

Early Infantry Brigade Combat Team (E-IBCT)

Executive Summary

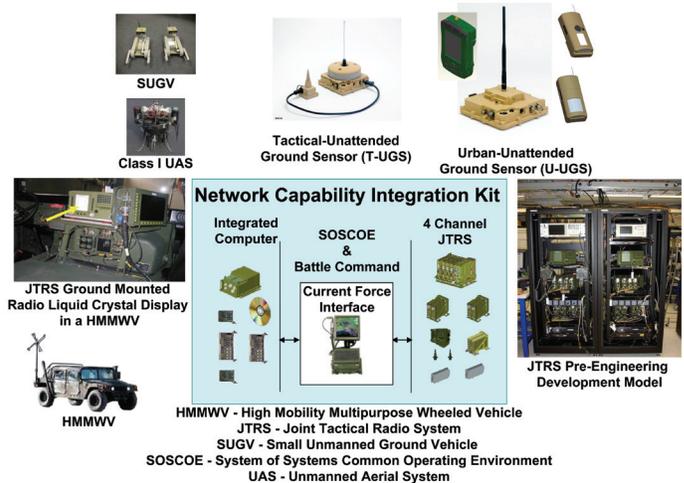
- The Under Secretary of Defense for Acquisition, Technology, and Logistics (USD (AT&L)) approved a Milestone C decision for Early Infantry Brigade Combat Team (E-IBCT) Increment 1 on December 24, 2009. The decision included approval for Low-Rate Initial Production (LRIP) of equipment for one E-IBCT.
- The USD (AT&L) cancelled the Non-Line-of-Sight Launch System (NLOS-LS) program in May 2010 based upon a recommendation from the Army that NLOS-LS was not cost-effective.
- The Army Test and Evaluation Command (ATEC) conducted a Limited User Test (LUT 10) at White Sands Missile Range, New Mexico, in September 2010. LUT 10 was the second operational test of the E-IBCT systems and was intended to assess progress in E-IBCT operational effectiveness and suitability in a realistic operational environment.
- Based upon analyses of the results from LUT 10 and developmental testing, DOT&E's current assessment of the E-IBCT systems is that, with the exception of the SUGV, none of the systems have demonstrated an adequate level of performance to be fielded to units and deployed in combat. The SUGV has demonstrated a sufficient level of tactical utility and operational reliability to merit fielding.

System

- E-IBCT Increment 1 now includes the following capabilities.
 - Network Integration Kit (NIK) mounted on a tactical wheeled vehicle such as High Mobility Multi-purpose Wheeled Vehicle or Mine Resistant Ambush Protected vehicle, consisting of:
 - Integrated Computer System with battle command software
 - Joint Tactical Radio System – Ground Mobile Radios
 - Unattended Ground Sensors (UGS)
 - Tactical UGS (T-UGS), including a Gateway; Intelligence, Surveillance, and Reconnaissance nodes (which include acoustic and seismic sensors); Radiological and Nuclear sensors; Passive Infrared sensors; and Electro-Optical/Infrared imagers.
 - Urban UGS (U-UGS), which are small, leave-behind imaging and intrusion detection sensors emplaced in structures such as buildings, caves, and tunnels

Activity

- The USD (AT&L) approved a Milestone C decision for E-IBCT Increment 1 on December 24, 2009. The decision included approval for LRIP of equipment for one E-IBCT.



- Class 1 Unmanned Aerial System (UAS), Block 0
- Small Unmanned Ground Vehicle (SUGV), Block 1
- The Army plans to field the first E-IBCT Increment 1 in FY11 with a total procurement objective of nine Increment 1 E-IBCTs.
- Detailed reports on the NIK, UGS, Class 1 UAS Block 0, and SUGV are provided following this overview.

Mission

E-IBCTs will perform all tactical operations – offensive, defensive, stability, and support – currently conducted by infantry forces. The Army intends the E-IBCT systems to enhance brigade intelligence, surveillance, and reconnaissance, as well as command and control capabilities.

Major Contractors

- Prime: The Boeing Company, Integrated Defense Systems – St. Louis, Missouri
- Class 1 UAS: Honeywell, Aerospace Division – Albuquerque, New Mexico
- UGS: Textron Defense Systems – Wilmington, Massachusetts
- SUGV: iRobot – Burlington, Massachusetts

This decision did not include the NLOS-LS, which was still undergoing testing at that time. This Milestone C decision also contained a provision to conduct a comparative test, as part

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of the E-IBCT IOT&E in FY11, of an E-IBCT-equipped unit with an infantry brigade combat team equipped as currently deployed for operations.

- The USD (AT&L) subsequently cancelled the NLOS-LS program in May 2010 based upon a recommendation from the Army that NLOS-LS was not cost-effective.
- Since the Milestone C decision, the E-IBCT program has pursued an intensive effort to fix reliability deficiencies identified in operational and developmental testing in 2009 for all E-IBCT systems.
- The Army conducted Technical Test 1 (TT-1), a developmental test, in July 2010 at White Sands Missile Range, New Mexico, to assess improvements in reliability.
- ATEC executed a Limited User Test (LUT 10) at White Sands Missile Range, New Mexico, in September 2010 in accordance with a DOT&E-approved test plan.
- LUT 10 was the second operational test of the E-IBCT systems and was intended to assess progress in E-IBCT operational effectiveness and suitability in a realistic operational environment. During LUT 10, an infantry battalion consisting of two infantry companies equipped with E-IBCT systems executed a series of offensive, defensive, and stability missions during three 96-hour scenarios. The results of LUT 10 will be used to inform a DAB decision to purchase an additional two E-IBCTs as part of LRIP.

Assessment

- Reliability test results from TT-1 indicate that all E-IBCT systems are showing notable improvement in reliability.
 - During TT-1, four of the five systems – Class 1 UAS, SUGV, T-UGS, and U-UGS – exceeded system requirements for Mean Time Between System Abort (MTBSA).
 - Two of the five systems – T-UGS and SUGV – are meeting reliability requirements for Mean Time Between Effective Function Failures (MTBEFF). EFFs are less severe failures than system aborts, representing a degradation in system performance as opposed to rendering the system unusable. The MTBEFF results reflect the program's priority on fixing the system aborts, which are the most serious failure modes.
 - The NIK, while demonstrating improved reliability (79 hours MTBSA, 31 hours MTBEFF) over last year's performance (33 hours MTBSA, 19 hours MTBEFF), fell short of meeting its MTBSA requirements (112 hours MTBSA, 37 hours MTBEFF).
- Based upon analyses of the results from LUT 10 and developmental testing, DOT&E's current assessment of the E-IBCT systems is that, with the exception of the SUGV, none of the systems have demonstrated an adequate level of performance to be fielded to units and deployed in combat. The SUGV has demonstrated a sufficient level of tactical utility and operational reliability to merit fielding. Individual system assessments are detailed below. More detailed system assessments are contained in the individual system reports following this overview.

- There was no demonstrated tactical 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. Sensor information from the E-IBCT systems is of limited tactical utility above company level and the test unit predominately employed local system controllers at the platoon and company level, operating the systems unconnected to the NIK. The only exception was the T-UGS, which requires the NIK for local control. The test unit found connecting systems to the NIK via a gateway to be difficult and time-consuming.
- NIK start-up and re-boot times are excessive, and the complexity of NIK operating and trouble-shooting procedures limited its usefulness in supporting tactical operations.
- The SUGV was the most tactically useful of the E-IBCT systems. The test unit successfully employed the SUGV in support of a range of tactical missions.
- The Class 1 UAS demonstrated some limited tactical utility, particularly in a static defense. However, the Class 1 UAS is still not reliable.
- T-UGS and U-UGS demonstrated little tactical utility, providing little useful tactical intelligence.
- Overall, the E-IBCT program has significantly improved E-IBCT systems' reliability over the past year. Based upon the LUT 10 results, the T-UGS, U-UGS, and SUGV are currently meeting reliability requirements. The NIK, while showing some improvement (79 hours MTBSA), still falls short of the reliability requirement (112 hours MTBSA). The Class 1 UAS has demonstrated little reliability improvement (3.11 hours MTBSA, 2.57 hours MTBEFF) when measured against last year's LUT 09 performance (1.5 hours MTBSA, 1.47 hours MTBEFF) and still falls short of its reliability requirements (23 hours MTBSA, 11 hours MTBEFF).
- The effectiveness of the E-IBCT systems is dependent upon the availability of production-representative Joint Tactical Radio System (JTRS) radios, corresponding waveforms, and network management tools to be provided by the JTRS program. This is a risk area for the E-IBCT program, as the JTRS development and test and evaluation schedule currently lags the E-IBCT program schedule by several months.

Recommendations

- Status of Previous Recommendations. The E-IBCT program and Army have taken positive steps to address the four FY09 recommendations. These recommendations included improving E-IBCT systems' reliability, improving SUGV line-of-sight communications ranges, obtaining an Interim Authority to Operate (IATO) for all E-IBCT radios prior to IOT&E, and assuring that an adequate high fidelity Real Time Casualty Assessment system is available to support E-IBCT operational testing. These recommendations remain valid

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and are focused on conducting a successful E-IBCT IOT&E in FY11.

- FY10 Recommendations.

1. The Army should not execute the E-IBCT IOT&E until all E-IBCT network components, including the JTRS radios and waveforms and the NIK's Cross Domain Guard have

received an IATO from the appropriate authority. The IATO will certify that these components are ready for operation in combat.

2. Recommendations specific to the NIK, UGS, Class 1 UAS, and SUGV are contained in detailed reports following this overview.

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