Future Combat Systems (FCS): Non-Line-of-Sight Cannon (NLOS-C)

Executive Summary

- The Non-Line-of-Sight-Cannon (NLOS-C) Firing Platform began testing in October 2006 at Yuma Proving Ground, Arizona. The Army is using the Firing Platform for risk reduction in cannon and mount development, safety certification, and the improvement of NLOS-C reliability.
- The contractor started fabricating the first five Early Prototype NLOS-C vehicles for delivery beginning in May 2008.
- NLOS-C performance may be compromised in order to meet C-17 aircraft weight and size restrictions for the standard deployment of three howitzers on one aircraft.

System

- NLOS-C, XM1203, is a tracked, self-propelled, hybrid-electric drive 155 mm Howitzer with a two-man crew.
- NLOS-C is the lead Future Combat Systems (FCS) Manned Ground Vehicle (MGV) system. Three MGV systems are designed to be deployable on one C-17 aircraft (before installing extra protective armor) to support early deploying forces with cannon fires.
- The Army will:
  - Procure eight prototypes in FY08 and FY09 for testing
  - Procure 18 Initial Production (formerly Block 0) systems in FY10-FY12 for fielding to the Army Evaluation Task Force for experimentation
- The cannon will fire six standard artillery rounds per minute to ranges of 30+ kilometers leveraging its automated ammunition handling system, laser ignition, and firing Excalibur munitions.
- NLOS-C units are expected to achieve improved accuracy with unguided projectiles.

- NLOS-C equipped units are expected to respond to fire mission requests within 20 seconds when stationary and within 30 seconds when moving.

Mission

- NLOS-C units are designed to provide area and precision cannon fires in support of FCS Brigade Combat Teams and other mechanized brigade combat teams.
- NLOS-C will fire the entire suite of Army 155 mm munitions, including Excalibur precision munitions, to attack point targets.

Activity

- The NLOS-C Firing Platform began testing in October 2006 at Yuma Proving Ground, Arizona. The Firing Platform is a surrogate chassis with a mounted Mission Module containing the gun mount, cannon, aiming, and ammunition handling systems. The design of the Mission Module closely resembles what will be used in the Early Prototype vehicles. The Army is using the Firing Platform for risk reduction in cannon and mount development, safety certification, and improving reliability of the Mission Module.
- The Army continues to test NLOS-C subsystems on the Firing Platform at Yuma Proving Ground, Arizona, and the Mission Equipment Integration Test Stands in Minneapolis, Minnesota, in order to gather data for development of the Early Prototype vehicles.
- The contractor started fabricating the first five Early Prototype NLOS-C vehicles for delivery beginning in May 2008.
- In August 2007, the Army initiated contract negotiations to direct the Lead Systems Integrator to deliver six NLOS-C initial production vehicles per year from FY10 to FY12.
- The Army continues using the NLOS-C Demonstrator for tube wear testing and cannon charge development.

Assessment

- NLOS-C performance may be compromised in order to meet C-17 aircraft weight and size restrictions for the standard deployment of three howitzers on one aircraft.

- Using the currently designed breech chamber and 38-caliber cannon tube, compared to the current 155 mm Paladin breech chamber and 39-caliber cannon tube, reduces the NLOS-C range for most munitions by 3-5 km.
- Conducting continuous 24-hour operations while performing fire missions, maintenance, resupply, and security associated with combat operations will test the two-man crew's endurance and mission focus.
- The eight-fold increased reliability requirement to 512 hours between system aborts during operational missions compared to the Paladin's 62-hour requirement may be difficult to achieve given NLOS-C's automated ammunition handling system, sophisticated automation, and communications equipment.
- Assessing the effectiveness of NLOS-C, within the Future Combat System-of-Systems, will require a high fidelity, real-time casualty assessment system that can accurately capture the impact indirect fires have on combat operations.

Recommendations

- Status of Previous Recommendations. The Army has begun to address DOT&E's FY05 recommendations and should continue efforts in developing a separate test and evaluation strategy to support the fielding of 18 NLOS-C Initial Production howitzers to the Army Evaluation Task Force (AETF). Currently, there is no requirement for a separate testing strategy to support equipment fielded only to the AETF. Other Previous Recommendations remain valid:
  - Ensure that FCS operational tests include adequate NLOS-C Live Fire exercises. Supported maneuver units will need opportunities that they can plan and coordinate fires, and the NLOS-C units will need to demonstrate they can sustain operations while delivering accurate and timely fires (FY05).
  - Develop a real-time casualty assessment system for indirect fires that can accurately assess the effectiveness of NLOS-C fires in system-of-systems exercises (FY05).
- FY07 Recommendations. None.