

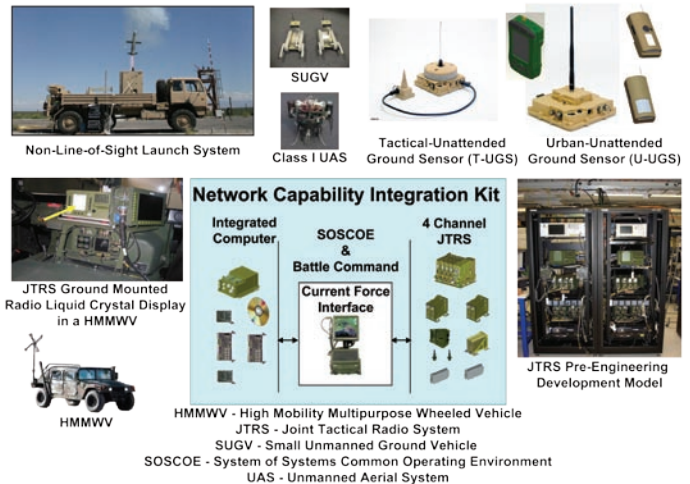
## Early Infantry Brigade Combat Team (E-IBCT)

### Executive Summary

- The systems to be acquired as part of the Early Infantry Brigade Combat Team (E-IBCT) program were originally components of the Future Combat Systems (FCS) program. In June 2009, the DoD cancelled the FCS program and directed the Army to establish the E-IBCT Increment One as a separate acquisition program with a Milestone C decision scheduled for December 2009.
- The Army Test and Evaluation Command (ATEC) executed a Limited User Test (LUT), the first operational test of E-IBCT systems, at Fort Bliss, Texas, in August and September 2009.
- Based upon analyses of the results from the LUT and developmental testing, DOT&E's current assessment of the E-IBCT systems is that none have demonstrated an adequate level of performance to be fielded to units and employed in combat. All of the systems require further development in order to meet threshold user requirements.

### System

- The Army intends to modernize IBCTs in two increments. The Army plans to field the first E-IBCT Increment One in FY11 with a total procurement objective of seven Increment One E-IBCTs. The Army has not yet determined the procurement objective for Increment Two E-IBCTs.
- Planned E-IBCT Increment One capabilities include the following:
  - Network Integration Kit (NIK) mounted on a High Mobility Multi-purpose Wheeled Vehicle (HMMWV), consisting of:
    - Integrated Computer System with battle command software
    - Force XXI Battle Command, Brigade and Below (FBCB2) Joint Capability Requirement software
    - Joint Tactical Radio System – Ground Mobile Radios (JTRS GMR)
  - Unattended Ground Sensors (UGS)
    - Tactical UGS (T-UGS) including a Gateway; Intelligence, Surveillance, and Reconnaissance sensors; Radiological and Nuclear (RN) sensors; and Electro-Optical/Infrared (EO/IR) sensors
    - Urban UGS (U-UGS), which are small, leave-behind imaging and intrusion detection sensors emplaced in structures such as buildings, caves, and tunnels
  - Non-Line-of-Sight Launch System (NLOS-LS) consisting of:
    - Container Launch Unit (CLU), which holds 15 missiles (maximum range out to 40 km), and a Computer and Communications System
    - In the E-IBCT, the Battle Command for the NLOS-LS is the Advanced Field Artillery Tactical Data System



- Class I Unmanned Aerial System (UAS), Block 0
- Small Unmanned Ground Vehicle (SUGV), Block 1
- The Army currently plans to equip the E-IBCT Increment Two with additional systems starting in FY13. The Army has not yet determined which systems will comprise Increment Two. Candidate systems include a number of systems from the FCS program such as:
  - Class IV UAS
  - Multi-functional Utility/Logistics and Equipment (MULE) unmanned ground vehicle
  - Common Controller AN/PSW-2
- Detailed reports on Class I UAS Block 0, NLOS-LS, and UGS are provided following this overview.

### Mission

E-IBCT's will perform all tactical operations – offensive, defensive, stability, and support – currently conducted by light infantry forces. The Army intends the E-IBCT systems to enhance brigade intelligence, surveillance, and reconnaissance; precision indirect fires; and command and control capabilities.

### Prime Contractors

- Prime: The Boeing Company, Integrated Defense Systems, St. Louis, Missouri
- Class I UAS: Honeywell, Aerospace Division, Albuquerque, New Mexico
- NLOS-LS: Raytheon Missile Systems, Tucson, Arizona
- UGS: Textron Defense Systems, Wilmington, Massachusetts
- SUGV: iRobot, Burlington, Massachusetts

## Activity

- The systems to be acquired as part of the E-IBCT program were originally components of the FCS program. In June 2009, the DoD cancelled the FCS program and directed the Army to establish E-IBCT Increment One as a separate acquisition program with a Milestone C decision scheduled for December 2009.
  - During the summer of 2009, the contractor conducted a series of three Technical Field Tests (TFT) at White Sands Missile Range, New Mexico. The TFTs were developmental tests executed under field conditions and were designed to assess the level of technical maturity for all E-IBCT systems. Additionally, the Army's Training and Doctrine Command (TRADOC) conducted an E-IBCT Force Development Test and Experimentation (FDT&E) in July and August 2009 at Fort Bliss, Texas. The intent of the FDT&E was to further develop tactics, techniques, and procedures for employment of E-IBCT systems.
  - ATEC executed a Limited User Test (LUT), the first operational test of E-IBCT systems, at Fort Bliss, Texas, in August and September 2009. During the LUT, a company-size unit equipped with E-IBCT systems executed a series of offensive, defensive, and stability missions during four 96-hour scenarios. The results of the LUT will be used to inform the E-IBCT Milestone C decision.
  - As an outcome of previous testing, the T-UGS was redesigned during the past year. A new form-factor T-UGS (NFF T-UGS) was introduced into the TFT in late July. A limited number of NFF T-UGS were also available for employment during the LUT. Other additional modifications to E-IBCT systems resulting from previous testing include the addition of a Leader Display and Control (LDAC) device – a handheld device to display U-UGS images – and a Range Extension Relay, a radio relay device to extend the communications range from the T-UGS field to the HMMWV-mounted NIK.
  - The NLOS-LS Flight LUT was rescheduled for January - February 2010 as a result of deficiencies discovered in the developmental test flights.
- Time Between System Abort (MTBSA)) is falling well short of user threshold requirements (23 hours MTBSA).
- The SUGV demonstrated a capability for remote investigation of potential threat locations, such as buildings or suspected IEDs. However, SUGV tactical utility is limited by poor line-of-sight communications range between the operator and the robotic vehicle. The SUGV is falling well short of user threshold reliability requirements.
  - The NIK performed its basic functions of controlling the UGS, receiving and passing still images from the UGS and Class I UAS, and interoperating with the current brigade battle command network. NIK reliability fell well below user threshold requirements.
- As noted above, the demonstrated reliability for the NIK, U-UGS, T-UGS, Class I UAS, and SUGV is poor and falls short of the level normally expected of an acquisition system at this stage of development. Shortfalls in meeting reliability requirements may adversely affect the E-IBCTs overall operational effectiveness and suitability and increase life-cycle costs.
  - The program plans to implement a number of configuration changes in all E-IBCT systems prior to LUT 2, scheduled for the summer of 2010. In particular, operational testing to date has been primarily conducted with prototype JTRS or surrogate radios. This has precluded the ability to conduct an evaluation of the E-IBCT systems operating in a secure tactical network against potential threat information operations, such as electronic warfare. This will be a necessary condition for LUT 2 and employment in combat.
  - The effectiveness of the E-IBCT systems is dependent upon the availability of production-representative JTRS radios and corresponding waveforms. This is a risk area for the program as the JTRS development and test and evaluation schedule currently lags the E-IBCT program by several months.
  - Adequate operational testing of the E-IBCT requires a high fidelity Real Time Casualty Assessment (RTCA) system. The ability to adequately evaluate the force-level effectiveness and survivability of an IBCT equipped with E-IBCT systems is directly dependent upon such an RTCA.

## Assessment

- Based upon analyses of the results from the LUT and developmental testing, DOT&E's current assessment of the E-IBCT systems is that none have demonstrated an adequate level of performance to be fielded to units and employed in combat. Individual system assessments are as follows:
  - NLOS-LS cannot be fully assessed until completion of the Flight LUT. The NLOS-LS CLU is currently on track to achieve its reliability requirement.
  - T-UGS and U-UGS as tested were not effective. These systems demonstrated poor communications connectivity, inadequate transmission ranges, poor image quality, and frequent system failures.
  - Class I UAS performed well, but is not reliable. The air vehicle flight and sensor performance met most user requirements. Its demonstrated reliability (1.5 hours Mean

## Recommendations

- Status of Previous Recommendations. There are no previous recommendations.
- FY09 Recommendations.
  1. Recommendations specific to Class I UAS Block 0, NLOS-LS, and UGS are contained in detailed reports following this overview.
  2. The E-IBCT program should develop and implement a revised reliability growth plan for all E-IBCT systems which will ensure systems achieve reliability requirements by the start of the IOT&E scheduled for 4QFY11.
  3. The E-IBCT program should improve the line-of-sight communications range between the SUGV operator and the robotic vehicle. The SUGV communications range

## ARMY PROGRAMS

- requirement of 1,000 meters, if met, would be satisfactory for effective SUGV employment.
4. The Army should not execute the E-IBCT IOT&E until all radios in E-IBCT systems have received an Interim Authority to Operate (IATO), which verifies that these radios are ready for operation in combat.
  5. The Army should review its test instrumentation development and procurement strategy to ensure that an adequate high fidelity RTCA system is available to support E-IBCT operational testing.

## ARMY PROGRAMS