Large Aircraft Infrared Countermeasures (LAIRCM)

Executive Summary

- The Large Aircraft Infrared Countermeasures (LAIRCM) Phase I system is fielded, is in full-rate production, and, as stated in DOT&E's FY05 report to Congress, is operationally effective and suitable.
- DOT&E assessed LAIRCM Phase II Guardian Laser Turret Assembly (GLTA) testing and demonstrated capabilities as adequate to support a low-rate initial production (LRIP) decision, based on the Air Force's FY07 Guardian Operational Assessment (OA).
- The Air Force changed the Guardian Acquisition Strategy from development of a new capability to an engineering change proposal in FY07.
- This new Air Force Acquisition Strategy for Guardian eliminated the Air Force's milestone decisions for the Guardian upgrade, allowing entry into full production without milestone decision points. The Air Force has not published a revised Acquisition Strategy.
- The Air Force's Milestone Decision Authority (MDA) is accepting risk if the GLTA production continues above previously planned LRIP quantities before the Air Force conducts the 2QFY10 LAIRCM Phase II IOT&E. In order to mitigate this risk, the upcoming Test and Evaluation Master Plan (TEMP) update addresses the provision of additional FY08 GLTA reliability data to DOT&E.
- DOT&E concurs with the Air Force Operational Test and Evaluation Center's (AFOTEC) OA report and assessment that the Next Generation Missile Warning System (NexGen MWS) testing and development is adequate to support making an LRIP decision. AFOTEC provided a white paper to DOT&E on GLTA reliability.

System

LAIRCM is a defensive system for large transport and rotary wing aircraft that combines the Air Force's newest Missile Warning System (MWS) and infrared laser jammer countermeasure systems.

- LAIRCM Phase I is fielded.
  - It delivers a system of proven and available subsystems.
  - Key components include ultraviolet MWS, countermeasures processor, and infrared laser jammer.
  - The infrared laser jammer is the Small Laser Transmitter Assembly (SLTA).
  - Platforms with LAIRCM Phase I include C-5, C-17, C-37, C-130H, MH-53, and CV-22.

  - Integration on C-40, AC-130H/U, and C-130J is planned or currently underway.
- LAIRCM Phase II is a spiral upgrade in development and incorporates:
  - A new infrared MWS called the NexGen MWS
  - A smaller jammer called GLTA
- The Phase II NexGen MWS is designed to provide higher performance warning compared to Phase I MWS through:
  - Earlier threat warning
  - Improved detection in challenging urban and natural environments
  - Enhanced capability against emerging threats
- Phase II GLTA reduces life-cycle costs through:
  - Smaller and lighter packaging
  - Reliability improvements

Mission

Combatant commanders use LAIRCM to provide automatic protection to crews and large transport or rotary wing aircraft against shoulder-fired, vehicle-launched, and other infrared guided missiles. Operators need such protection during normal take-off and landing, assault landings, tactical descents, air drops, low-level flight, and aerial refueling.

Prime Contractor

- Northrop Grumman

Activity

LAIRCM Phase I

- The Air Force fielded LAIRCM Phase I in FY05; no significant testing of the Phase I system with the SLTA took place in FY08.

LAIRCM Phase II

- LAIRCM Phase II is in the System Development and Demonstration phase.
- The Air Force made the NexGen MWS source selection and LRIP decision in 1QFY09. The selection decision was between the two-color infrared MWS from Northrop Grumman and one-color infrared MWS from Lockheed Martin. Northrop Grumman's two-color infrared MWS was selected.
- The Air Force tested the integration of the LAIRCM on the C-5 transport aircraft in 1QFY08, on the C-40 in 2QFY08, and on the AC-130H in 4QFY08. The LAIRCM system configuration on these aircraft was a combination of the Phase I ultra-violet MWS and the Phase II GLTA jammer.
- The Service will continue LAIRCM suitability testing into FY09 as a component of C-5 systems integration testing. Air Mobility Command (AMC) is collecting detailed suitability data on LAIRCM reliability on the C-5, C-17, and C-130 aircraft.
- The LAIRCM Program Office is working on an update to the January 2007 DOT&E-approved TEMP, which will reflect the revised Acquisition Strategy. Despite the LAIRCM Program Office's best efforts, this update has not made sufficient progress.
- The Service conducted LAIRCM testing in FY08 in accordance with the current DOT&E-approved TEMP.

Assessment

LAIRCM Phase I

- The LAIRCM Phase I system is operationally effective and suitable, and enhances aircraft survivability.

LAIRCM Phase II

- Limited GLTA testing has not confirmed design maturity; however, the MDA is planning to exceed 20 percent LRIP quantities before the Air Force conducts the LAIRCM Phase II IOT&E in 2QFY10. System performance, reliability, availability, and maintainability have not been proven with the current design.
- The AFOTEC OA is a basis for NexGen MWS source selection that ended in 3QFY07. DOT&E concurred with AFOTEC OA conclusions that NexGen testing and performance were adequate to support an LRIP decision.
- The LAIRCM Program Office is implementing several hardware and software changes to the laser designed to improve the reliability of both the SLTA and GLTA. These changes are intended to support the current operational tempo of the transport aircraft with LAIRCM, and also reduce depot maintenance.

Recommendations

- Status of Previous Recommendations. The Air Force addressed three of the four previous recommendations; however, they have not provided the revised TEMP for Phase II as recommended in FY07.
- FY08 Recommendations.
  1. LAIRCM Phase II: The Air Force should provide a revised TEMP that incorporates changes to the LAIRCM Acquisition Strategy, details a Reliability Improvement Program, and clearly defines the effectiveness and suitability testing to support the FY10 LAIRCM Phase II IOT&E.
  2. After the NexGen source selection, the Air Force should conduct the planned developmental testing on the C-17 in order to demonstrate system maturity for the Phase II IOT&E.