

Joint Tactical Radio System (JTRS) Handheld, Manpack, and Small Form Fit (HMS)

Executive Summary

- In April 2009, the Army completed the Rifleman Radio Limited User Test (LUT). DOT&E assessed the Rifleman Radio's LUT performance as supportive of mission preparation, movement, and reconnaissance, but the radio did not demonstrate usefulness during squad combat engagements and exhibited deficiencies in operational reliability, transmission range, battery life, and concept of operations.
- The Joint Tactical Radio System (JTRS) Handheld, Manpack, and Small Form Fit (HMS) Overarching Integrated Product Team (OIPT) postponed the program's Milestone C to allow the program time to resolve program shortfalls and prepare a strategy to address poor reliability and performance problems demonstrated during the Rifleman Radio LUT.
- The Army tasked the JTRS HMS program to participate in the Vice Chief of Staff of the Army (VCSA) July 2010 Brigade Combat Team Integrated Network exercise and delayed the JTRS HMS Rifleman Radio Verification of Correction of Deficiencies (VCD) test planned for May 2010 until January 2011. The 2009 Rifleman Radio LUT and 2011 VCD test will support a Milestone C decision.

System

- JTRS is a family of software-programmable and hardware-configurable digital radios intended to provide increased interoperability, flexibility, and adaptability to support numerous tactical communications requirements.
- The JTRS HMS program provides Handheld and two-channel Manpack Radios supporting Army, Marine Corps, Navy, and Air Force operations. The program develops Small Form Fit (SFF) radio configurations that include the stand-alone Army Rifleman Radio and embedded SFF variants that serve in Army host platforms such as the Early Infantry Brigade Combat Team (E-IBCT) Unattended Ground Sensors (UGS) and Unmanned Aircraft System (Class 1), and Nett Warrior.
- The program strategy has two phases of HMS production. Phase 1 is Rifleman Radios with National Security Agency (NSA) Type 2 encryption of unclassified information. Phase 2 is Manpack Radios with NSA Type 1 encryption of classified information.

Activity

- In April 2009, the Army conducted the Rifleman Radio LUT at Fort Bliss, Texas, to support the program's Milestone C decision scheduled for November 2009. The LUT assessed the operational effectiveness, suitability, and survivability



Mission

Commanders from the Army, Marine Corps, Navy, and Air Force intend to:

- Use JTRS Handheld, Manpack, and Rifleman Radios to communicate and create networks to exchange voice, video, and data using legacy waveforms or the Soldier Radio Waveform during all aspects of military operations.
- Integrate JTRS SFF variants into host platforms to provide networked communications capabilities for users engaged in land combat operations to support voice, video, and data across the air, land, and sea battlespace.

Major Contractor

General Dynamics, C4 Systems – Scottsdale, Arizona

of the Rifleman Radio under numerous mission scenarios executed by an infantry platoon within the Army Evaluation Task Force.

- On October 20, 2009, the JTRS HMS OIPT postponed the program's Milestone C. The OIPT took this action to allow the program time to resolve unit cost issues and a commercial GPS waiver, and to prepare a strategy to correct reliability and performance deficiencies highlighted during the Rifleman Radio LUT.
- The JTRS HMS program scheduled a Rifleman Radio VCD test for May 2010 at the Maneuver Battle Lab, Fort Benning, Georgia. The Army postponed the VCD test to January 2011 when the program was tasked to support the VCSA Brigade Combat Team Integrated Network exercise in July 2010.
- The JTRS HMS program provided SFF A radios to the Brigade Combat Team Modernization program to support the 4QFY10 E-IBCT LUT 10. These radios functioned as components of the E-IBCT UGS.
- The Army Training and Doctrine Command refined two Rifleman Radio requirements as a result of the JTRS HMS OIPT.
 - The Rifleman Radio range requirement changed from a point-to-point range of 2 kilometers to uninterrupted communication for an infantry squad dispersed in a circle of 2 kilometers diameter for urban terrain and 1 kilometer for dense vegetation.
 - Battery life was reduced from 24 hours to eight hours due to technology limitations.
- The JTRS HMS program initiated a complete redesign of the Rifleman Radio hardware to address the deficiencies identified during the April 2009 LUT. The Production-Representative Radio (PRR) version of the Rifleman Radio incorporates design improvements in size, weight, and battery life, as well as increased radio frequency power out. PRR Rifleman Radios participated in the July 2010 VCSA Brigade Combat Team Integrated Network exercise. The JTRS HMS program intends to use PRR Rifleman Radios exclusively in the January 2011 VCD test that supports the Army's planned July 2011 Rifleman Radio Milestone C.
- The JTRS HMS program office has an aggressive schedule for conducting the Manpack Radio LUT in 3QFY11 and the Rifleman Radio IOT&E in 1QFY12.
- The Army is developing a JTRS HMS Manpack Radio Acquisition Strategy Report, Capabilities Production Document, and Test and Evaluation Master Plan (TEMP).

Assessment

- DOT&E assessed the performance of the Rifleman Radio as useful during mission preparation, movement, and reconnaissance activities. During combat engagements, the radio demonstrated poor performance and the squad had difficulty with employment of the radio.
- During the 2009 Rifleman Radio LUT:
 - Operational reliability was less than one-half of the radio's Milestone C requirement of 840 hours
 - Transmission range fell short of the radio's requirement of 2,000 meters, demonstrating connectivity to 1,000 meters
 - Batteries had a short lifespan and generated excessive heat
 - Concept of operations for employing the radio proved vague and at times hindered operations
- The JTRS HMS program did not assess the development of Position Location Information, Information Assurance, Electronic Warfare, and Nuclear, Biological, and Chemical operations during the Rifleman Radio LUT. These areas will be assessed in future developmental testing and the Rifleman Radio IOT&E.
- The JTRS HMS program continues preparation for its rescheduled January 2011 Rifleman Radio VCD test.
- The JTRS HMS Manpack does not have an approved Capabilities Production Document or TEMP.

Recommendations

- Status of Previous Recommendations. The JTRS HMS program is addressing all previous recommendations.
- FY10 Recommendations. The JTRS HMS program should:
 1. Develop a strategy to address poor reliability, poor performance, and the immature intra-platoon concept of operations demonstrated during the Rifleman Radio LUT. These improvements are critical for success during the scheduled 1QFY12 IOT&E.
 2. Complete necessary Manpack radio documentation to support future operational test.
 3. Assure that adequate developmental testing is performed prior to future operational tests.