ALR-69A Radar Warning Receiver (RWR)

Executive Summary
- On March 18, 2009, an Acquisition Decision Memorandum (ADM) was issued that authorized 37 additional systems as part of the second phase of low-rate initial production (LRIP II). On August 18, 2009, the Air Force Milestone Decision Authority (MDA) approved an LRIP II ceiling change increasing the quantity to 44 systems.
- The Air Force is continuing dedicated developmental and operational testing, with a full-rate production decision planned for June 2011.
- The ALR-69A continues to show improved operation in dense and dynamic flight test environments; however, system maturity is less than expected at this point in the program.

System
- The ALR-69A is a Radar Warning Receiver (RWR) that detects, identifies, and locates threat electronic signals.
- The Core ALR-69A RWR is designed to improve performance over the Air Force's primary RWR system, the ALR-69, by enhancing:
  - Detection range and time
  - Accuracy of threat identification
  - Location of threat emitter systems
  - Performance in a dense signal environment
  - Reliability and maintainability
- The system integrates with transport and fighter aircraft. The lead platform is the C-130H, with other platforms to be added at a later date.
- Core ALR-69A RWR components include:
  - Radar Receivers (previously the digital quadrant receivers)
  - Countermeasures Signal Processor (previously the countermeasures computer)
  - Control indicator
  - Azimuth indicator
- The Air Force incorporated spiral developments, which are incremental improvements to the core system, to provide the most significant new ALR-69A capabilities. These ALR-69A spiral designs are to improve the Core ALR-69A's threat locating capabilities, which enable the following:
  - Spiral 1: Accurate threat-locating capability by single aircraft
  - Spiral 2: Location of threat emitters through a multi aircraft network, accurate enough for attack with GPS-guided munitions
  - Spiral 3: Specific Emitter Identification – currently RWRs classify threats as general threat systems, but the Specific Emitter Identification is designed to "fingerprint" a specific threat
- Spiral 1 is temporarily unfunded and development is on hold. Spiral 2 is part of the program of record and was assessed during an Advanced Concept Technology Demonstration effort, which completed in September 2008. Spiral 3 is unfunded.

1 - Legacy ALR-69 Components
2 - Primary ALR-69 Components
3 - Radar Receiver
4 - Countermeasure Signal Processor

Mission
- Combatant Commanders will use ALR-69A to enhance the survivability of transport, fighter, and Special Operations aircraft on missions that penetrate hostile areas.
- Commanders use the ALR-69A to provide aircraft self-protection by warning pilots of radar threats, supporting threat avoidance, or permitting timely use of defensive countermeasures.

Prime Contractor
- Raytheon, Space and Airborne Systems, Goleta, California

Activity
- The Air Force designated Air Mobility Command's C-130H as the lead aircraft for ALR-69A integration.
- On March 18, 2009, an ADM was issued that authorized 37 systems as part of LRIP II. On August 18, 2009, the Air

Force MDA approved an LRIP II ceiling change increasing the quantity to 44 systems.
- DOT&E approved a Test and Evaluation Master Plan update on May 8, 2009.
- Raytheon delivered new Software Load 1.09 in August 2009 for developmental testing. Dedicated flight tests resumed with this new software in September 2009.
- The Air Force will continue dedicated developmental and operational testing, with a full-rate production decision planned for June 2011.

Assessment
- The ALR-69A continues to show improved operation in dense and dynamic flight test environments; however, system maturity is still less than expected at this point in the program.
- Government flights in FY08 revealed several limitations and deficiencies in the radar warning display system. The new software load delivered by Raytheon in August 2009 incorporates several deficiency report fixes intended to show improvements over FY08 testing.

Recommendations
- Status of Previous Recommendations. The Air Force is adequately addressing the one FY08 recommendation.
- FY09 Recommendations. None.