

ManTech Miniaturized Initiator Integrated into CVLWT Safe & Arm Device

S0985 - Low Cost, Reliable Packaging & Integration of Miniaturized Explosive Components



OBJECTIVE

The warhead system of the Common Very Light-Weight Torpedo (CVLWT), formerly known as the Canistered Countermeasure Anti-Torpedo (CCAT), contains the warhead, Safety & Arming (S&A) device, fire-sets, and Exploding Foil Initiators (EFI). The design of the CVLWT warhead requires two initiator systems, each containing a fire-set, EFI and explosives. Early in the CVLWT program, it was apparent that the high production cost associated with previous initiator systems was inconsistent with the overall CVLWT objective for affordability. Manufacturing and assembly of the initiator required touch labor-intensive operations and components were not optimized for assembly. For example, the EFI was connected to the fire-set via a hand soldering process that often required rework or resulted in scrap parts. Further, existing processes for initiator systems do not provide a hermetic sealed package, which leads to long-term reliability concerns. The objective of this project was to develop, integrate and demonstrate assembly and packaging techniques for miniature explosive train components contained in the S&A device of the CVLWT.

PAY OFF

The high cost associated with packaging and sealing separate energetic components will be reduced through the integration of the warhead initiation components into a single package. The development of production-oriented packaging techniques for miniature explosive train components achieves a 6X cost reduction through elimination of hand labor processes, reducing the number of piece parts, and simplifying assembly processes. For the planned CVLWT production quantities, the estimated cost per initiator unit has been reduced from \$2000 to about \$350. This reduces not only the cost of manufacture but also greatly improves the quality control and reliability by improving assembly consistency.

IMPLEMENTATION

The CVLWT system is being developed as a small, multi-mission capable torpedo weapon. The S&A packaging improvements have been implemented into the CVLWT Engineering Development Model as a part of the ongoing acquisition program development. Transition will occur from System Development & Demonstration (SDD) to Limited Rate Initial Production (LRIP) and Full Rate Production. The S&A packaging processes conducted at Naval Surface Warfare Center, Indian Head Division and subcontractors will be fully transitioned to the CVLWT warhead manufacturer at the end of the SDD phase.

Period of Performance
Jan 2001 to Mar 2005

Stakeholder
PEO SUBS, PMS 415

Performing Activity
EMTC

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Initiator Package, S&A and CVLWT Torpedo

Total ManTech Investment
\$1,133,000

Please visit the Navy EMTC Web site:

<http://www.navsea.navy.mil/nswc/indianhead/codeCA/EMTC/main.aspx>

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