Large Aircraft Infrared Countermeasures (LAIRCM)

Executive Summary

- The Large Aircraft Infrared Countermeasures (LAIRCM) Phase I system is fielded and, as stated in DOT&E's May 2005 Beyond Low-Rate Initial Production (BLRIP) Report, is operationally effective and suitable. The Air Force began full-rate production in May 2005.
- The DOT&E-approved operational assessment of Phase II is nearly complete. The Air Force Operational Test and Evaluation Center (AFOTEC) is leading this test to support separate 2QFY07 low-rate initial production decisions for the Guardian Laser Jamming Turret and Next Generation (NexGen) Missile Warning Sensor (MWS).

System

- LAIRCM is a defensive system for large transport aircraft and combines the Air Force's newest MWS and infrared laser jammer countermeasure systems.
- LAIRCM Phase I is fielded.
  - It delivers a system of proven and available subsystems.
  - Key components include ultra-violet MWS, countermeasures processor, and infrared laser jammer.
  - The infrared laser jammer is the Small Laser Transmitter Assembly.
  - Platforms with LAIRCM include C-17, C-130, and MH-53.
  - Future integration on C-5 and C-40 is planned.
- LAIRCM Phase II is in development and incorporates:
  - A new infrared MWS called the NexGen MWS
  - Miniaturized Laser Jammer Turret Assembly (called the Guardian)
- 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 Guardian Laser Jamming Turret offers:
  - Smaller and lighter packaging
  - Reduced cost
  - Reliability improvements

Mission

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

Activity

LAIRCM Phase I

- LAIRCM Phase I is fielded. The Air Force authorized full-rate production for 163 LAIRCM systems in May 2005, following the DOT&E report that determined LAIRCM to be operationally effective and suitable.
- In FY06, the Air Force reported on follow-on tests and evaluations to assess the correction of deficiencies discovered during the IOT&E and earlier test periods.

LAIRCM Phase II

- LAIRCM Phase II is in the System Development and Demonstration phase, in preparation for separate 2QFY07 low-rate initial production (LRIP) decisions for the Guardian Laser Jamming Turret and NexGen MWS.
- AFOTEC began the DOT&E-approved operational assessment in 1QFY06 on two competing NexGen MWS designs and one Guardian Laser Jamming Turret design to support the LRIP decisions.
- The Air Force has taken delivery of early versions of both NexGen MWS contractors' respective Digital System Models, which are designed to assess MWS detection performance in various mission environments.
- Air Force test organizations conducted live missile firing tests to assess both NexGen MWS and Guardian at Nevada Test and Training Range in 3QFY06. This included testing of LAIRCM NexGen against both surface-to-air and air-to-air infrared missiles.

- Air Force test units conducted NexGen MWS flight tests on C-130s at Eglin AFB, Florida, and Guardian Turret flight tests on a C-17 at Edwards AFB, California.
- The Joint Mobile Infrared Countermeasures Test System (JMITS) is a new ground-based missile simulator that has been used to support LAIRCM Phase II testing. JMITS is being developed under the OSD-sponsored Central Test and Evaluation Investment Program to test the advanced design of the NexGen MWS. Additionally, OSD and AFOTEC are developing a Towed Airborne Plume Simulator to support future LAIRCM testing.
- DOT&E approved the LAIRCM revised Test and Evaluation Master Plan (TEMP) in August 2006 to support testing of Phase II up to, but not including, IOT&E.
- Testing in FY06 was conducted in accordance with the DOT&E-approved TEMP and test plans.

Assessment

LAIRCM Phase I

- The LAIRCM Phase I system is operationally effective at enhancing aircraft survivability, and is much less susceptible to degradation under certain conditions compared to the system initially fielded.
- DOT&E assessed that the Air Force's modifications to LAIRCM, after the full-rate production decision in 2005, enhanced performance and mitigated the primary suitability problem identified in IOT&E.

LAIRCM Phase II

- DOT&E expects the operational assessment of Phase II to complete on time to support the separate 2QFY07 LRIP decisions for the Guardian Laser Jamming Turret and NexGen MWS.
- The live missile fire and flight tests were conducted adequately, with performance reports expected to be available 1QFY07 for the NexGen MWS source selection.
- The OSD-sponsored development of JMITS is expected to be available to support operational testing in 1QFY07.
- DOT&E directed the Air Force to provide a revised TEMP by January 2007 to clarify evaluation plans for the IOT&E.

Recommendations

- Status of Previous Recommendations. The Air Force addressed the DOT&E recommendations from previous annual reports.
- FY06 Recommendations.
  1. LAIRCM Phase I: None
  2. LAIRCM Phase II: The Air Force should provide a revised TEMP by January 2007 to clarify the suitability evaluation plan for the IOT&E.