Bradley Engineering Change Proposal (ECP)

Executive Summary

- In June 2013, the Army conducted an underbody blast test of an M2A2 Operation Desert Storm Bradley modified in the squad area to represent an M2A3 Infantry Fighting Vehicle with Engineering Change Proposal 1 (ECP1) components. The vehicle also included proposed modifications to the underbody add-on armor, squad area's floor, and ammunition stowage plan.
- The blast test revealed that significant improvements to the Bradley Fighting Vehicle Systems (BFVS) level of force protection and vulnerability are feasible. Additional testing is required to further refine and evaluate the proposed modifications.

System

- The Army expects the Bradley ECP1 to restore ground clearance with upgrades to the suspension and track. ECP2 will integrate network technologies as they become available for three variants of the BFVS:
  - M2A3 Infantry Fighting Vehicle
  - M3A3 Cavalry Fighting Vehicle
  - Bradley Fire Support Team with Fire Support Sensor System
- The program designed the Bradley Urban Survivability Kit I, II, and III and add-on armor kit to improve vehicle and crew survivability. These kits were urgently fielded for Operation Iraqi Freedom and are now part of the M2A3 configuration.

Mission

Combatant Commanders employ BFVS-equipped Armor Brigade Combat Teams to provide protected transport of Soldiers; provide overwatching fires to support dismounted infantry and suppress an enemy; and perform missions to disrupt or destroy enemy military forces and control land areas.

Major Contractor

BAE Systems Land and Armaments – Sterling Heights, Michigan

Activity

- The Army is developing additional survivability upgrades outside of the ECP efforts to improve force protection and decrease vulnerabilities identified in FY12.
- In June 2013, DOT&E approved the Detailed Test Plan Addendum for a third Bradley ECP underbody blast event. The objective of the test was to determine if the additional proposed survivability upgrades could improve force protection. Additionally, DOT&E directed that the Program Office develop a Test and Evaluation Master Plan for the ECP2 test and evaluation.
- In June 2013, the Army conducted an underbody blast test at the Aberdeen Test Center, Maryland, of an M2A2 Operation Desert Storm Bradley modified in the squad area to represent an M2A3 Infantry Fighting Vehicle with ECP1 components, along with proposed survivability upgrades to the underbody add-on armor, squad area floor, and ammunition stowage plan.

Assessment

- The Army's previous vulnerability testing of the Bradley Urban Survivability Kit I, II, and III and add-on-armor kit, now part of the M2A3 configuration, was not adequate. Furthermore, testing in FY12 revealed severe vehicle and occupant vulnerabilities.
- Results from the third underbody blast test in June 2013 revealed that significant improvements to the BFVS's force protection and vulnerability are feasible. Additional testing is required to further refine and evaluate the proposed survivability modifications.
- Results from the third underbody blast test also demonstrate that the Armored Multi-purpose Vehicle survivability requirement is achievable with a Bradley-like platform.
- The underbody blast tests with realistic threats (as opposed to outdated underbody requirements) conducted to-date alone are not sufficient to address all of the critical BFVS survivability concerns. The Army will need to develop a comprehensive LFT&E strategy once the design of the improvement kit is fixed.

Recommendations

- Status of Previous Recommendations. The Army began addressing the two previous recommendations concerning the need for a comprehensive live fire strategy and examination of vulnerabilities identified during early testing; however, these recommendations remain open and will be addressed in FY14.
- FY13 Recommendation.
  1. The Army should conduct adequate technical testing of proposed survivability improvement kits and modifications to optimize the design prior to conducting formal live fire testing.