

# Armored Multi-Purpose Vehicle (AMPV)



Armored Multi-Purpose Vehicle uses, clockwise from top left: General Purpose | Mission Command | Mortar Carrier | Medical Treatment with Shelter | Medical Evacuation

The Army completed Full-up System Level (FUSL) live fire testing in May 2022 and conducted an IOT&E in July 2022. DOT&E submitted a combined IOT&E and LFT&E report with a classified survivability annex to Congress in January 2023 assessing the Armored Multi-Purpose Vehicle (AMPV) Family of Vehicles (FoV) as operationally effective, suitable, and survivable against specified kinetic threats. DOT&E provided the Army with the combined IOT&E and LFT&E report and assessments to support a full-rate production decision by the Army Acquisition Executive in July 2023. The Army is considering modifying existing AMPV variants to support select modernization initiatives which include the Terrestrial Layer System, and the Modular Turreted Mortar System.

## SYSTEM DESCRIPTION

The AMPV is a tracked, ground combat vehicle that supports casualty evacuation and treatment, command post operations,

logistical resupply, and heavy mortar fire support to an Armored Brigade Combat Team (ABCT). There are five variants: General Purpose (GP), Mission Command (MCmd), Medical Treatment (MT), Medical Evacuation (ME), and Mortar Carrier (MC). The AMPV

replaces the M113A3 Family of Vehicles (FoV), consisting of the M113A3 (GP and ME), M1064A3 (MC), M1068 (MCmd) and M577 (MT) variants, and addresses shortcomings in survivability and force protection: size, weight, power, and cooling; and the ability

to incorporate future technologies, such as the Army Network.

## MISSION

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ABCTs will employ the AMPV to provide a more survivable and mobile platform than the legacy M113A3 FoV to accomplish required operational support missions across the range of military operations. ABCT units will use AMPVs to support casualty evacuation and treatment, command post operations, logistical resupply, and heavy mortar fire support.

## PROGRAM

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The AMPV is an Acquisition Category IC program utilizing the major capability acquisition pathway. The Army conducted a Limited User Test in September 2018 to support a low-rate production decision in January 2019. The Army conducted the IOT&E in July 2022. FUSL testing was completed in May 2022. The full-rate production decision was made in July 2023.

### » MAJOR CONTRACTOR

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- BAE Systems – York, Pennsylvania

## TEST ADEQUACY

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The Army conducted an IOT&E in July 2022 using units from an ABCT to conduct tactical missions in a synthetic environment

against a near-peer opposing force operating in an electronic warfare and cyber-contested environment. FUSL testing was conducted from May 2021 through May 2022. The Army executed 35 FUSL events using production-representative vehicles to evaluate system and crew vulnerability to kinetic threat engagements. The Army also tested the Automated Fire Extinguishing System in all variants. Operational and live fire testing was adequate, conducted in accordance with DOT&E-approved test plans, and was observed by DOT&E. DOT&E published a combined IOT&E and LFT&E report with a classified survivability annex in January 2023.

## PERFORMANCE

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### » EFFECTIVENESS

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The AMPV FoV is effective in supporting a unit to accomplish its doctrinal missions and contributed to the accomplishment of the unit's assigned task and purpose. The AMPV FoV provides increased mobility and better supports the operating tempo of an ABCT than the M113A3 FoV. Each variant maintained a tactical speed consistent with the maneuver force, and when needed, was able to accelerate to and maintain an operational speed equivalent to other vehicles in the ABCT.

Crews employed the MCcmd variant to support brigade and battalion-level command post operations using digital systems. The fixed interior layout of the MCcmd

does not support the conduct of analog command post functions; hinders digital fire direction center operations and does not support analog fire direction center operations. Since completion of the IOT&E, the program office has made modifications to the interior of the MCcmd variant in order to better support the conduct of analog operations.

Crews equipped with the MC variant provided timely fires in support of maneuvering units and conducted fire missions faster than M1064A3 MC crews. Crews reported less shock and a more stable platform while firing rounds from the MC than compared to the M1064A3 MC. Crews stated that the heavier and more stable MC platform better handled the firing impulse when firing maximum charge missions while transmitting less shock to vehicle crew. Soldiers expressed this was a significant improvement over the M1064A3.

The ME variant's litter lift system facilitates the loading, unloading and transporting of litter patients better than the M113A3 and provides increased protection of ambulatory patients. The increased mobility over the M113A3 ambulance allows medics to evacuate casualties from the battlefield faster. The ME is less likely than the M113A3 to cause additional injuries during transport because the ME's suspension provides a smoother and more stable ride than the M113A3. The ME has better storage capacity for equipment and supplies than the M113A3 and provides additional medical capability and mounting

locations for medical equipment such as suction and oxygen. Several medics commented that the placement and orientation of the medic's seat made it difficult to monitor patients when using a seatbelt during transport, and that there were no handholds to steady themselves when treating or monitoring casualties on-the-move. Since the completion of IOT&E, the program office has initiated development of a hand hold special kit which will be implemented on future medical variants.

The MT variant's treatment table enables crews to provide medical treatment under armor protection. When treating casualties, the vehicle's low interior height causes the medical staff to work hunched over or on their knees. The process of moving and adjusting the height and tilt of the table, and the time required to make these adjustments, makes it difficult to quickly configure and position the table to treat a casualty. The table blocks accessibility to the medical supplies stored on the right side of the vehicle. The table slides from the stowed position to the center of the vehicle along grooved tracks in the deck. These grooves fill with debris that makes moving the table and locking it into the stowed position difficult.

The GP variant has a larger cargo carrying capacity than the M113A3 and is equipped with litter brackets to support units conducting logistics resupply and casualty evacuation missions. The larger interior of the GP increases the quantity of supplies that can

be transported during resupply operations. This increased capability aids in improving unit sustainment, while reducing the number of resupply missions.

## » **SUITABILITY**

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The AMPV FoV is operationally suitable. The AMPV FoV met its availability and mean miles between essential function failures requirements as point estimates. Although the vehicles did not meet the requirement for mean miles between system aborts during the IOT&E, the degradation to the probability of mission completion was less than 5 percent and had no operational impact to the unit's ability to conduct missions. Drivetrain and vehicle electronic failures lowered system reliability. Since completion of the IOT&E, the program office has implemented corrective actions to address the hardware and software corrective actions to address essential function failure and system abort failure modes. These fixes are planned to be verified in follow-on production testing conducted by the program office in 2024.

## » **SURVIVABILITY**

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The AMPV FoV, when equipped with reactive armor tiles, is survivable against threshold-level kinetic threats. The test team observed inadvertent discharges of the automatic fire extinguishing system (AFES) during live fire testing. The Army is examining design solutions to improve the mounting provisions of the AFES components and plans to verify the fixes through testing. AMPV

FoV vulnerabilities in a cyber- and electromagnetic-contested environment are detailed in the classified survivability annex to the combined IOT&E and LFT&E report published in January 2023. The Army is implementing the survivability recommendations identified in the classified annex.

## **RECOMMENDATIONS**

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The Army should:

1. Continue initiatives to make the interior of the MCcmd modular and reconfigurable to better support crews conducting analog operations.
2. Continue to develop a fire direction center-specific variant to better facilitate crews' ability to conduct fire direction center operations.
3. Continue corrective actions to address essential function failure and system abort failure modes to improve reliability.
4. Continue to address the survivability recommendations provided in the classified annex to the combined IOT&E and LFT&E report.