

# Joint Tactical Radio System (JTRS) Ground Mobile Radio (GMR)

## Executive Summary

- The Joint Tactical Radio System (JTRS) Ground Mobile Radio (GMR) product line continues developmental testing to include completing tests of up to 12 nodes using pre-Engineering Developmental Model (pre-EDM) sets and use of pre-EDM GMR in the Future Combat System (FCS) Spin Out (SO) Preliminary-Limited User Test (LUT). The program and contractor will perform Production Qualification Testing (PQT) on GMR EDM sets in 2009.
- JTRS GMR continues to develop its Increment 1 program baseline, including finalizing acquisition documentation and movement toward operational test.
- The Defense Acquisition Executive (DAE) directed the program to work with OSD and the FCS program to address the need to complete a 30 node test to evaluate the Wideband Networking Waveform (WNW), and associated network management.
- The program is working with DOT&E to determine the number of radios and associated platforms required to assess networking scalability, performance of the networking waveforms, and network enterprise services appropriate for the GMR.
- The Joint Program Executive Office (JPEO) is reviewing JTRS enterprise-level testing requirements and responsibilities between the GMR, the Networking Enterprise Domain, and other JTRS product lines.

## System

- JTRS is a family of software-programmable and hardware-configurable digital radios designed to provide increased interoperability, flexibility, and adaptability

## Activity

- JTRS GMR experienced cost overruns resulting from waveform interface software security deficiencies and the Soldier Radio Waveform. These funding shortfalls could impact the program's test schedule. The DAE prescribed action for the JPEO to identify cost issues early to ensure a successful Milestone C decision in late FY10.
- The DAE requested the Assistant Secretary of Defense (Network Information and Integration), with the Director of Defense Research and Engineering, the Deputy Under Secretary of Defense (Acquisition and Technology), DOT&E, and the FCS Program Manager, work with the JPEO JTRS program to provide near term testing of at least 30 GMR nodes with WNW and associated network management



1 - Control Display Device  
 2 - Universal Transceivers with Network / Information Security Interface Unit  
 3 - Power Amplifiers

to support many diverse warfighter communications requirements.

- JTRS GMR components include control display devices, universal transceivers, network/information security interface units, and power amplifiers, which combine to create radio sets for Army, Marine Corps, and Air Force ground vehicle installations.

## Mission

Commanders from the Army, Marine Corps, and Air Force intend to use JTRS GMR to:

- Communicate and create networks to exchange voice, video, and data during all aspects of military operations.
- Provide the capability to interface with other JTRS product line radios and legacy radio systems in joint and coalition operations.

## Prime Contractor

- Boeing

functions. This testing would fully evaluate waveform capability, hardware performance, and network management operations.

- The prime contractor continued its series of developmental tests using pre-EDM hardware versions of the GMR to test incremental improvements in software and waveforms to mitigate risk to PQT.
- The JTRS GMR program received testing data and had representatives at the FCS SO Preliminary-LUT at White Sands Missile Range, New Mexico. The program used this data to support ongoing improvements to the GMR.
- The program began planning for PQT of the GMR EDM versions to occur in 2009.

# DOD PROGRAMS

- The JTRS GMR Test and Evaluation Working Integrated Product Team (T&E WIPT) updated the GMR Test and Evaluation Master Plan (TEMP) and initiated formal staffing. DOT&E, JPEO, and the Army are working resolution of final DOT&E adequacy deficiencies.

## Assessment

- GMR funding shortfalls could affect radio configuration types (2 versus 4 channels), reduce the number of sets procured under the program, and introduce schedule delays.
- The JPEO is examining means to execute a 30 node WNW test within either a new or existing test event.
- JTRS GMR developmental tests with pre-EDM radios (up to 12 node networks) provided insights on software waveforms and experience in testing software-defined radios. The program's testing identified performance concerns with the networking waveforms and radio initialization times, which the program has used to improve its GMR design.
- The program plans to implement an integrated PQT to meet their proposed aggressive test schedule.

- The T&E WIPT identified significant issues impacting test adequacy as part of the GMR TEMP update. The most significant issues are determining the numbers of radios and associated platforms necessary to adequately assess network scalability, maintaining operational synchronization with the FCS program, and assessing performance of cross-JTRS enterprise capabilities; networking waveforms, enterprise network management, and network enterprise services.

## Recommendations

- Status of Previous Recommendations. The GMR program is addressing all previous recommendations.
- FY08 Recommendations.
  1. The JTRS GMR program should resolve issues with test adequacy to support the LUT in FY10 and Multi-Service Operational Test and Evaluation in FY12.
  2. The JTRS GMR program should establish agreement with the JTRS Networking Enterprise Domain regarding roles and responsibilities for testing waveforms, network management, and services for large-scale JTRS networks.