

The Army's Armored Multi-Purpose Vehicle (AMPV): Background and Issues for Congress

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Summary

The Armored Multi-Purpose Vehicle (AMPV) is the Army's proposed replacement for the Vietnam-era M-113 personnel carriers, which are still in service in a variety of support capacities in Armored Brigade Combat Teams (ABCTs). While M-113s no longer serve as infantry fighting vehicles, five variants of the M-113 are used as command and control vehicles, general purpose vehicles, mortar carriers, and medical treatment and evacuation vehicles. An estimated 3,000 of these M-113 variants are currently in service with the Army.

The AMPV is intended to be a "vehicle integration" or non-developmental program (candidate vehicles will be either existing vehicles or modified existing vehicles—not vehicles that are specially designed and not currently in service). Some suggest that a non-developmental vehicle might make it easier for the Army to eventually field this system to the force, as most of the Army's most recent developmental programs, such as the Ground Combat Vehicle (GCV), the Future Combat System (FCS), the Crusader self-propelled artillery system, and the Comanche helicopter, were cancelled before they could be fully developed and fielded.

On November 26, 2013, the Army issued a Request for Proposal (RFP) for the AMPV. This RFP stipulated the Army planned to award a five-year EMD contract in May 2014 worth \$458 million to a single contractor for 29 prototypes. While the March 2013 RFP established an Average Unit Manufacturing Cost Ceiling for each AMPV at \$1.8 million, this was rescinded to permit vendors greater flexibility. The EMD phase was scheduled to run between FY2015 and FY2019, followed by three years of low-rate initial production (LRIP) starting in 2020. The Army currently plans to procure 2,907 AMPVs to replace M-113s in ABCTs at an estimated program cost of \$10.233 billion. The Army also has plans to replace 1,922 M-113s at Echelons Above Brigade (EAB), but requirements for these vehicles have not yet been established. While the Army would like a pure fleet of AMPVs, others support a mixed fleet of wheeled and tracked AMPV variants.

On December 23, 2014, the Army announced it had selected BAE Systems Land and Armaments L.P. as the winner of the EMD contract. The initial award is for 52 months, valued at about \$382 million. In addition, the award provides for an optional Low-Rate Initial Production (LRIP) phase. If this phase is awarded, BAE would produce an additional 289 vehicles for a total contract value of \$1.2 billion. This EMD contract does not include EAB AMPV variants. The AMPV reportedly successfully completed its Critical Design Review (CDR) on June 23, 2016.

The FY2017 President's budget request for the AMPV was \$184.2 million in RDT&E funding. Requested FY2017 funding is intended to support the integration, assembly, checkout, and shipment of 29 prototype AMPVs to government test sites and the beginning of 1,500 miles of shakedown testing. Both the House and Senate recommended fully funding the AMPV's FY2017 Budget Request.

Potential issues for Congress include additional AMPVs for European Army Prepositioned Stocks (APS) and European Activity Sets (EAS) and the continuing AMPV pure versus mixed fleet debate.

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Background

In early 1956, the Army began the development of an air-transportable, armored multi-purpose vehicle family intended to provide a lightweight, amphibious armored personnel carrier for armor and mechanized infantry units.¹ Known as the M-113, it entered production in 1960 and saw extensive wartime service in Vietnam. Considered a reliable and versatile vehicle, a number of different variations of the M-113 were produced to fulfill such roles as a command and control vehicle, mortar carrier, and armored ambulance, to name but a few. The Army began replacing the M-113 infantry carrier version in the early 1980s with the M-2 Bradley Infantry Fighting Vehicle, but many non-infantry carrier versions of the M-113 were retained in service. According to reports, about 3,000 M-113 variants are currently still in use.²

The Armored Multi-Purpose Vehicle (AMPV)³

According to the Army:

The Armored Multi-Purpose Vehicle (AMPV) is the proposed United States Army program for replacement of the M-113 Family of Vehicles (FOV) to mitigate current and future capability gaps in force protection, mobility, reliability, and interoperability by mission role variant within the Heavy Brigade Combat Team (HBCT) [now known as the Armored Brigade Combat Team – ABCT]. The AMPV will have multiple variants tailored to specific mission roles within HBCT. Mission roles are as follows: General Purpose, Medical Evacuation, Medical Treatment, Mortar Carrier, and Mission Command. AMPV is a vehicle integration program.

The Army's AMPV Requirements⁴

Regarding the decision to replace remaining M-113s, the Army notes:

- The M-113 lacks the force protection and mobility needed to operate as part of combined arms teams within complex operational environments. For example, “commanders will not allow them to leave Forward Operating Bases (FOBs) or enter contested areas without extensive mission protection and route clearance.”⁵
- The use of other vehicles for M-113 mission sets (casualty evacuations, for example) reduces unit combat effectiveness.

The majority of the Army's M-113s are found in Armored Brigade Combat Teams (ABCTs), where they comprise 32% of the tracked armored vehicles organic to that organization. The 114 M-113 variants in the ABCT are distributed as follows:

¹ Information in this section is taken from Christopher F. Foss, *Jane's Armour and Artillery, 2011-2012*, 32nd Edition, pp. 470-478.

² Tony Bertuca, “Optimism Emerges for the AMPV Program, Though Pre-RFP Work Remains,” *InsideDefense.com*, August 16, 2013.

³ From the Army's AMPV Program website, <https://contracting.tacom.army.mil/majorsys/ampv/ampv.htm>, accessed September 13, 2013.

⁴ Information in this section is taken from an Army briefing: “AMPV Industry Day,” April 23, 2013.

⁵ *Ibid.*, p. 13.

Table I. M-113 Distribution in ABCTs, by Variant

M-113 Variant Type	Number of M-113s
M-113A3 General Purpose (GP)	19
M-1068A3 Mission Command (MCmd)	41
M-1064 Mortar Carrier (MC)	15
M-113A3 Medical Evacuation (ME)	31
M-577 Medical Treatment (MT)	8

Source: Information in this table is taken from an Army briefing: “AMPV Industry Day,” April 23, 2013, p. 13.

AMPVs at Echelons Above Brigade (EAB)⁶

In addition to the AMPV requirement in the ABCTs, the Army also plans on procuring an additional 1,922 AMPVs to replace M-113s in Echelons Above Brigade (EAB).⁷ The Army notes that these AMPVs might have different requirements than the ABCT AMPVs, and the Army is currently assessing these requirements. Currently, no contract awards have been made for EAB AMPVs.

Program Overview⁸

According to the Government Accountability Office (GAO), in March 2012, the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD, AT&L) approved a materiel development decision for AMPV and authorized the Army’s entry into the materiel solution analysis phase. The Army completed the AMPV analysis of alternatives (AoA) in July 2012 and proposed a non-developmental vehicle (the candidate vehicle will be either an existing vehicle or a modified existing vehicle—not a vehicle that is specially designed and not in current service). Because the AMPV is to be a non-developmental vehicle, DOD decided the program would start at Milestone B, Engineering and Manufacturing Development (EMD) Phase and skip the Milestone A, Technology Development Phase.

The Army planned for a full and open competition and aimed to award one industry bidder a 42-month EMD contract to develop all five AMPV variants. A draft Request for Proposal (RFP) released in March 2013 stated the EMD contract would be worth \$1.46 billion, including \$388 million for 29 EMD prototypes for testing between 2014 and 2017 and \$1.08 billion for 289 low-rate initial production (LRIP) models between 2018 and 2020. The Army had planned on releasing the formal RFP in June 2013 but instead slipped the date until mid-September 2013, citing a delayed Defense Acquisition Board review attributed in part to Department of Defense

⁶ Information in this section is from PEO Ground Combat Systems, AMPV Program’s EMD Contract Awarded to BAE, December 24, 2014.

⁷ Echelon Above Brigade (EAB) refers to Army combat units larger than brigades—generally division and corps sized—as well as non-ABCT support brigades. Examples of EAB units that have M-113s that will be replaced with AMPVs include Armored Division and Corps headquarters and Combat Engineer Brigades.

⁸ Information in this section is taken from the United States Government Accountability Office, Defense Acquisitions: Assessments of Selected Weapon Programs, GAO-13-294SP, March 2013, p. 133, and an Army briefing: “AMPV Industry Day,” April 23, 2013 and Tony Bertuca, “Optimism Emerges for AMPV Program Though Pre-RFP Work Remains,” *InsideDefense.com*, August 16, 2013.

civilian furloughs.⁹ The EMD contract award was originally planned for late 2014. The Army planned for an average unit manufacturing cost (AUMC) of \$1.8 million per vehicle.

Department of Defense (DOD) Approves AMPV Program¹⁰

On November 26, 2013, DOD issued an acquisition decision memorandum (ADM) officially approving the Army's entry into the Milestone B, Engineering and Manufacturing Development (EMD) Phase. The ADM directed the Army to impose an Average Procurement Unit Cost less than or equal to \$3.2 million at a production rate of not less than 180 vehicles per year. In addition, operations and sustainment costs were to be less than or equal to \$400,000 per vehicle per year. The Army was also directed to down select to a single prime contractor at the completion of Milestone B.

Army Issues AMPV Draft Request for Proposal (RFP)¹¹

Also on November 26, 2013, the Army issued a new draft Request for Proposal (RFP) for the AMPV. This RFP stipulated the Army planned to award a five-year EMD contract in May 2014 worth \$458 million to a single contractor for 29 prototypes. While the March 2013 RFP established an Average Unit Manufacturing Cost Ceiling for each AMPV at \$1.8 million, this was rescinded to permit vendors greater flexibility. The EMD phase was scheduled to run between FY2015 and FY2019, followed by three years of low-rate initial production (LRIP) starting in 2020.

Projected ABCT AMPV Production Quantities¹²

Under 2013 plans and projected force structure, the Army planned to start full rate production of the ABCT AMPV in FY2020 at the rate of two to three ABCTs per year. Total vehicle production by variant is depicted in the following table:

⁹ Tony Bertuca, "Army's Armored Multi-Purpose Vehicle RFP Scheduled for Mid-September," *InsideDefense.com*, August 9, 2013.

¹⁰ Information in this section is taken from Department of Defense, "Armored Multi-Purpose Vehicle Pre-Engineering and Manufacturing Development Request for Proposals Acquisition Decision Memorandum," November 26, 2013 and Tony Bertuca, "DOD Officially OKs Army's Armored Multi-Purpose Vehicle Program; RFP Hits the Street," *InsideDefense.com*, November 26, 2013.

¹¹ Information in this section is taken from Solicitation, Offer, and Award: Armored Multi-Purpose Vehicle, Number: W56HZV-13-R-0022, November 26, 2013 and Tony Bertuca, "DOD Officially OKs Army's Armored Multi-Purpose Vehicle Program; RFP Hits the Street," *InsideDefense.com*, November 26, 2013.

¹² Information in this section is taken from an Army briefing: "AMPV Industry Day," April 23, 2013.

Table 2. 2013 Projected ABCT AMPV Production, by Variant

Variant to Be Replaced	ABCT Total	Training and Doctrine Command and Testing (See Notes)	Total Vehicles by Quantity
M-113A3 General Purpose (GP)	462	58	520
M-1068A3 Mission Command (MCmd)	899	92	991
M-1064 Mortar Carrier (MC)	348	36	384
M-113A3 Medical Evacuation (ME)	736	52	788
M-577 Medical Treatment (MT)	194	20	214
Totals	2,639	258	2,897

Source: Information in this table is taken from an Army briefing: "AMPV Industry Day," April 23, 2013, p. 23.

Notes: Training and Doctrine Command (TRADOC), the Army command responsible for training the force, would use AMPVs at its various schools and courses for training soldiers. Testing AMPV quantities would be allocated to various Army and Department of Defense organizations responsible for testing vehicles.

2015 Projected Total Program Costs¹³

As of July 2015, for a 2,936 vehicle procurement, the Government Accountability Office (GAO) estimated total AMPV program costs as follows (FY2016 dollars):

- Research and Development: \$1.031 billion.
- Procurement: \$9.887 billion.
- Estimated Total Program Cost: \$10.918 billion.

Selected Program Activities

Army Awards ABCT AMPV Contract to BAE¹⁴

On December 23, 2014, the Army announced it had selected BAE Systems Land and Armaments L.P. as the winner of the EMD contract. The initial award was for 52 months valued at about \$382 million. During this period of performance, BAE was to produce 29 vehicles, which would be put through "rigorous developmental and operational testing." In addition, the award provided for an optional Low-Rate Initial Production (LRIP) phase award in the future. If this phase is awarded, BAE would produce an additional 289 vehicles for a total contract value of \$1.2 billion.

¹³ U.S. Government Accountability Office (GAO), Defense Acquisitions: Assessments of Selected Weapon Programs, GAO-16-329P, March 2016, p. 65.

¹⁴ Information in this section is from PEO Ground Combat Systems, AMPV Program's EMD Contract Awarded to BAE, December 24, 2014.

EMD Contract Does Not Include Echelons Above Brigade (EAB) AMPVs¹⁵

The Army, in its announcement, emphasized the BAE EMD contract did not pertain to the 1,922 Echelons Above Brigade AMPVs. As previously noted, these AMPVs might have different requirements than the ABCT AMPVs, and the Army is currently assessing these requirements. The Army did not say when it envisioned making a contract award for EAB AMPVs.

AMPV Completes Critical Design Review

According to reports, the AMPV successfully completed its Critical Design Review (CDR)¹⁶ on June 23, 2016.¹⁷ Successful completion of a CDR demonstrates the AMPV's design is stable, can be expected to meet established performance standards, and can be accomplished within its established budget.

Budgetary Issues

FY2017

FY2017 President's Budget Request¹⁸

The FY2017 President's budget request for the AMPV was \$184.2 million in RDT&E funding. Requested FY2017 funding is intended to support the integration, assembly, checkout, and shipment of 29 prototype AMPVs to government test sites and the beginning of 1,500 miles of shakedown testing.

FY2017 National Defense Authorization Act¹⁹

Both the House and Senate recommended fully funding the AMPV's FY2017 budget request.

¹⁵ Ibid.

¹⁶ According to AcqNotes: "A Critical Design Review (CDR) is a multi-disciplined technical review to ensure that a system can proceed into fabrication, demonstration, and test and can meet stated performance requirements within cost, schedule, and risk." <http://www.acqnotes.com/acqnote/acquisitions/critical-design-review>, accessed September 13, 2016.

¹⁷ Jason Sherman, "Armored Multi-Purpose Vehicle Program Clears Key EMD Milestone," InsideDefense.com, July 1, 2016.

¹⁸ Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer, United States Department of Defense Fiscal Year 2017 Budget Request, Program Acquisition Cost by Weapon System, February 2016, p. 3-3 and Department of Defense Fiscal Year (FY) 2017 President's Budget Submission, Research, Development, Test & Evaluation, Army RDT&E – Volume II, Budget Activity 5, February 2016, p. 1053.

¹⁹ H.Rept. 114-537, National Defense Authorization Act for Fiscal Year 2017, May 4, 2016, p. 494 and S.Rept. 114-255, National Defense Authorization Act for Fiscal Year 2017, May 18, 2016, p. 476.

Potential Issues for Congress

Additional AMPVs for European Army Prepositioned Stocks (APS) and European Activity Sets (EAS)?

As part of DOD's FY2017 budget request for the European Reassurance Initiative (ERI),²⁰ DOD requested \$546.5 million for, among other things, the creation of one ABCT's worth of equipment for Army Prepositioned Stocks (APS) in Europe.²¹ In addition to the APS, the Army is creating a European Activity Set (EAS), which the Army describes as "a combined-arms, battalion-sized group of vehicles and equipment that is pre-positioned in Europe to outfit U.S. Army Regionally Aligned Forces when they rotate into theatre for training or contingency operations."²² While the Army established a requirement for 2,897 AMPVs for ABCTs in 2013, it is not known if the creation of an ABCT equipment set as part of Army Prepositioned Stocks (APS) in Europe as well as the creation of at least one EAS in Europe will increase the Army's overall requirement for AMPVs. In addition, the Army reportedly plans to expand prepositioned stocks and activity sets in other regions as well,²³ which has the potential to further increase the Army's overall AMPV requirement. Given these relatively recent initiatives, Congress might wish to discuss with the Army and DOD how the potential expansion of prepositioned stocks and activity sets affects the Army's stated 2013 AMPV requirements for both ABCTs and Echelons Above Brigade (EAB).

Mixed AMPV Fleet Debate

Some Members have expressed concerns with the Army's current AMPV RFP. They propose the current RFP, which stipulates the selection of a single vendor, be modified so a mixed fleet (both tracked and wheeled) of AMPVs can be acquired. This could essentially make the AMPV procurement a multi-vendor effort. The Members supporting this course of action contend a mixed fleet is "sensible, sustainable, cost effective for the taxpayer, and most importantly, best for the warfighter."²⁴

In December 2014, a number of Members sent letters to Army and DOD leadership requesting the Army delay awarding the AMPV ambulance variant contract until after congressional defense committees have had adequate time to review congressionally mandated reports.²⁵

Other Members reportedly support continuing the pure AMPV fleet approach, noting "any changes to the AMPV acquisition will result in delays and increase costs to the program for the

²⁰For additional information on ERI see CRS Report R43478, *NATO: Response to the Crisis in Ukraine and Security Concerns in Central and Eastern Europe*, coordinated by Paul Belkin.

²¹ Office of the Under Secretary of Defense (Comptroller), European Reassurance Initiative, Department of Defense Budget, Fiscal Year (FY) 2017, February 2016, p. 16.

²² U.S. Army Europe Fact Sheet: "U.S. Army European Activity Set," http://www.eur.army.mil/jmtc/exercises/CombinedResolve/EAS_Fact_Sheet.pdf, accessed February 18, 2016.

²³ Joe Gould, "U.S. Army Plans to Expand Prepositioned Stocks," *Defense News*, June 3, 2015.

²⁴ Letter to Secretary Frank Kendall, Under Secretary of Defense for Acquisitions, Technology, and Logistics, from Rep. Mike Rogers et al., April 3, 2014.

²⁵ Tony Bertuca, "Lawmakers Push Pentagon to Delay AMPV Award," *InsideDefense.com*, December 5, 2014.

Army” and that “our priority is to ensure a timely procurement of a more survivable and more mobile personnel carrier for our soldiers.”²⁶

FY2015 National Defense Authorization Act legislative language²⁷ calls for, among other things, further examination of the use of wheeled AMPV variants at both Echelons Above Brigade (EAB) as well as for medical evacuation purposes.

The Army's AMPV Report to Congress²⁸

In response to the FY2015 NDAA, the Army published its report to Congress on March 10, 2015.²⁹ The Army's findings included the following:

²⁶ Tony Bertuca, “Two More Senators Support BAE in AMPV Letter to Senate Appropriators,” *InsideDefense.com*, June 27, 2014.

²⁷ Rules Committee Print 113-58, House Amendment to the Text of S. 1847, [Showing the text of the Carl Levin and Howard P. “Buck” McKeon National Defense Authorization Act for Fiscal Year 2015], December 2, 2014. Complete language is cited in the following passage:

SEC. 216. LIMITATION ON AVAILABILITY OF FUNDS FOR ARMORED MULTI-PURPOSE VEHICLE PROGRAM.

(a) LIMITATION.—Of the funds authorized to be appropriated by this Act or otherwise made available for fiscal year 2015 for research, development, test, and evaluation, Army, for the armored multi-purpose vehicle program, not more than 80 percent may be obligated or expended until the date on which the Secretary of the Army submits to the congressional defense committees the report under subsection (b)(1).

(b) REPORT.—

(1) IN GENERAL.—Not later than March 1, 2015, the Secretary of the Army shall submit to the congressional defense committees a report on the armored multi-purpose vehicle program.

(2) MATTERS INCLUDED.—The report under paragraph (1) shall include the following:

(A) An identification of the existing capability gaps of the M–113 family of vehicles assigned, as of the date of the report, to units outside of combat brigades.

(B) An identification of the mission roles that are in common between—

(i) such vehicles assigned to units outside of combat brigades; and

(ii) the vehicles examined in the armor brigade combat team during the armored multi-purpose vehicle analysis of alternatives.

(C) The estimated timeline and the rough order of magnitude of funding requirements associated with complete M–113 family of vehicles divestiture within the units outside of combat brigades and the risk associated with delaying the replacement of such vehicles.

(D) A description of the requirements for force protection, mobility, and size, weight, power, and cooling capacity for the mission roles of M–113 family of vehicles assigned to units outside of combat brigades.

(E) A discussion of the mission roles of the M–113 family of vehicles assigned to units outside of combat brigades that are comparable to the mission roles of the M–113 family of vehicles assigned to armor brigade combat teams.

(F) A discussion of whether a one-for-one replacement of the M–113 family of vehicles assigned to units outside of combat brigades is likely.

(G) With respect to mission roles, a discussion of any substantive distinctions that exist in the capabilities of the M–113 family of vehicles that are needed based on the level of the unit to which the vehicle is assigned (not including combat brigades).

(H) A discussion of the relative priority of fielding among the mission roles.

(I) An assessment for the feasibility of incorporating medical wheeled variants within the armor brigade combat teams.

²⁸ Headquarters, Department of the Army, Armored Multi-Purpose Vehicle Program: Report to Congress, 2015.

²⁹ Tony Bertuca, “Army Finds Wheeled Medical Vehicles Unsuitable to Support ABCTs,” *InsideDefense.com*, March 6, 2015.

- Wheeled medical vehicles are unsuitable for ABCTs due to the inability to maneuver with highly mobile combat vehicles and provide protection against the challenging threats that the ABCTs are designed to fight against (page 2).
- Because the medical evacuation vehicle operates in close proximity to ABCT combat vehicles (Bradley fighting vehicles and Abrams tanks), the AMPV must be capable of maneuvering across challenging terrain while protecting crew and casualties from the challenging threats an ABCT encounters (page 10).
- **[Regrading wheeled medical vehicles]** The lack of mobility and force protection could result in the commander using Bradley fighting vehicles to conduct evacuation of casualties; increasing the evacuation timeline (due to the re-tasking) and increasing casualty “died of wounds rates” (due to lack of medical equipment). Simultaneously, the loss of combat vehicles [Bradleys used for casualty evacuation] in contact with the enemy reduces combat power and could lead to a mission halt, or complete mission failure (page 11).

The Army’s report to Congress suggests they would not be receptive to developing and fielding a wheeled medical AMPV variant. It is not known if this issue of a mixed AMPV fleet has been resolved as a result of the Army’s report or if Congress will wish to further examine this option. Furthermore, it is not known how the Army’s report and possible congressional response could affect the eventual award of the EAB AMPV contract.

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