HOUSE ARMED SERVICES
SUBCOMMITTEE ON
TACTICAL AIR AND LAND
FORCES

TESTIMONY OF

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Mr. Chairman, Congressman Reyes, 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 and the Stryker Double V-Shaped Hull (SDVH) program, as well as my assessment of past and planned future testing of Army Network programs.

E-IBCT Increment 1

My assessment of the Early Infantry Brigade Combat Team (E-IBCT) Increment 1 performance is based upon the results of Limited User Test 10 (LUT 10) conducted in September 2010, at Fort Bliss, Texas, and White Sands Missile, Range New Mexico, as well as the LUT conducted in 2009.

The performance of the E-IBCT systems during these operational tests was an important consideration affecting the decision earlier this year by the Undersecretary of Defense for Acquisition, Technology and Logistics and the Army leadership to cancel three components of the E-IBCT Increment 1 – the Class 1 Unmanned Aerial System (Class 1 UAS) and both the Urban and Tactical Unattended Ground Sensors (U-UGS and T-UGS) – and to limit procurement of the Network Integration Kit to one additional brigade set. In the case of the remaining E-IBCT component, the Small Unmanned Ground Vehicle (SUGV), an additional Low Rate Initial Production (LRIP) of two brigade sets was approved. Any future SUGV production decisions will be made under a separate Army SUGV program.

Assessment of E-IBCT Test Results

My assessment of the EIBCT systems' operational effectiveness during LUT 10 conducted last September remains essentially unchanged from my assessment following the LUT conducted in 2009, about which I testified before this committee last March. Overall, during testing in both LUT 09 and LUT 10, the E-IBCT systems, with the exception of the SUGV, demonstrated little military utility and made no significant contribution to mission accomplishment. All of the systems tested, with the exception of the SUGV, had notable deficiencies in operational performance.

The demonstrated reliability for the E-IBCT systems in LUT 10, with the exception of the Class 1 UAS, showed significant improvement over the reliability demonstrated in LUT 09.

The remainder of this testimony describes my key findings with respect to the individual E-IBCT systems, the results of testing to date of Stryker Double V-shaped Hull, and issues associated with past and planned testing of the systems composing the Army's tactical communications network.

Network Integration Kit (NIK) There was no demonstrated military utility for the NIK's primary function of networking sensor output, consisting of still images from the E-IBCT systems, with higher tactical echelons, e.g. battalion or brigade headquarters. The still imagery collected by the E-IBCT systems often contained no useful information. When useful information was collected, it was of only local tactical interest and of fleeting tactical value and, hence, was very rarely passed across the network via the NIK.

Since the sensor information from the E-IBCT systems was of limited tactical utility above company level, the test unit predominately employed local system controllers at the platoon and company level, operating these systems unconnected to the NIK.

During LUT 10, the NIK experienced a frequent degradation in Single Channel Ground and Airborne Radio System (SINCGARS) audio volume and quality, forcing units to use legacy hand-held radios or, in some cases, runners. The NIK start- up and re-boot times were long, in excess of the 25-minute "cold-start" requirement. The complexity of NIK operating and trouble-shooting procedures limited its usefulness in supporting tactical operations.

Computer Network Operations conducted by the Army identified a number of information assurance vulnerabilities in the NIK network.

The Interoperability (IO) Kit, a laptop computer connected to the Joint Tactical Radio System Ground Mobile Radio (JTRS GMR) integrated within the NIK, was used successfully by battalion and company command posts during LUT 10. The IO Kit enabled file transfers and “chat” over the JTRS GMR Wideband Networking Waveform across the E-IBCT NIK network.

The NIK, while showing improvement in Mean Time Between System Abort (MTBSA), still fell short of its reliability requirement. The Army states it has fixed the problems experienced during the LUT with NIK start-up and re-boot, as well as SINCGARS degradation. An operational assessment scheduled to be conducted during the summer of 2011 will hopefully provide an opportunity to verify under tactically realistic conditions that these problems have been corrected.

Small Unmanned Ground Vehicle Block 1 (SUGV)

The SUGV was the most tactically useful of the E-IBCT systems. This system provides a capability for remote investigation of potential threats, such as Improvised Explosive Devices (IED). The test unit successfully employed the SUGV in support of a range of tactical missions. It was most frequently employed during missions that involved clearing buildings or caves, or at Traffic Control Points (TCPs). Based upon the results of LUT-10, I made a number of recommendations for the Army to consider that would improve the capability of future SUGV variants. Among these was the addition of an electronic tether which would allow the user to continue to operate the SUGV when radio line-of-sight was lost.

Class I Block 0 Unmanned Aerial System The Class I UAS was most useful when employed from a static defensive position such as the company combat outpost (COP). It was less useful in offensive operations due to its weight and bulkiness. The Class 1 UAS has a loud aural signature and the unit did not use it when tactical surprise was desired. The unit showed a preference for the Raven UAS over the Class I UAS because the Raven was easier to deploy, had longer endurance, and was quieter. The Class 1 UAS fell well short of its reliability requirements, demonstrating a 3.1-hour

MTBSA versus a 23-hour requirement. Unlike the other E-IBCT systems, the Class 1 UAS showed little reliability growth from LUT 09.

Tactical and Urban Unmanned Ground Sensors (T-UGS and U-UGS)

Both the T-UGS and U-UGS demonstrated little tactical utility, providing the unit little useful tactical intelligence. Both systems are difficult to conceal and are easily identified by the enemy, precluding their usefulness as unattended sensors. Both the T-UGS and U-UGS exceeded their reliability requirements.

Lessons Learned I will briefly discuss two topics associated with the E-IBCT program that could be characterized as "lessons learned." These topics have applicability to other defense acquisition programs.

The first topic is operational requirements. All of the E-IBCT systems met or came close to meeting most of their documented requirements. The program office designed the E-IBCT systems to the specifications it was given and was largely successful in doing so. Yet, in operational testing, these systems demonstrated little useful military capability. In operational test and evaluation, our focus is necessarily on answering the question: "Is a unit's ability to accomplish its mission improved when equipped with a system?" and much less so on answering the question: "Does this system meet its system specifications?" In the case of the E-IBCT, the systems under test contributed little to improve mission accomplishment.

I attribute this lack of demonstrated military utility in large measure to the established system requirements and specifications not being descriptive of a meaningful and useful operational capability. In my view, the E-IBCT requirements document did not sufficiently link its largely technical specifications to desired operational outcomes. The requirements and specifications were necessary, but well short of sufficient, to assure military utility. This situation is not unique to the E-IBCT program. Program requirements must be operational in nature and clearly linked to a useful and measurable operational capability. Contract specifications must be both necessary and sufficient to assure operational effectiveness in combat.

The second topic I will address briefly is the continued need for programs to execute disciplined and rigorous developmental testing, particularly with regard to reliability. After the poor reliability results from the LUT conducted in 2009, the E-IBCT program executed an aggressive program of reliability growth and testing. This effort resulted in the considerably improved reliability found in the operational test conducted in 2010. Had better developmental testing been conducted prior to the LUT-09, the significant reliability shortfalls would not have been discovered in operational testing and the limited military utility of the majority of the E-IBCT systems would have been clearly apparent sooner.

Stryker Double V-shaped Hull

The Army intends to begin deploying the Stryker Double V-Shaped Hull (SDVH) to Afghanistan in June 2011. The Army began the SDVH test program in July 2010 to confirm improved protection against improvised explosive devices while retaining other elements of the existing Stryker fleet's operational performance. The Army continues to conduct operational and live fire testing of the Stryker configurations modified with the DVH.

As part of the multi-phase SDVH live fire test program, the Army recently completed structural and prototype system-level testing of the protection provided by SDVH, as well as baseline Full-Up System-Level (FUSL) testing of the protection provided by the Stryker vehicles equipped with the modifications and survivability kits currently in use in Operation Enduring Freedom (OEF). These tests have provided the data needed to perform an initial comparative assessment of the protection provided by the SDVH relative to that of the original Strykers. Testing of the OEF-kitted Stryker vehicles demonstrates that the modifications significantly improve protection against improvised explosive devices relative to the original Strykers (which had no survivability kits) and in some cases provide protection comparable to the threshold requirements for Mine-Resistant Ambush Protected All-Terrain Vehicles (M-ATV). Testing also indicates that the SDVH provides significantly better protection to crew than OEF-kitted Strykers. In particular, the SDVH meets and in some cases exceeds M-ATV threshold requirements. The FUSL live fire testing of production-representative

SDVH remains to be done. That testing, which the Army expects to complete by February 2012, will provide the additional data required to fully characterize the protection provided to crew by SDVH and its overall operational survivability against the full range of threats and across all Stryker configurations.

I approved a plan to conduct operational testing of the SDVH in two phases to assure the implications for tactical mobility of the additional 5,000 pounds of weight of the SDVH relative to OEF-kitted Strykers, both of which use the same engine, are understood. Based on the testing conducted thus far at the Yuma Proving Ground (YPG) and the National Training Center (NTC), I assess no operationally significant degradation to mobility when SDVH is employed on level rocky or soft soils. However, testing indicates there is some degradation in mobility that has not yet been observed to be tactically significant due to inadequate engine power when SDVH is operated over terrain with long steep slopes.

My assessment is that the driver's compartment of the SDVH is not suitable. Long-duration missions conducted with the SDVH at operational speeds using combat-experienced drivers on rugged Afghanistan-like terrain in Yuma reveal two problems with the driver's compartment:

- The seat release latch used to evacuate an incapacitated driver is extremely difficult to use: it took the crew twice as long to evacuate a driver from a SDVH as from an OEF-kitted Stryker.

- SDVH incorporates a redesigned driver's compartment with limited physical room that restricts driver movement and results in increased driver fatigue during long-duration missions.

I recommend the Army correct the first problem before deploying SDVH and implement changes to the vehicle's design mitigating the second problem as soon as feasible.

Army Network Testing

This summer's Integrated Network Baseline Event (INBE) is the Army's first major test event within its FY 11-12 Integrated Evaluation Schedule. The Army intends that the INBE conduct six Limited User Tests to support Milestone C or fielding decisions for the following systems:

- Joint Tactical Radio System (JTRS) Ground Mobile Radio (GMR)
- Mounted Soldier System (MSS)
- Force XXI Battle Command Brigade and Below (FBCB2) Joint Capability Requirement (JCR)
- Early Infantry Brigade Combat Team (E-IBCT) Network Interface Kit (NIK)
- JTRS Handheld Manpack Small Form Fit (HMS) Manpack
- Spider XM7 Network Command Munition

These will be the most complex tests ever attempted of the systems currently planned to compose the Army's network.

Unfortunately, the Army has not yet determined how the individual systems composing the network will be used and interact with one another, or at what echelons and in what numbers those systems will be used; that is, it has not yet defined an integrated network architecture. The Army has also yet to develop test plans describing the conditions under which the upcoming INBE will be conducted, what data will be collected, and how those data will be analyzed. Without this information, which is already late-to-need to conduct testing this summer, there is substantial risk the INBE will produce information inadequate to support decisions to buy and field the systems listed above.

Developmental Test Key to a Successful Operational Test

My office witnessed a Limited User Test conducted in 2009 during which the Joint Tactical Radio System (JTRS) Handheld, Manpack and Small Form Factor (HMS) Rifleman Radio performed poorly due primarily to inadequate developmental testing. In February 2011, the program conducted additional testing demonstrating the problems identified in 2009 have been corrected. The program has now produced a radio that appears to be far superior in both cost and performance to the original Rifleman Radio.

The JTRS HMS Manpack radio only recently completed its first week-long government developmental test at the beginning of February. Thus, there is substantial risk that problems will be discovered during the operational testing of the Manpack to be conducted as part of the upcoming INBE.

The JTRS Ground Mobile Radio (GMR) was unable to fix deficiencies, including hardware and software programmable waveform issues, identified in the 2010 System Integration Test prior to execution of the ongoing Field Experiment 5 (FE5). Similarly, there will be insufficient time to fix problems identified during FE5 prior to the upcoming INBE Limited User Test. JTRS HMS and GMR, like several other INBE programs, will complete developmental testing with little or no time to correct deficiencies prior to operational testing during the INBE.

Network Interface Kit (NIK) and JTRS GMR

The primary purpose of the NIK, with its component GMR radio, had been to provide the mobile, secure Internet enabling information derived from the E-IBCT sensors to be shared across numerous Army echelons of command. With the exception of the Small Unmanned Ground Vehicle, all the E-IBCT sensors have been terminated. Thus, the role of the NIK, including its component GMR, within the INBE is now, at best, ambiguous. This ambiguity must be resolved quickly if useful information is to be collected during the INBE regarding the contributions of the NIK [GMR] to accomplishing combat missions.

Army Network Testing Conclusion

For the Army to be successful in testing its network, it needs an integrated network architecture and clear requirements. Moreover, the Army Test and Evaluation Command needs to be staffed with the right expertise and equipped with proper digital instrumentation to conduct operational tests on large integrated networks. Absent these key ingredients, there is substantial risk the upcoming INBE will be unable to provide decision-makers with adequate information.