

AN/AAR-47 A(V)2 Upgrade Missile / Laser Warning Receiver

Executive Summary

- The Navy's AAR-47 A(V)2 is the upgrade to the widely fielded AAR-47 V(2). It is designed to reduce vulnerability to bright light sources.
- DOT&E assessed the AAR-47 A(V)2 as operationally effective, including reduced sensitivity to bright light sources, when integrated on the KC-130J and KC-130T.
- The AAR-47 A(V)2's warning capability can be significantly degraded in certain environments, the details of which are classified. This limitation is a function of the older design and applies to all platforms that AAR-47 is integrated on.
- The Navy and Air Force need to ensure the pilots and crews relying on the AAR-47 for protection clearly understand this common limitation.

System

- The AAR-47 is a defensive system that warns pilots of missile threats and commands dispensing of flares as an infrared countermeasure. This legacy missile warning sensor is installed on many aircraft, including C-130, C-5, C-17, AH-1, UH-1, H-46, H-60, P-3, H-47, H-53, and MV-22.
- The AAR-47 V(2) sensor upgrade program is designed to improve missile warning sensor performance and incorporates laser warning functionality.



- The new AAR-47 A(V)2 missile warning sensor incorporates an additional internal detector into the widely fielded AAR-47 V(2) sensor designed to reduce vulnerability to bright light sources.
- This is a Navy-led joint program with active Air Force and U.S. Special Operations Command participation.

Mission

Combatant commanders utilize AAR-47 A(V)2 to enhance survivability of several types of fixed- and rotary-wing aircraft against shoulder-fired, vehicle-launched, and other portable infrared-guided missile threats.

Activity

The AAR-47 A(V)2 is in full production as a Navy and Air Force upgrade designed to reduce vulnerability to bright light sources improving missile warning sensor effectiveness.

Navy

- Commander, Operational Test and Evaluation Force, the Navy's operational test agency, completed testing of the AAR-47 A(V)2 integrated on the KC-130T in FY07.
- The Navy began testing a potential upgrade to the AAR-47 A(V)2, commonly called the AAR-47 B(V)2. A data collection effort was completed in June 2007 and two live missile firing events are scheduled in FY08.
- The Navy testing of AAR-47 A(V)2 in FY07 was conducted in accordance with the Navy KC-130T Test and Evaluation Master Plan (TEMP) approved by DOT&E in FY07.

Air Force

- The Air Force's Air National Guard Air Force Reserve Command Test Center (AATC) conducted an operational utility evaluation of the AAR-47 A(V)2 as integrated on the A-10 aircraft in FY06 without DOT&E knowledge. The

Air National Guard subsequently fielded A10s with AAR-47 installed.

- In FY07, the Air Force coordinated with DOT&E to ensure appropriate involvement for all future testing of the AAR-47 on the A-10 aircraft.
- The Air Force acknowledged known AAR-47 system limitations to the systems capabilities in A-10 tactical publications.

Assessment

Navy

- DOT&E assessed the AAR-47 A(V)2 as operationally effective, including reduced sensitivity to bright light sources, when integrated on the KC-130J and KC-130T.
- The AAR-47 A(V)2's warning capability can be significantly degraded in certain environments, the details of which are classified. This substantial limitation is a function of the AAR-47's older warning sensor design technology, which is independent of the specific platform integration.

NAVY PROGRAMS

- The Navy's KC-130J/AAR-47 A(V)2 testing in FY07 was adequate, including the use of validated ground-based missile simulators and standardized operating procedures.
- Although the Navy executed adequate ground-based missile simulation procedures in FY07, standardized procedures still have not been institutionalized by the Navy, which increases the potential for future test adequacy issues.

Air Force

- DOT&E did not concur with the FY06 AATC Report that stated that AAR-47 was effective on the A-10 aircraft because the Air Force did not test or report on one significant AAR-47 system limitation.

Air Force and Navy

- There is not a current AAR-47 TEMP that aligns the Air Force and Navy's test efforts or addresses who will conduct follow-on testing for AAR-47 integration on new platforms.
- The Services do not consistently or uniformly test to or report on the one significant AAR-47 effectiveness limitation, which

needs to be clearly characterized for the warfighters counting on AAR-47 for self-protection.

Recommendations

- Status of Previous Recommendations. Two DOT&E recommendations from the previous annual reports remain unresolved. Although the Services have established standardized ground-based missile simulation procedures as recommended by DOT&E, the Navy has not consistently planned applicable tests to employ these procedures. Additionally, the Services did not address the DOT&E recommendation to update the AAR-47 TEMP (FY06).
- FY07 Recommendation.
 1. The Navy and Air Force should ensure the pilots and crews relying on the AAR-47 for protection clearly understand common limitations.