

Bradley Engineering Change Proposal (ECP) and Modernization

Executive Summary

- In 2020, the Army completed the cooperative vulnerability and penetration assessment (CVPA) (January 2020), the adversarial assessment (AA) (September – October 2020), and the FOT&E (October 2020) in accordance with the DOT&E-approved Test and Evaluation Master Plan (TEMP).
- The Army Test and Evaluation Command (ATEC) suspended the maneuver portion of the FOT&E during record run five due to safety concerns. The turret batteries overheated in all six test articles creating a safety hazard to soldiers.
- DOT&E has sufficient data to inform an evaluation by merging the authenticated pilot test data and the record test data.
- DOT&E plans to publish an operational and live fire test report in 2QFY21 to support the program’s scheduled Materiel Release decision in 3QFY21.



System

- The Bradley Engineering Change Proposal (ECP) program integrates new technologies to mitigate the degradation of legacy system performance and to maintain the operational capability outlined in current system requirements documents
 - ECP Phase I included a suspension and track upgrade to restore ground clearance and suspension reliability because of increases in Bradley armor and weight.
 - ECP Phase II will upgrade the electrical system and power train to restore lost mobility, and integrate new technologies to improve situational awareness and vehicle survivability.
- Completion of Phases I and II will result in the conversion of existing M2A3 and Operation Desert Storm – Situational Awareness (ODS-SA) versions of Bradley Fighting Vehicles into the M2A4 version, and the conversion of M7A3 Bradley Fire Support Team vehicles into the M7A4 version. The current plan is to field the M2A4 and M7A4 to four brigades including one brigade set to support the European Deterrence Initiative.

- The A4 versions will inherit the survivability enhancement features found on the A3/ODS-SA baseline configurations: Bradley Urban Survivability Kits, Bradley Reactive Armor Tiles, and Add-on Armor Kit that the Army developed and fielded in response to Operational Needs Statements during Operation Iraqi Freedom. The A4 will include the Commander’s Independent Viewer.

Mission

Combatant Commanders employ Armor Brigade Combat Teams equipped with Bradley Family of Vehicles to provide protected transport of soldiers, to provide direct fires to support dismounted infantry, to disrupt or destroy enemy military forces, and to control land areas.

Major Contractor

BAE Systems Land and Armaments – York, Pennsylvania

Activity

- DOT&E approved an updated TEMP including a LFT&E Strategy in July 2020.
- The coronavirus (COVID-19) pandemic affected the FOT&E schedule, delaying a gunnery event by 4 weeks to November 2020.
- In FY20, the Army conducted the CVPA at Yuma Proving Ground, Arizona, and the AA and FOT&E at Fort Hood,

- Texas. The Army accomplished most of the planned test objectives during the suspended FOT&E.
- ATEC used a mechanized infantry platoon (4x M2A4), a Company Fire Support Element (1x M7A4), and a Company Headquarters Section (1x M2A4) as the test unit, with one M2A4 and one M7A4 as cybersecurity test vehicles and spares. The test unit executed 6 offensive missions with a

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total of 18 battle tasks against an opposing force mechanized infantry platoon and scout section.

- The FOT&E deviated from the approved test plan. ATEC suspended the maneuver portion of the FOT&E during record run five due to safety concerns. DOT&E has sufficient data to inform an evaluation by merging the authenticated pilot test data and the record test data.
- All six test article turret batteries overheated and discharged toxic fumes into the turret and crew compartment. This is a safety hazard to soldiers. The program manager was present during test and observed the turret battery issue. He supported the recommendation to suspend the remaining maneuver missions.
- The Army is delaying the gunnery event until the turret battery issue is resolved and tested.
- In FY19, the Army completed the Phase I Bradley ECP LFT&E program using prototype vehicles. Phase II, scheduled to be completed in February 2021, will include full-up system-level testing using a production-representative vehicle.

Assessment

- DOT&E is analyzing the test data to assess M2A4/M7A4 effectiveness, suitability, and survivability.
- Preliminary assessment of live fire test data indicate that upgrades incorporated by the Bradley ECP program did not introduce any significant or unexpected vulnerabilities.
- DOT&E plans to publish an operational and live fire test report in 2QFY21 to support the scheduled Materiel Release decision in 3QFY21.

Recommendations

1. The Army should examine the risk created by issues with the turret batteries and adjust the Materiel Release decision date.
2. The program manager should conduct root cause analysis and correct the turret battery overheating and the toxic fumes in the turret and crew compartment before fielding to soldiers.