Defence Science & Technology Organisation (DSTO), Edinburgh, SA
- Thales Australia – Naval Systems, Rydalmere, NSW
- Sonartech Atlas (STN), North Ryde, NSW

Scope of Activities

The RMS CTD was composed of two distinct phases:

- Concept Evaluation
 - Proposal, study, definition and selection of new monostatic concepts.
 - Evaluation of existing mono-static configurations.
 - Final mono-static concept selection.
- Detailed Design
 - Definition and feasibility of selected mono-static concept.
 - Design of new mono-static sonobuoy.
 - Development of acoustic processor / display.
 - Demonstration of the new mono-static concept.

Achievements

The RMS CTD contract 2006-6 commenced in October 2006 and was completed in May 2008 with a Final Design Review (FDR) including Thales, DSTO and other Commonwealth representatives. The CTD scope and its target performance were successfully achieved within the proposed schedule.

A major CTD challenge was how to design the arrays with sufficient acoustic performance, while also ensuring that they fit within the very limited space of the standard A-size sonobuoy canister. This was achieved by the use of five folding telescopic arms and an innovative new mechanical deployment methodology for which a patent application is being processed by Thales Australia.

The final design selection was made in a team fashion utilising the Decision Analysis and Resolution (DAR) process developed within Thales Australia CMMI framework. This has led to a well optimised design.

The RMS team has developed and built a fully representative monostatic sonobuoy prototype with final acoustic and electrical functionality and performance, through sub-systems integration and testing.

The team has achieved the contractual requirements and demonstrated in sea trial activities that the target performance measure of an enhanced detection range has been attained.

Thales Australia has gone beyond the CTD work scope by building and successfully sea testing a full mechanical prototype of the new sonobuoy that physically demonstrates that both the arrays and the electronics can be deployed from a single standard A-size sonobuoy canister. This provides key risk reduction for any subsequent product industrialisation phase.

Capability Benefits

The successful RMS sonobuoy demonstration illustrates its potential to provide to the ADF an airborne ASW detection and localisation capability in excess of any existing operational system, in order to meet current and future ADF requirements.

The new RMS mono-static sonobuoy could potentially benefit the ADF by maintaining local sonobuoy design and manufacturing capability to rapidly service ADF specific requirements and also maintain a coherent ASW solutions capability across all ADF operational mission requirements.

The design approach enables the realisation of a single buoy in one A-size canister with functionality and performance equivalent to two existing sonobuoys used together. High transmitter efficiency also facilitates reduced weight through a reduction in the number of transmitter elements and offers a very flexible, efficient and improved capability to an airborne ASW operation.

This innovative new monostatic sonobuoy concept leverages advanced technical features already existing in current well established sonobuoys previously validated through extensive development and qualification test programs. This would facilitate a low risk transition to service of this innovative new sonobuoy product.

Photo 1 – RMS sonobuoy prototype deployed during the demonstration sea trials

