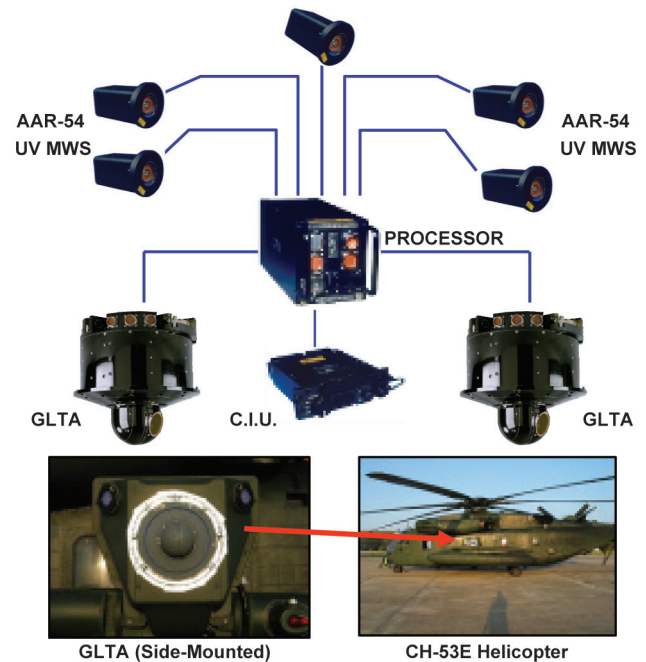


## Department of the Navy Large Aircraft Infrared Countermeasures (DoN LAIRCM)

### Executive Summary

- DOT&E submitted a Department of the Navy's Large Aircraft Infrared Countermeasure (DoN LAIRCM) CH-53E Beyond Low-Rate Production (BLRIP) Report to Congress in December 2009. DOT&E found the system operationally effective and suitable in most environments, but highlighted a critical classified performance shortfall in some environments.
- The Navy updated their missile warning software to address the critical performance shortfall and other minor problems identified during the CH-53E IOT&E. The Navy later conducted a Verification of Correction of Deficiencies (VCD) T&E, a live fire missile test, and a shipboard test to verify the resolution of the system's critical performance shortfall. Subsequently, the Navy fielded the updated software on the CH-53E aircraft and incorporated it into the CH-46E FOT&E.
- The Navy completed the CH-46E FOT&E in May 2010. Test results demonstrated improved system performance with the upgraded missile warning software.
- The CH-53D FOT&E has been cancelled due to the Marine Corps decision to retire the CH-53D fleet beginning FY12.



**C.I.U. - Control Interface Unit**  
**GLTA - Guardian Laser Turret Assembly**  
**MWS - Missile Warning System**  
**UV - Ultraviolet**

### System

- The DoN LAIRCM system, a variant of the Air Force LAIRCM system, is a defensive system for Marine Corps helicopters designed to defend against surface-to-air infrared missile threats. It combines the derivative AAR-54 two-color infrared Missile Warning Sensor (MWS) with the Guardian Laser Transmitter Assembly (GLTA). The GLTA is equipped with a four-axis, stabilized gimbal system, an AN/AAR-24 Fine Track Sensor, and a Viper™ laser. The MWS detects an oncoming missile threat and sends the information to the system processor which, in turn, notifies the crew through the control interface unit and at the same time directs the GLTA to slew to and begin jamming the threat.
- The Navy plans to procure and install 156 systems for the CH-53E, CH-46E, and CH-53D platforms.

fired, vehicle-launched, and other infrared-guided missiles. Commanders will use such protection during normal take-off and landing, assault landing, tactical descents, re-supply, rescue, forward arming and refueling, low-level flight, and aerial refueling.

### Major Contractor

Northrop Grumman, Electronic Systems, Defensive Systems Division – Rolling Meadows, Illinois

### Mission

Combatant Commanders will use DoN LAIRCM to provide automatic protection of rotary wing aircraft against shoulder

### Activity

- The Navy conducted all testing in accordance with DOT&E approved test plans and Test and Evaluation Master Plan.
- The Navy conducted live fire missile testing using DoN LAIRCM updated software in October 2009.
- The Navy conducted a VCD T&E in November 2009, using a CH-46E aircraft to resolve problems identified during the CH-53E IOT&E.

# NAVY PROGRAMS

- DOT&E submitted a DoN LAIRCM CH-53E BLRIP report to Congress in December 2009.
- The Navy conducted shipboard operational compatibility tests on the flight deck of the USS *Kearsarge* in December 2009, using a CH-46E aircraft.
- DOT&E approved a DoN LAIRCM CH-46E FOT&E plan on January 26, 2010, requiring the Commander, Operational Test and Evaluation Force to include a maintenance demonstration on the CH-46E, using pre-faulted weapons replaceable assemblies to allow an adequate evaluation of the DoN LAIRCM's built-in-test and maintenance procedures.
- The Navy completed FOT&E on the CH-46E aircraft in May 2010.
- DOT&E approved a DoN LAIRCM CH-53D FOT&E plan in July 2010, but the CH-53D FOT&E was delayed until FY11 because of an aircraft maintenance problem related to the aircraft and not DoN LAIRCM.
- The CH-53D FOT&E has been cancelled due to the Marine Corps decision to retire the CH-53D fleet beginning FY12.
- The December 2009 CH-46E shipboard compatibility test was incomplete and therefore inadequate. Flight tests were not accomplished in proximity of the ship and therefore, potential electromagnetic interference and compatibility problems could not be determined or effects of salt spray on the MWS sensors or the GLTA. Also, the Multi-role Electro-Optical End-to-end (MEON) tester (used to stimulate the missile warning system) could not be used on the ship due to lack of space on-deck.
- The CH-46E FOT&E results demonstrated improved system performance compared to results from the CH-53E IOT&E. The FOT&E was adequate to evaluate the effectiveness of the DoN LAIRCM as installed on the CH-46E.
- Live fire missile testing after the system software had been updated demonstrated improved missile warning performance.
- The Navy fielded DoN LAIRCM as an early operational capability on the CH-53E, which deployed to U.S. Central Command in 2009. In 2010, the Navy sent personnel to the deployed location to collect additional effectiveness and suitability data. Aircrew and maintenance training was enhanced through this deployment resulting in improvements in operational effectiveness and reliability growth.

## Assessment

- DOT&E evaluated DoN LAIRCM on the CH-53E and determined the system was operationally effective in most environments, but a major classified system deficiency inhibited the system from being operationally effective in all environments. DOT&E determined the system was operationally suitable. Operational testing was adequate to evaluate the effectiveness of DoN LAIRCM against the types of threats encountered in Operation Iraqi Freedom and Operation Enduring Freedom.
- The results from the Navy VCD T&E using a CH-46E aircraft indicated the correction to the major deficiency identified in the CH-53E IOT&E was effective.

## Recommendations

- Status of Previous Recommendations. The Navy and Marine Corps satisfactorily addressed three of the four previous recommendations. The Navy successfully completed a comprehensive FOT&E on the CH-46E, but was unable to complete the FOT&E for the CH-53D due to airframe cracks found in the aircraft tail-boom section.
- FY10 Recommendation. The Navy/Marine Corps should:
  1. Conduct shipboard testing of the DoN LAIRCM system on at least one of the three helicopter platforms to ascertain compatibility with the shipboard environment.