Enhanced AN/TPQ-36 (EQ-36) Radar System

Executive Summary

Quick Reaction Capability (QRC) AN/TPQ-53 Radar

- The Army is developing and fielding 38 Quick Reaction Capability (QRC) radars to support an Urgent Materiel Release. Fielding began in 2010 with 10 systems operating in Iraq and Afghanistan. The Army contracted with Lockheed Martin Missile Systems and Sensors to build 32 QRC radars, and plans to purchase the remaining 6 QRC radars from a yet to be selected Program of Record vendor. The Army designated the QRC system as the AN/TPQ-53 radar in September 2011.
- The Army conducted three QRC AN/TPQ-53 radar test events at Yuma Proving Ground, Arizona, in October 2010, January 2011, and June 2011. Testing focused on acquiring threat rocket, artillery, mortar fires, and the radar's integration with the Counter Rocket, Artillery, and Mortar (CRAM) system.
- During testing in January 2011 at Yuma Proving Ground, the QRC AN/TPQ-53 radars under test acquired, tracked, and provided accurate locations of most rocket, artillery, and mortar systems. The radar has difficulty detecting certain types of rockets and artillery rounds.

Program of Record EQ-36 Radar

- In August 2011, the Army released to industry the EQ-36 radar Program of Record low-rate production Request for Proposal (RFP) contract as part of the Source Selection Evaluation Board process.
- The Army will select a contractor to produce 136 Program of Record EQ-36 radars based on the results of a Source Selection Evaluation Board in FY12.

System

- The EQ-36 is a mobile radar system designed to detect, classify, and track projectiles fired from mortar, artillery, and rocket systems using a 90-degree or continuous 360-degree sector search.
- The radar provides target location of threat indirect fire systems with sufficient accuracy for effective counterfire.
- The EQ-36 is designed to operate with the CRAM system and the future Indirect Fire Protection Capability System.
- The Army intends to field the EQ-36 radar to the sensor platoons in Brigade Combat Teams and Fire Brigades to replace the current AN/TPQ-36 and AN/TPQ-37 Firefinder Radars.

- The EQ-36 is operated by a crew of four Soldiers and transportable by C-17 aircraft, with battlefield mobility provided by two Family of Medium Tactical Vehicle trucks.
- The Army is developing and fielding 38 QRC radars to support an Urgent Material Release. Fielding began in 2010 with 10 systems operating in Iraq and Afghanistan. The Army contracted with Lockheed Martin Missile Systems and Sensors to build 32 QRC radars and plans to purchase the remaining 6 QRC radars from a yet to be selected Program of Record vendor. The Army designated the QRC systems as the AN/TPQ-53 radar in September 2011.
- The Army will select a contractor to produce 136 Program of Record EQ-36 radars based on the results of a Source Selection Evaluation Board in FY12.

Mission

Field Artillery units protect friendly forces by employing the EQ-36 radar to determine timely and accurate location of threat rocket, artillery, and mortars systems for defeat with counterfire engagements. Air Defense Artillery units will use the EQ-36 radar integrated into the CRAM and Indirect Fire Protection Capability System to warn friendly forces and to engage incoming threat indirect fires.

Major Contractors

- QRC AN/TPQ-53 Radar: Lockheed Martin Missile Systems and Sensors – Syracuse, New York
- EQ-36 Radar: The Army will select the Program of Record EQ-36 radar contractor in FY12.

Activity

Quick Reaction Capability (QRC) AN/TPQ-53 Radar

- The Army completed initial fielding of 12 QRC AN/TPQ-53 radars in July 2011. The Army plans to field the remaining QRC AN/TPQ-53 radars FY12-14.
- The Army conducted three QRC AN/TPQ-53 radar test events at Yuma Proving Ground, Arizona, in October 2010, January 2011, and June 2011. Testing focused on acquiring threat rocket, artillery, and mortar fires and the radar's integration with the CRAM system.

Program of Record EQ-36 Radar

- In August 2011, the Army released to industry the RFP for the EQ-36 radar Program of Record low-rate production contract as part of the Source Selection Evaluation Board process.
- The Source Selection Evaluation Board process includes a Live Ammunition System Demonstration (LASD) at Yuma Proving Ground, Arizona, which began in September 2011. The EQ-36 Program of Record RFP contract solicited vendor participation in the LASD requesting contractor-operated systems for evaluation.
- During the LASD, the program tested the operational, live fire acquisition, and communication capabilities of the participating systems against the full system requirements. Army radar subject matter experts from the Fires Center of Excellence, Fort Sill, Oklahoma, monitored each system during testing and provided their observations to the Source Selection Evaluation Board.
- The LASD will support the first low-rate initial production decision of the EQ-36 Program of Record Radars. DOT&E will report on the LASD results to support the Milestone C update decision scheduled for 2QFY12.

Assessment

- Based on radar testing at Yuma Proving Ground and Army reporting from theater to date, radar reliability remains poor and is well below system requirements. The QRC AN/TPQ-53 radar is demonstrating one system abort every 30 hours; the Program of Record requirement is one system abort every 185 hours.
- During testing in January 2011 at Yuma Proving Ground, the QRC AN/TPQ-53 radars under test acquired, tracked, and provided accurate locations of most rocket, artillery, and mortars systems. The radar has difficulty detecting certain types of rockets and artillery rounds.
- Using updated software, the QRC AN/TPQ-53 radar demonstrated improvements in reducing the rate of misclassifying aircraft as threat projectiles in the 90-degree and 360-degree modes.
- During June 2011 testing, the QRC AN/TPQ-53 radar decreased the rate of false location reporting in which the system reports detecting a threat projectile when no projectiles had actually been fired. The radar's misclassifying and false location reporting rates remain below the Program of Record requirement of one false report in 12 hours.

Recommendations

- Status of Previous Recommendations. The Army is satisfactorily addressing all three FY10 recommendations.
- FY11 Recommendations. The Army should:
  1. Continue testing all EQ-36 software updates.
  2. Increase dedicated reliability testing focusing on decreasing system aborts.
  3. Continue conducting operational assessments of the deployed AN/TPQ-53 radars.