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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.

The AMPV is intended to be a 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 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 past 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 Engineering and Manufacturing Development (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While the March 2013 RFP established an Average Unit Manufacturing Cost Ceiling for each AMPV at $1.8 million, this was rescinded to permit vendors greater flexibility.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. In 2013, the Army planned to procure 2,897 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. On December 15, 2016, BAE delivered the first general purpose AMPV to the Army for testing.

The FY2018 budget request for the AMPV requests $647.4 million for the production of 107 vehicles.

A potential issue for Congress is whether the Administration's proposal to increase the size of the Army will translate into a requirement for additional AMPVs.

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Background

In 1956, the Army began the development of a family of air-transportable, armored multi-purpose vehicles 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.

The Armored Multi-Purpose Vehicle (AMPV)[2]

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 Requirements[3]

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."[4]
- 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] From the Army's AMPV Program website, https://contracting.tacom.army.mil/majorsys/ampv/ampv.htm, accessed September 13, 2013.

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

[4] Ibid., p. 13.

Table 1. 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)[5]

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).[6] 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 Overview[7]

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

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

[6] 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.

[7] 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.[8] 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 Program[9]

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)[10]

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 Quantities[11]

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:

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

[9] 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.

[10] 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.

[11] 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.

Selected Program Activities

Army Awards ABCT AMPV Contract to BAE[12]

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.

EMD Contract Does Not Include Echelons Above Brigade (EAB) AMPVs[13]

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.

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

[13] Ibid.

AMPV Completes Critical Design Review

According to reports, the AMPV successfully completed its Critical Design Review (CDR)[14] on June 23, 2016.[15] Successful completion of a CDR demonstrates the AMPV's design is stable, can be expected to meet established performance standards, and the program can be accomplished within its established budget.

Roll Out of First AMPV for Testing[16]

On December 15, 2016, BAE delivered the first general purpose AMPV to the Army for testing. The Army plans for six months of contractor tests, followed by one year of government testing and then Limited User Testing.

Department of Defense FY2018 AMPV Budget Request[17]

The FY2018 presidential budget includes Research Development, Testing and Evaluation (RDT&E) and Procurement funding requests for the AMPV in both the Base and Overseas Contingency Operations (OCO) budgets, as well as FY2018 requested quantities.

Table 3. FY2018 AMPV Budget Request

Funding Category	Base Budget	Base Budget	OCO Budget	OCO Budget	Total Request	Total Request
	$M	Qty	$M	Qty	$M	Qty
RDT&E	199.8	—	—	—	**199.8**	—
Procurement	193.7	42	253.9	65	**447.6**	**107**
TOTAL	**393.5**	**42**	**253.9**	**65**	**647.4**	**107**

Source: Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer, Program Acquisition Cost by Weapon System: United States Department of Defense Fiscal Year 2018 Budget Request, May 2017, p. 3-3.

Notes: $M = U.S. Dollars in Millions; **Qty** = FY2018 Procurement Quantities

Of particular note, 65 AMPVs are to be procured with OCO funds under the European Reassurance Initiative (ERI).[18]

[14] 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.

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

[16] Connie Lee, "BAE Rolls Out First Armored Multi-Purpose Vehicle for Testing," *InsideDefense.com*, December 19, 2016.

[17] Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer, Program Acquisition Cost by Weapon System: United States Department of Defense Fiscal Year 2018 Budget Request, May 2017, p. 3-3.

[18] "Announced by the President in June 2014, ERI was established in the FY2015 budget as a one-year, $1 billion emergency response to Russian aggression. At that time, Russia had seized Crimea and was conducting cross-border (continued...)

Potential Issue for Congress

Will the Administration's Proposal to Increase the Size of the Army Translate into a Requirement for Additional AMPVs?

The Administration has proposed increasing the Active Army by 60,000 additional soldiers.[19] With these additional troops, the Army plans to create two new Armored Brigade Combat Teams (ABCTs), convert an existing Infantry Brigade Combat Team (IBCT) to an ABCT, create a new IBCT, activate four new Security Force Assistance Brigades (SFABs), create a new Division and Corps headquarters, and create a number of unspecified enabling units.[20] The potential increase in Army force structure implies a possible increase in the number of AMPVs required, not just for the three new ABCTs but also for other enabling units that are authorized M-113s. There is also a possibility that if the Army adds EAB units as well, that additional EAB AMPVs will also be required. These increased AMPV requirements could prove to be of interest to Congress, as the overall program cost would likely increase and the procurement of additional vehicles might also affect the Army's current fielding plans.

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military operations in eastern Ukraine. ERI was intended to "reassure allies of the U.S. commitment to their security and territorial integrity as members of the NATO Alliance." It supported increased U.S. investment across five categories: (1) presence; (2) training and exercises; (3) infrastructure; (4) prepositioned equipment; and (5) building partner capacity (https://www.csis.org/analysis/european-reassurance-initiative-0, Center for Strategic and International Studies, accessed May 31, 2017).

[19] Leo Shane III and Andrew Tilghman, "Trump's Military Will have More Troops and More Firepower – If He Can Find the Money," *Military Times,* November 20, 2016.

[20] FY18 490K Army with Modernization Uplift, obtained by *InsideDefense.com*, January 24, 2017.