

Global Broadcast Service (GBS) System

Executive Summary

- Global Broadcast Service (GBS) Multi-Service Operational Test and Evaluation (MOT&E) was conducted by the Air Force Operational Test and Evaluation Center (AFOTEC) and occurred in September and October 2005.
- DOT&E determined operational testing was adequate to confirm:
 - The GBS space and transmit segments are operationally effective and suitable.
 - The GBS receive segment is operationally effective when personnel are available to man the receive suites; the intended operating concept was for unattended use.
- DOT&E determined testing was adequate to confirm the GBS receive suite of the receive segment is not operationally suitable.
- The Army-modified receive suite was a change to the program of record terminal prior to fielding.
- AFOTEC required nine months to provide GBS MOT&E data to DOT&E for the Beyond Low-Rate Initial Production (BLRIP) report.
- The DOT&E GBS BLRIP report is expected in late 2006.

System

- The GBS is a satellite-based broadcast system providing near worldwide, high capacity, one-way transmission of operational military data.
- The GBS system consists of three segments:
 - The space segment includes four GBS transponders on each of three Ultra-High Frequency follow-on satellites and additional government-leased satellite capability to meet operational demand
 - The transmit segment broadcasts data streams and manages the flow of selected information through the orbiting satellites for broadcast to the appropriate theaters of operation; has fixed Primary Injection Point and mobile Theater Injection Point antennas



- The receive segment has fixed and mobile terminals and extracts the appropriate information for distribution to the end users within selected areas of operation
- The GBS is being developed to augment and interface with other military communications systems such as DoD Teleport.

Mission

- Combatant commanders and operational forces worldwide use GBS to provide a continuous high-speed and high-volume flow of data, audio, imagery, and video at multiple classification levels for sustained operations.
- The GBS capability to provide intelligence and battlespace weather information increases the joint operations mission data available to deployed and garrisoned military forces across the globe.

Activity

- AFOTEC conducted the GBS MOT&E-I from September 16 - October 28, 2005, in accordance with DOT&E-approved test plans. Results provided the basis for DOT&E's BLRIP report.
- Operational testing locations included Hanscom Air Force Base, Massachusetts; Norfolk, Virginia; Fort Drum, New York; Fort Hood, Texas; Fort Monmouth, New Jersey; Hurlbert Field, Florida; Duke Field, Florida; and Camp Pendleton, California.

- During MOT&E-I, DOT&E identified Army modifications to the program of record receive suites before fielding.
- MOT&E-II testing scheduled for 2007-2008 focuses on the full military functionality of GBS. This includes testing the Theater Injection Points of the Transmit segment and end-to-end effectiveness and suitability.

Assessment

- DOT&E determined operational testing was adequate to confirm:
 - The GBS space and transmit segments are operationally effective and suitable.
 - The GBS receive segment is operationally effective when personnel are available to man the receive suites; the intended operating concept was for unattended use.
- DOT&E determined testing was adequate to confirm the GBS receive suite of the receive segment is not operationally suitable.
- The GBS upgrade transition to an Internet Protocol capability is making progress toward delivering increased volumes of high-speed data, compared to the previous mission configuration.
- The Army receive suites modifications have not been integrated into the program suitability baseline.
- The Wideband Gapfiller Satellite (WGS) MOT&E is continuing to integrate with the testing of the final mission capability requirements of the GBS Phase II and related system programs. The GBS MOT&E-II test strategy may require updates to meet the needs of system users.
- The GBS Theater Injection Points of the Transmit segment will need to examine baseline configurations that more directly address the needs of joint military forces.

Recommendations

- Status of Previous Recommendations. The Air Force has made progress on the two FY05 DOT&E recommendations; both remain valid.
FY05 #1: The Air Force should determine if the GBS MOT&E-II test strategy requires updating to meet the

current user expectations for an Initial Operational Capability declaration.

FY05 #2: The GBS Theater Injection Points should be configured and tested consistent with the implementation configurations identified by U.S. Joint Forces Command and U.S. Strategic Command.

- FY06 Recommendations. The Air Force should:
 1. Standardize and validate the Army-modified 88XR User segment receive suite equipment configurations, training, and technical orders.
 2. Correct and retest system performance shortfalls and reliability deficiencies, including the receive suite unattended mode.
 3. Complete the updated Interactive Electronic Technical Manual for current full-rate production equipment configurations and standards.
 4. Complete GBS System Security and information assurance corrective measures and actions to meet the established standards of the system certifying authorities.
 5. Provide current system documentation, training, and technical orders so that GBS operators and maintainers can properly accomplish their duties.
 6. Complete the review and release of the Joint Integrated Logistics Plan to sustain integrated GBS operations and fielding of the system.
 7. Conduct scheduled MOT&E to confirm corrective actions for current and emerging features of the GBS full-rate production program baseline.