

Suite of Integrated Radio Frequency Countermeasures (SIRFC) (AN/ALQ-211)

Executive Summary

- Emerging results from the FY07 Suite of Integrated Radio Frequency Countermeasures (SIRFC) IOT&E indicate that the SIRFC:
 - Radar Warning Receiver (RWR) provides significant improvement to effectiveness and situational awareness for special operations helicopter pilots in operationally-representative mission environments
 - Electronic Countermeasures Suite has effectiveness and reliability limitations, but does provide some level of increased jamming effectiveness against 80 percent of all threats evaluated during testing when combined with tactics and expendables.
 - Electronic Countermeasures suite continues to demonstrate reliability problems that limits the availability of self-protection jamming during IOT&E
- The U.S. Army's Special Operations Command (USASOC) completed IOT&E of SIRFC for the MH-47G in late 4QFY07. A full-rate production decision was originally scheduled for 1QFY08, but due to multiple failures in the Radio Frequency Switch Assembly (item 5 in diagram) during the IOT&E, correction of deficiency testing delayed the decision until 3QFY08.
- The Navy and Air Force Special Operations Command (AFSOC) completed operational testing of SIRFC on the CV-22 aircraft during the 3QFY08 CV-22 IOT&E.

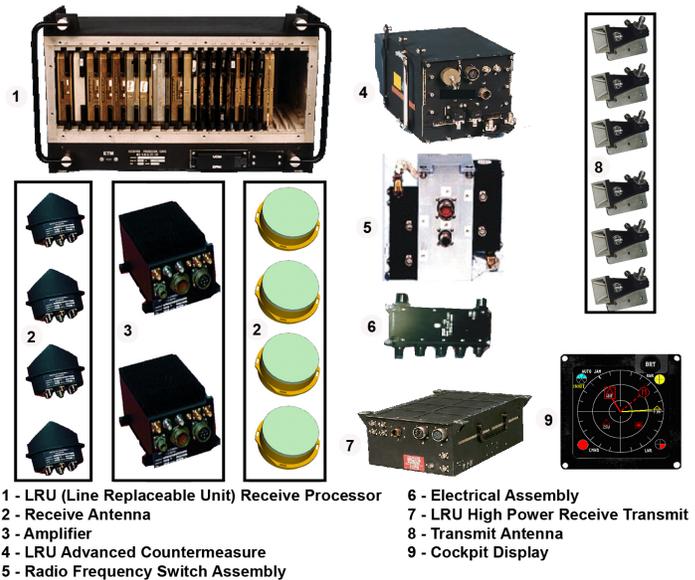
System

- SIRFC is an advanced radio frequency self-protection system designed for installation on aircraft.
- Major SIRFC subsystems are:
 - Advanced threat RWRs (Numbers 1, 2, 3, 6, and 9 in picture)
 - Advanced threat radar jammer/Electronic Countermeasures (Numbers 4, 5, 7, and 8 in picture)
- SIRFC platforms are Army Special Operations MH-47 and MH-60 helicopters and Air Force Special Operations CV-22 tilt rotor aircraft.

Activity

U.S. Army Special Operations Command

- USASOC completed the IOT&E of SIRFC on the MH-47G helicopter in 4QFY07. This test event supported a full-rate production decision in 3QFY08.
- Multiple failures in the Radio Frequency Switch Assembly (item 5 in diagram) during IOT&E delayed the USASOC's



Mission

Special Operations Forces will use SIRFC to enhance the survivability of aircraft on missions that penetrate hostile areas. SIRFC-equipped units should be able to provide self-protection against threat radar-guided weapons systems by:

- Improving aircrew situational awareness and threat warning
- Employment of active electronic jamming countermeasures
- Expending countermeasures (i.e., chaff)

Prime Contractor

- ITT

full-rate production decision of SIRFC. At the conclusion of IOT&E, the Milestone Decision Authority (MDA) instructed the contractor for SIRFC to redesign the Radio Frequency Switch Assembly and for the Army Communications Electronic Research, Development, and Engineering Center

(CERDEC), to verify that the switch redesign corrected deficiencies seen in IOT&E.

- CERDEC conducted a 570-hour chamber test on the newly designed switch assembly during 2QFY08. One failure occurred during this test period; however, this failure mode was determined to be random and not related to the failures that occurred during IOT&E.
- DOT&E requested additional flight-testing of the newly designed switch assembly in order to verify installed on-aircraft performance and suitability. USASOC scheduled these flights from 4QFY08 through 1QFY09.
- USASOC's FY08 testing was conducted in accordance with the DOT&E approved SIRFC Test and Evaluation Master Plan (TEMP).

Air Force and Navy

- The Navy, in coordination with AFSOC and the Air Force Operational Test and Evaluation Center (AFOTEC), the Air Force's Operational Test Agency, completed operational testing of SIRFC on the CV-22 aircraft during the 3QFY08 CV-22 IOT&E
- The CV-22 IOT&E included 171 hours of dedicated SIRFC missions spread across four aircraft over an eight-week period. AFOTEC conducted test missions at the Naval Air Warfare Center, China Lake, California, and the Air Force's Nevada Test and Training Range. Analysis of this testing is ongoing.
- The Navy and Air Force conducted FY08 testing in accordance with the DOT&E-approved V-22 TEMP.

Assessment

Although the Services conduct SIRFC development and testing under two separate TEMPS, inter-program communication is good and allows the CV-22 program to benefit from the USASOC SIRFC lessons learned.

U.S. Army Special Operations Command

- DOT&E completed the effectiveness and suitability assessment of SIRFC IOT&E flight data during FY08.

DOT&E will release the SIRFC Beyond Low-Rate Initial Production (BLRIP) report after the completion of flight-testing.

- Emerging results indicate that the SIRFC is operationally effective.
- DOT&E will complete the suitability assessment at the conclusion of the upcoming 4QFY08 flight tests.

Air Force and Navy

- DOT&E's assessment of the emerging results of the FY08 CV-22 IOT&E and all SIRFC-related test events indicate that:
 - RWR-related SIRFC performance on the CV-22 will be similar to that observed on the USASOC MH-47G installation.
 - SIRFC jamming on CV-22 will not be as effective as was observed on the USACOC MH-47G aircraft primarily due to the difference in jammer power between the two platforms.
 - AFOTEC submitted the multiple deficiency reports against the SIRFC system during the CV-22 IOT&E test period. These deficiency reports are currently under review.

Recommendations

- Status of Previous Recommendations. The Services followed all previous recommendations.
- FY08 Recommendations.
 1. USASOC, the Air Force, and the Navy should all continue to monitor SIRFC reliability. In addition, they should develop more robust tactics and jamming techniques to help improve survivability against all threat systems.
 2. The Air Force should continue their effort to install a higher power jamming transmitter on the CV-22.