

## Bradley Family of Vehicles (BFoV) Engineering Change Proposal (ECP)

### Executive Summary

- In 2018, the Army started live fire testing of the Bradley Engineering Change Proposal (ECP) to evaluate the survivability of the Bradley to threat-induced ballistic shock and underbody accelerative loads. The Army completed controlled damage experiments (CDE) and started with live fire system-level tests on prototype vehicles. Full-up system-level (FUSL) events using production-representative vehicles will be completed in FY20.
- Preliminary analysis of live fire testing did not reveal any unexpected vulnerabilities. DOT&E plans to complete detailed survivability analysis to support the ECP 2 Full Materiel Release decision in 4QFY20.
- The Army terminated the follow-on ECP 2b upgrade (designated as Bradley A5) in early June 2018 due to cost concerns. The Bradley A5 was intended to provide additional lethality and vehicle survivability improvements by FY25.



### System

- The Bradley Family of Vehicles (BFoV) ECP program intends to integrate new technologies to mitigate the degradation of existing system performance. The ECPs are not intended to exceed the operational capability outlined in current system requirements documents.
- The initial ECP 1 phase was a suspension and track upgrade to restore ground clearance and suspension reliability because of increases in Bradley armor and weight. The follow-on ECP 2 phase will upgrade the electrical system and power train to restore lost mobility and integrate new technologies to improve situational awareness and vehicle survivability.
- Installation of ECP 1 and ECP 2 kits 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 M7A3 Bradley Fire Support Team vehicle into the M7A4 version.
- The current plan is to convert five brigades to the A4 variant and supply the European Deterrence Initiative with

one brigade set of A4 vehicles. The A3/ODS-SA baseline configurations include the additional 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 A3 also includes the Commander's Independent Viewer.

### Mission

Combatant Commanders employ Armor Brigade Combat Teams equipped with Bradley Fighting Vehicles to provide protected transport of soldiers, 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 – Sterling Heights, Michigan

### Activity

- In September 2016, DOT&E approved an updated Test and Evaluation Master Plan to support the production contract award for ECP 2 for June 2017. Government changes in desired quantity, late delivery of the contractor proposal, and increased contractor cost per vehicle estimates resulted in a slip in the production contract award to 3QFY18.

- In 2018, the Army completed CDE in support of the LFT&E program. The LFT&E program largely consists of two phases: Phase I or system-level tests on prototype vehicles, and Phase II or FUSL events on production vehicles. The Army will complete Phase I in FY18 and Phase II in FY20 to

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evaluate system vulnerability to threat-induced ballistic shock and underbody accelerative loads.

- The Army continued efforts in 2018 to test and improve M2A4 ECP reliability through developmental testing.
- In June 2018, the Program Office canceled the follow-on ECP 2b upgrade (designated as Bradley A5), which was intended to provide additional lethality and vehicle survivability improvements by FY25.

## Assessment

- Preliminary analysis of live fire testing did not reveal any unexpected vulnerabilities. DOT&E intends to complete a detailed survivability assessment in FY20. The survivability assessment will include results from Bradley reactive

armor tile tests completed in FY16, CDEs, automatic fire extinguishing system tests, system-level tests, FUSL, and modeling and simulation. This analysis will support the ECP 2 Full Materiel Release decision in 4QFY20.

- The hydro-mechanical power transmission (HMPT) 800B series was the original transmission selected for the M2A4 and M7A4 ECP. Problems identified with the HMPT 800B series during developmental testing resulted in the Army deciding to replace the HMPT 800B series with the existing HMPT 800 series.

## Recommendations

None.