

Armored Multi-Purpose Vehicle (AMPV)

Executive Summary

- BAE Systems did not meet the July 2020 first vehicle delivery dates. They are 6-8 months behind original delivery schedule to deliver critical vehicles to support Armored Multi-Purpose Vehicle (AMPV) IOT&E and live fire test events.
- In FY20, the Army continued live fire testing using prototype vehicles across all AMPV variants to support the evaluation of survivability and force protection specification requirements.
- The decision on when to proceed to IOT&E will be made in 1QFY21.
- The Full-Rate Production (FRP) decision is scheduled for 3QFY22.

System

- AMPV will replace the M113 Family of Vehicles program that the Army terminated in 2007.
- The Army intends for the AMPV variants to address the M113 shortcomings in survivability and force protection; size, weight, power, and cooling; and the ability to incorporate future technologies, such as the Army Network.
- AMPV is required to operate alongside the M1 Abrams Main Battle Tank and the M2 Bradley Infantry Fighting Vehicle in the Armored Brigade Combat Team (ABCT).
- The AMPV program has five variants:
 - General Purpose (GP) vehicle from which the unit First Sergeant conducts combat resupply escort, emergency resupply, and casualty evacuation; and provides security for medical evacuation.
 - Mission Command (CD) vehicle to integrate the communications equipment in accordance with the Network Systems Architecture.
 - Medical Treatment (MT) vehicle to provide an armored and mobile protected environment for the unit surgeon



and medical staff to provide immediate medical care of casualties or life stabilization triage for casualties prior to their evacuation to more capable facilities.

- Medical Evacuation (ME) (Ambulance) vehicle to provide protected ambulance evacuation and immediate medical care to the mechanized and armored cavalry units.
- Mortar Carrier (MC) vehicle to provide immediate, responsive, heavy mortar fire support to the ABCT by utilizing the M121 Mortar System and the M95 Mortar Fire Control System.

Mission

Commanders employ units equipped with the AMPV to provide a more survivable and highly mobile platform to accomplish required operational support missions across the range of military operations. ABCT units use AMPVs to conduct logistical resupply; casualty evacuation and treatment; command post operations; and heavy mortar fire support.

Major Contractor

BAE Systems – York, Pennsylvania

Activity

- Due to production challenges and effects of the coronavirus (COVID-19) pandemic, BAE did not meet the July 2020 first vehicle delivery dates and is 6-8 months behind original delivery schedule to deliver critical vehicles to support AMPV IOT&E and live fire test events.
- DOT&E and the Army Test and Evaluation Command identified 24 items during the limited user test (LUT) in FY19 that BAE should correct and have evaluated during the IOT&E. The program is addressing 21 of the 24 items and intends to have 19 corrections completed prior to the IOT&E.
 - Two of the corrections are not expected to be ready by the IOT&E.
 - The hatch and roof continue to leak. Corrected actions applied did not fix the leaks.
 - A redesign for the mortar carrier cover hatch to address the difficulty in opening is not expected until 1QFY24.
 - Three items have no current industry solutions and will be evaluated if there are future design changes.
 - The footrest in the ME for the medic seat interferes with ingress and egress.

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- The CD internal configuration does not allow multiple mission roles.
- The MT seating configuration does not facilitate treatment of patients while in transit.
- The Electronic Warfare (EW) and cybersecurity working group continues to meet to determine the scope and scale for EW and outsider threat testing to be conducted during the adversarial assessment and IOT&E.
- IOT&E is scheduled to begin in 4QFY21 and the FRP decision is scheduled for 3QFY22.
- DOT&E approved changes to the Milestone C Test and Evaluation Master Plan on January 21, 2020, to account for vehicle manufacturing delays, pre-COVID-19 impact, and to better leverage previous live fire testing data. The changes included a 27 percent reduction in full-up system-level (FUSL) events and expanded modeling and simulation (M&S) analyses.
 - FUSL testing includes 35 FUSL events, 2 system-level exploitation events, and 12 expanded M&S analyses to support the survivability and crew casualty assessment of the production-representative AMPV variants against operationally expected kinetic threats.
 - FUSL live fire testing is scheduled to start in 2QFY21.
- In 3QFY20, the Army started Phase II system-level live fire testing, which included eight underbody events distributed across all AMPV (prototype) variants with the exception of the MC variant that the Army tested during Phase I in FY19. Phase II testing is scheduled to end in 1QFY21.
- In FY20, in coordination with BAE Systems, the AMPV Program Office continued to address vehicle design

vulnerabilities, identified in exploitation and Phase I live fire testing. The effectiveness of the design changes and the ability of the AMPV to meet survivability and force protection requirements will be evaluated during FUSL testing.

Assessment

- Further vehicle delivery delays may cause significant risk to the current schedule for the operational and live fire test programs. The decision to proceed with IOT&E as scheduled will be made in 1QFY21.
- Verification of the corrective actions taken to address deficiencies found during the LUT is partially delayed due to the delay in delivery of vehicles for production qualification testing. Some corrective action testing is ongoing.
- DOT&E intends to publish a combined operational and live fire report in FY22 to support the FRP decision.

Recommendations

The Army should:

1. Continue to correct and validate design changes intended to mitigate vehicle and crew vulnerabilities found in live fire testing.
2. Remain event driven to complete the live fire test program and the IOT&E to inform the FRP decision.
3. Conduct a future assessment (e.g., FOT&E) to evaluate the fixes and design changes for the items not corrected prior to the IOT&E.