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TESTIMONY OF

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Mr. Chairman, Congressman Bartlett, distinguished members of the Committee, thank you for the opportunity to provide my assessment of test results for the Early Infantry Brigade Combat Team (E-IBCT) Increment 1, my assessment of the test plans for the Ground Mobile Radio and Handheld, Manpack, Small Form Factor variants of the JTRS program, and my assessment of test planning for the Extended Range Multi-Purpose (ERMP) Unmanned Aerial System.

Assessment of E-IBCT Test Results

My operational assessment of the Early Infantry Brigade (E-IBCT) Increment 1 performance is based upon the results of the E-IBCT Limited User Test (LUT 09) conducted in August - September 2009 and the Non Line of Sight Launch System (NLOS-LS) Flight LUT conducted in January - February 2010. My assessment is supplemented with data from developmental testing, as appropriate.

Each of the E-IBCT systems requires further development prior to conducting an Initial Operational Test and Evaluation (IOT&E) in FY11 or fielding. All of the systems have notable performance deficiencies. The demonstrated operational reliability for each of the systems falls significantly below the user threshold requirements.

LUT 09 was the first operational test of the E-IBCT systems. It was conducted at Fort Bliss, Texas, and consisted of an infantry company and scout platoon equipped with E-IBCT systems executing full spectrum operations against a threat force composed of conventional mechanized forces and paramilitary forces with civilians present on the battlefield. The force-on-force test consisted of four 96-hour scenarios with the test unit executing fourteen offensive, defensive, and stability missions. Operations were conducted both day and night. Live firing of the NLOS-LS was conducted during the NLOS-LS Flight LUT at White Sands Missile Range, New Mexico, in January-February 2010.

Many of the systems tested in LUT 09 were not in the same configuration as the systems intended for purchase. The Small Unmanned Ground Vehicle used a

production radio, the remaining five systems used pre-production radios and waveforms. Numerous changes to be implemented in the E-IBCT systems to be produced (as compared to those tested in LUT 09) had been identified prior to LUT 09. The program manager has informed DOT&E that additional changes will be made to address the reliability problems discovered during the LUT. The first opportunity to test the effects of these changes and any others made to address performance problems identified in LUT 09 will be the E-IBCT LUT to be conducted in August-September 2010 (LUT 10). The E-IBCT systems have not been tested against electronic warfare or computer network attack threats. E-IBCT operations in an electronic warfare and computer network attack environments will be assessed in LUT 10.

My key findings with respect to the performance of the individual E-IBCT systems are summarized below.

Non Line of Sight Launch System (NLOS-LS). NLOS-LS requires further developmental and operational flight tests to demonstrate improvement in missile reliability and the performance of the missile's infrared (IR) seeker. The demonstrated missile reliability is 61 percent, below the 85 percent requirement. Missiles using the IR seeker in developmental and LUT flight tests hit 5 of 11 targets. The program needs to conduct additional testing and allocate adequate time to demonstrate performance and implement fixes to improve reliability. The NLOS-LS Container Launch Unit met its reliability requirement during LUT 09, demonstrating a 259-hour mean time between system abort versus a 125-hour requirement. During the February 10 Flight LUT, problems with the NLOS-LS navigation system caused six of the seven total system aborts that occurred during a small number of operating hours, resulting in a mean time between system abort of 12 hours. This was the first test using a new software version for the NLOS-LS navigation system. Soldiers received numerous fault codes from the NLOS-LS navigation system when they initialized the CLU. Failure review is ongoing. The effectiveness of fixes to the navigation system and other failure modes should be tested in the E-IBCT LUT 10 later this year.

NLOS-LS is making progress in some performance areas. Missiles using the laser-designate mode demonstrated success in operational and developmental testing,

hitting 5 of 7 targets. The missile warhead can kill armored vehicles when it hits vulnerable areas. In LUT 09, the NLOS-LS Container Launch Unit was interoperable with the fire support network and was effective in processing electronic fire commands. During LUT 09, the test unit effectively engaged armored targets with the NLOS-LS in simulated fire missions. When simulated and evaluated to be successful, NLOS-LS had a significant impact on the battle by destroying threat armored vehicles.

The NLOS-LS Flight LUT was the first operational flight test of the system. Soldiers from the Army Expeditionary Task Force Fires Battalion fired six missions at operationally representative threat targets. Forward observers using their tactical equipment acquired actual threat tanks, armored combat vehicles, and a commercial truck. The tanks and armored combat vehicles had realistic threat countermeasures. The Precision Attack Munition and the Container Launch Unit were production representative. During the Flight LUT, two of six missiles fired achieved target hits and four missed their targets. Two of the missiles impacted 14 or more kilometers short of the target. The cause of one miss is known: the CLU misinterpreted temperature data sent by the Advanced Field Artillery Data System. This caused the missile to safe the warhead and ignore the laser designation missing the target. The Army has identified potential causes for two other misses involving the motor in the precision attack munition and a circuit board failure.

The Army has informed DOT&E that the program is completing Failure Review Board investigations of the developmental and operational flight failures. I recommend the Army conduct additional developmental and operational flight testing once all of the necessary corrective measures have been identified and applied.

Network Integration Kit (NIK). In LUT 09, the NIK demonstrated a capability to receive sensor data from the Tactical Unattended Ground Sensor and Urban Unattended Ground Sensor Gateways and to interoperate with the Force XXI Battle Command Brigade and Below battle command network by passing messages and still images. The NIK operated with pre-production pre- Engineering Development Model Joint Tactical Radio System Ground Mobile Radios which are not certified to pass classified traffic. The NIK did not meet its reliability requirement, demonstrating a 33-

hour mean time between system abort versus a requirement of 112 hours. The NIK had a lengthy boot up time of 30-35 minutes versus a 10 minute requirement for a warm start reboot. The capability of the NIK to pass classified data using low probability of intercept waveforms will be evaluated in LUT 10.

Class I Block 0 Unmanned Aerial System. The Class 1 UAS meets most of its air vehicle flight and sensor performance requirements. This system was heavily used by the test unit to perform intelligence, surveillance, and reconnaissance tasks. The UAS was not employed as the back-packable company-level and platoon-level asset envisioned by the user. Due to poor system reliability, the unit consolidated these systems under centralized battalion-level control to achieve system redundancy. The UAS does not have the range or endurance necessary to conduct missions within a larger battalion area of operations. An assessment cannot be made of the effectiveness of the UAS employed in the platoon/company role for which it is designed.

The Class 1 UAS is not reliable, demonstrating a mean time between system abort of 1.5 hours versus a 23-hour user threshold requirement.

Small Unmanned Ground Vehicle Block 1 (SUGV). During LUT 09, the SUGV demonstrated a capability for remote investigation of potential threats. The test unit successfully demonstrated the capability to transmit still images from the SUGV to the Network Integration Kit via an Unattended Ground Sensor Gateway. The SUGV sensor performs satisfactorily in daylight, providing images that can identify personnel at 100 meters, achieving the user requirement. The SUGV does not meet the user requirement for recognizing personnel at night. The most significant SUGV operational deficiency is the limited communications range between the operator and the SUGV. The SUGV user requirement calls for a 1,000 meter line-of-sight tele-operation range. This range allows the operator to employ the robot at a safe distance while conducting reconnaissance of potentially hazardous locations. During LUT 09, much shorter ranges were achieved. Typical tele-operation ranges were 125-150 meters in open terrain and 50-75 meters in and around buildings. These short tele-operation ranges exposed SUGV operators to hostile fire. Several operators were evaluated as killed during the LUT.

During LUT 09, the SUGV demonstrated a 5.2-hour mean time between system abort versus a requirement of 42 hours.

Urban Unattended Ground Sensor (U-UGS). The U-UGS demonstrated little contribution to unit situational awareness, providing limited actionable intelligence. Images were often blurry or blank and not readable. During LUT 09, the Leader Display and Control Device was not used by the unit, although it is essential to providing local unit leaders U-UGS alerts and images. The U-UGS has demonstrated a capability to transmit images to the NIK via a gateway device. The U-UGS is not reliable, demonstrating a mean time between system abort of 25 hours versus a requirement of 105 hours.

Tactical Unattended Ground Sensor (T-UGS). The T-UGS provided little contribution to unit situational awareness. During LUT 09, it provided no actionable intelligence to the test unit, with half of its photo images blank or blurry. The T-UGS demonstrated a capability to transmit images to the NIK. The T-UGS is not reliable, demonstrating a mean time between system abort of 52 hours versus a requirement of 127 hours.

Reliability. The Army Test and Evaluation Command calculated reliability growth potentials for the NIK, U-UGS, T-UGS, SUGV and Class 1 UAS that are all below the reliability thresholds associated with each system. Thus, the reliability desired for these systems is not achievable by IOT&E without an extensive design-for-reliability effort by the Army.

Assessment of the Joint Tactical Radio System (JTRS) Ground Mobile Radio (GMR) and Handheld, Manpack, Small Form Factor (HMS) Test Plans

The Joint Tactical Radio System (JTRS) Handheld, Manpack and Small Form Fit (HMS) and Ground Mobile Radio (GMR) are schedule-driven programs working to complete system development prior to operational tests scheduled for November 2010.

Readiness for and successful completion of these operational tests are dependent upon the success of developmental testing, development of supporting waveforms and network management tools, and the completion of user requirements such as radio network architectures and plans for network management.

The JTRS HMS program completed the Rifleman Radio Limited User Test (LUT) in April 2009. This test highlighted deficiencies in reliability, battery life, range and an immature Concept of Operations. The Rifleman Radio reliability, battery life, and transmission range were well below user requirements. The Concept of Operations did not provide sufficient radio discipline during combat. The program will conduct a series of tests from April - June 2010 to verify correction of deficiencies. The results of these tests will support a Milestone C review in August 2010. The program is scheduled to conduct the Rifleman Radio Initial Operational Test (IOT) in November 2010, in conjunction with the JTRS HMS Manpack LUT.

The JTRS HMS program is executing Manpack radio developmental testing leading to the Manpack LUT in November 2010. This LUT will be conducted in conjunction with the Rifleman Radio IOT. Completion of planning for these tests awaits JTRS HMS Manpack user requirements.

The JTRS GMR program is experiencing an eight-month delay in developmental testing due to late delivery of hardware and software. Because the schedule for conducting the GMR LUT in November 2010 has remained unchanged despite the delay in development, this shift in schedule has reduced the time available to develop corrective actions for deficiencies discovered during developmental testing prior to conducting the LUT.

The JTRS GMR LUT is dependent upon the delivery of a functional Wideband Networking Waveform (WNW) and network management tools. WNW version 3.1 demonstrated low throughput and poor message completion rates during the April 2009 WNW 30-Node Test. The JTRS Network Enterprise Domain (NED) has conducted production qualification testing on JTRS WNW version 4.0.1 and has made this version available for integration into GMR. The National Security Agency identified security issues with WNW 4.0.1 and will reassess an updated WNW 4.0.2 for corrections.

The JTRS GMR is a critical component of the NIK and provides transfer of data, imagery and voice communications within the E-IBCT. Delays in the GMR program could affect plans for fielding the E-IBCT.

The Army's ability to execute the overall JTRS test schedule leading to the three scheduled operational tests (Rifleman Radio IOT, Manpack LUT and GMR LUT) in November 2010 is of great concern due to a lack of time to address corrective actions, the dependence upon supporting waveform and network management success, and the need to complete user requirements.

Assessment of the testing plan for the Extended Range Multi-Purpose (ERMP) Unmanned Aircraft System (UAS)

The ERMP program has grown in complexity and scope since Milestone B in April 2005 as a result of the following:

- The Secretary of Defense directed a surge in intelligence, surveillance, and reconnaissance support in Iraq and Afghanistan.
- The program transitioned from an Acquisition Category II to an Acquisition Category ID program.
- The Department accelerated procurement and fielding timelines and increased production quantities from 11 to 14 systems.

The surge provided impetus for completing the ERMP Test and Evaluation Master Plan which I approved in December 2009 in support of the Milestone C decision in February 2010. The master plan calls for a series of operational tests conducted in conjunction with unit training to support the intelligence, surveillance, and reconnaissance surge, as well as completion of the ERMP program of record. The surge units are two "Quick Reaction Capability" platoon-size organizations – QRC 1 and 2. Major components of each are four aircraft, two Ground Control Stations and one "legacy" Ground Control Station. The program of record system is a company-size organization. Major components include 12 aircraft and 5 Ground Control Stations.

The Army conducted a Customer Test in April 2009. Using the results of that test and developmental testing, as appropriate, DOT&E provided an Early Fielding Report to the Defense Committees in September 2009 assessing the ERMP QRC 1 unit's ability to accomplish its war time mission. In that Early Fielding Report I conclude the QRC 1 unit effectively employed the ERMP system. Demonstrated performance of the aircraft and the electro-optical infrared payload met requirements. Poor One System Ground Control Station software reliability hindered, but did not prevent, successful mission execution. The QRC 1 unit was able to successfully complete missions using line-of-sight Tactical Common Data Links in spite of incomplete development and integration within the ERMP system. Development of the Satellite Communications (SATCOM) data link between the Ground Control Station and the aircraft was not complete and therefore the QRC 1 unit was not able to utilize beyond line-of-sight SATCOM during the test. The communications relay capability had limited range. The Quick Reaction Capability 1 unit completed deployment in August 2009 and began conducting combat operations in Iraq in November 2009.

In addition to the Early Fielding Report, I provided an operational assessment to support the Milestone C Low Rate Initial Production decision in February 2010. That assessment combined the results of the Customer Test, developmental testing completed since the Customer Test, and demonstrated performance of the deployed QRC 1 unit.

In that report I conclude that the ERMP system has continued to mature since the Customer Test. In addition to demonstrating the capability to autonomously and cooperatively employ Hellfire missiles, the program has implemented improvements to the reliability and performance of the satellite, Tactical Common Data Link, and other radio communications. SATCOM is now fully operational, Tactical Common Data Link communications are performing at the required 300-kilometer ranges, and the communications relay capability has improved from 30 to 60 kilometers.

The Army plans to conduct a Limited User Test, in conjunction with unit training at the National Training Center with the QRC 2 unit in May-June 2010, and deploy the unit later in the year. The operational assessment resulting from this test event will support the second Low Rate Initial Production decision. The Customer Test and the Limited User Test are excellent examples of combining training and testing to support a

rapid fielding initiative. The upcoming Limited User Test at the National Training Center is being conducted with organizations that the ERMP QRC 2 unit will support when deployed.

Full production-representative system testing will occur in the Initial Operational Test and Evaluation conducted in FY 2011 and Follow-on Operational Test and Evaluation conducted in FY 2012. Like the Limited User Test, the Initial Operational Test and Evaluation and Follow-on Test and Evaluation will be conducted in conjunction with a unit's deployment training at the National Training Center. The need for Follow-on Test and Evaluation is due to the planned change from the currently fielded Lynx II to the production-representative STARlite Synthetic Aperture Radar / Ground Moving Target Indicator payload.

My assessment of the planned testing for ERMP is that it is robust and is an excellent example of conducting training and testing to support rapid fielding initiatives and the acquisition program of record.