Combat Survivor Evader Locator (CSEL) and the PRC Family of Handheld Survivor Radios

Executive Summary

CSEL

- The Combat Survivor Evader Locator (CSEL) program corrected, verified, and closed deficiencies identified in previous operational testing.
- The CSEL program is developing a web-based application for virtual rescue center capability. Testing and fielding will occur in FY07.
- The program is beginning development of Terminal Area Communication (TAC) and Terminal Area Guidance (TAG) capabilities. Testing and fielding will occur in FY08.
- The program should complete development prior to initial production, conduct adequate operational testing led by the Air Force Operational Test and Evaluation Center (AFOTEC) and supported by units from all Services, and commit to full production only after operational testing completes.

PRC

- Multiple DoD agencies procured 1,350 PRC radios this year. Coalition partner and other international customer nations purchased 520 PRC radios this year. The developer adds capabilities to PRC radios each year, but previous versions cannot be updated with the new capabilities. Operational units receive a more capable PRC radio, but this process complicates the overall search and rescue mission by increasing supportability (training, maintenance, and programming) and increasing the number of radio variants fielded.

System

The CSEL is a radio system that allows a survivor to contact rescue forces, report status, and communicate for recovery. It includes:

- A handheld radio that includes a military Global Positioning System (GPS) receiver and navigation system
- A satellite communication system
- Encrypted data and voice capability on multiple programmable frequencies
- Ultra High Frequency base station computers that route the data messages to rescue command and control elements
- Equipment to program and update the handheld radios

PRC radios are similar to CSEL radios. There are several variants of PRC radios that are fielded, including the 112B, 112D, and 112G J001. PRC radios include:

- Commercial GPS and navigation system
- Line-of-sight communication with unique receivers carried on theater force aircraft
- Commercially-encrypted data and voice capabilities on programmable frequencies

The latest version is the PRC-112G J002. This radio incorporates new features including an over-the-horizon data messaging capability, more software-programmable waveforms for beacons and messages, and an option for military-only GPS.

Mission

Rescue forces equipped with CSEL or PRC 112 systems use them to identify, locate, and authenticate isolated persons quickly and accurately.

- CSEL sends a data message from the survivor via satellite to a central rescue center. The center forwards that message to rescue forces, who then communicate with the survivor via voice communications to facilitate recovery.
- PRC sends a data message from the survivor that is received by aircraft pre-positioned in theater and specially equipped to receive PRC messages. These aircraft may be rescue forces or support aircraft that pass the messages to rescue forces. Rescue forces contact the survivor via either data or voice communications, in order to facilitate recovery.

Activity

CSEL

- The CSEL program corrected, verified, and closed the remaining deficiencies identified during the Multi-Service

Operational Test and Evaluation in 2004. Verification lagged the corrections process because the test teams lacked an efficient venue in which to test the corrections. A letter from

AFOTEC outlining the verifications is in draft and will be submitted to the Air Force program office and DOT&E by late November.

- The CSEL program completed the last retrofits of radios that received a potentially defective circuit card.
- The CSEL program is developing a web-based application that will allow the creation of virtual rescue centers at locations where secure internet terminals exist. This capability will increase operational flexibility in setting up rescue centers to monitor and react to CSEL survivor messages, without impacting or affecting the previously-fielded capabilities. The program originally intended to complete operational testing of this new capability in FY06 and fielding in January 2007. The testing will now occur in early 2007 with fielding in June 2007.
- The CSEL program outlined their new approach for developing, testing, and fielding TAC and TAG capabilities. Users identified these capabilities (unfunded prior to this year) as the most important new capability to pursue. Development is underway and testing is planned for fall 2007.

PRC

- The PRC-112 developer sold 1,350 radios to multiple DoD agencies in FY06. In addition, the developer sold 520 radios to coalition partner and other international customer nations.

Assessment

CSEL

- DOT&E supports the current deficiency correction and verification effort, as well as the future development and operational testing strategy outlined by the program office and AFOTEC. This approach will provide adequate operational testing prior to production and fielding of new CSEL capabilities.
- CSEL has demonstrated better capability than PRC radios, except for the lack of TAC and TAG. The addition of these capabilities will fulfill that shortfall.
- The Army and Navy developed procedures to replace legacy radios with CSEL radios, which reduce the number of fielded radio variants. There is no Service-wide strategy for replacing radios in the Air Force. Some Air Force units are developing replacement procedures. Other Air Force units desire to wait until TAC/TAG is available before they commit to replacing PRC-112G and other legacy radios.

PRC

- Each year, the PRC developer updates the PRC-112G radio with new or updated features and capabilities such as over-the-horizon capability or military GPS. These radios are not backward compatible (previously procured versions cannot be updated with the latest capabilities). Previous operational testing of multiple radios indicated that reducing the number of radio variants and increasing the global interoperability will increase the likelihood of successfully recovering personnel in a wide-range of environments. While some of the new capabilities add to the overall capability of the PRC radio, procurement of annually-updated PRC radios adds to the number of radio variants in operational units, complicates the supportability (training, maintenance, and programming), and decreases the overall global interoperability of Combat Search and Rescue radios.

Recommendations

- Status of Previous Recommendations. The program took effective action on the previous DOT&E recommendations for follow-on operational testing and management of the CSEL architecture.
  FY05 #2: The Army and Navy developed strategies for updating and replacing the oldest survivor radios with CSEL advanced radios. However, the Air Force still does not have a Service-wide strategy.
- FY06 Recommendation.
  1. The CSEL program should continue development and testing of the web-based rescue center application, development and testing of the terminal area capabilities, followed by adequate operational testing supporting production and fielding.