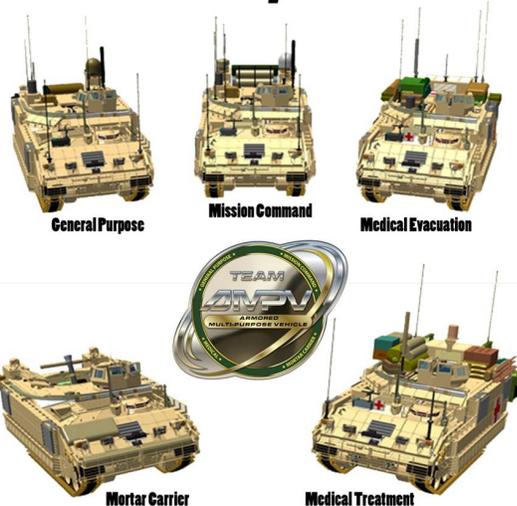




Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-471

AMPV Family of Vehicles



Armored Multi-Purpose Vehicle (AMPV)

As of FY 2017 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
\$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
\$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
\$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President's Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

Program Information

Program Name

Armored Multi-Purpose Vehicle (AMPV)

DoD Component

Army

Responsible Office

COL Michael Milner
6501 E. 11 Mile Road/Mail Stop 563
Warren, MI 48397-5000

michael.w.milner.mil@mail.mil

Phone: 586-282-0968
Fax: 586-282-7797
DSN Phone: 786-0968
DSN Fax: 786-7797
Date Assigned: September 5, 2014

References

SAR Baseline (Development Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated May 12, 2015

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated May 12, 2015

Mission and Description

The Armored Multi-Purpose Vehicle (AMPV) is the materiel solution for replacement of the Army's M113 Armored Personnel Carrier Family of Vehicles (FoV) within the Armored Brigade Combat Team (ABCT). It will mitigate current and future capability gaps in force protection, mobility, reliability, and interoperability across the Spectrum of Conflict. The AMPV will replace five mission roles currently performed by the M113 FoV by transferring the current M113 Mission Equipment Packages to a new Military Vehicle Derivative platform. In total, the AMPV FoV will account for approximately 30% of the ABCT's tracked fleet and consists of the following five variants:

1. **Mission Command Vehicle:** This platform enables effective mission command planning and execution for both the Command Post and Tactical Command Vehicle versions. It will host current Battle Command Systems, communications equipment future replacements, and upgrades of hardware and software.
2. **Medical Treatment Vehicle:** This platform will provide a protected surgical environment, with adequate lighting and accessible medical equipment. It will provide a capability for immediate medical care for one patient by a medical crew of four.
3. **Medical Evacuation Vehicle:** This platform will conduct combat medical evacuation activities and provide evacuation for up to four litter or six ambulatory patients, with a crew of three medical attendants.
4. **General Purpose Vehicle:** This platform will operate throughout the battle space by conducting re-supply, maintenance, casualty evacuation, and other tasks within the formation.
5. **Mortar Carrier Vehicle:** This platform will provide immediate responsive fire support to conduct fast-paced offensive operations.

Executive Summary

Program Highlights since Last Report:

Since the initial June 2015 SAR for AMPV, a successful Integrated Baseline Review (IBR) occurred at BAE's facility on August 8-10, 2015. The IBR verified that the contractor has a baseline in place to accomplish the EMD scope of work on time and within budget.

A Configuration Steering Board (CSB) was held on September 23, 2015 that approved modifications to Key System Attribute (KSA) 5 (Power/Power Management) and KSA 16 (Transportability). These modifications made minor adjustments to align requirements with emerging design. The CSB decision memorandum was signed by the Army Acquisition Executive on December 6, 2015. The program intends to conduct a trigger CSB prior to Critical Design Review (CDR) to resolve any remaining requirements compliance issues.

On May 26, 2015, PM AMPV modified the contract with BAE to update the Mission Command (MCmd) vehicle to meet the Army's latest network requirements. To assess BAE's progress towards meeting these changes the Government and BAE completed an Artifact Review (AR) October 20-21, 2015. During the AR, BAE presented the additional MCmd equipment in the Materials and Equipment Matrix that will support all the mission roles, and demonstrated the MCmd variant's readiness to continue with detailed design for CDR.

A joint Government and BAE Technical Review (TR) was held on December 8-9, 2015 to close out Preliminary Design Review (PDR) exit criteria. This successful review included key stakeholders from OSD, Maneuver Center of Excellence, Armaments Research, Development and Engineering Center, and Army Test and Evaluation Command. The Procurement Contracting Officer (PCO) notified BAE of PDR completion on January 21, 2016.

The FY 2016 Omnibus Appropriations Bill decremented FY 2016 RDT&E funding by \$4M assigned to Program Management Growth. While this decrement will cause a slight re-prioritization of selected efforts in FY 2016, there is sufficient funding to execute critical planned FY 2016 work. In accordance with standard practices, the program's EVM baseline reflects a combination of detailed work packages and higher level planning packages. Since the detailed work packages encompass all FY 2016 effort, and since these work packages were generated with the knowledge of the \$4M funding decrement, the impact of the decrement has been mitigated by the program's planning process.

As required by section 2366b, title 10, U.S.C., the USD(AT&L) certified the program on December 22, 2014 with three waivers. Two of the waivers are no longer relevant as the actions that necessitated the waivers are now complete. The remaining waiver and status is as follows:

Provision (2), Preliminary Design Review (PDR): The DAE waived this requirement because a Technology Maturation and Risk Reduction Phase was not required based on the maturity of the technology. The DAE determined that delaying the start of EMD until completion of the PDR and post-PDR assessment would create unnecessarily delays and increased costs. The strategy to procure a Military Vehicle Derivative and to integrate Government defined, mature subsystems supported this waiver.

There are no significant software-related issues with this program at this time.

History of Significant Developments since Program Initiation:

June 21, 2013: The AMPV CDD was approved.

December 9, 2014: The AMPV Milestone B DAB was held.

December 22, 2014: The ADM was signed by the DAE authorizing AMPV to enter at Milestone B. The ADM directed the Army to fund the AMPV program to the OSD CAPE ICE.

December 23, 2014: A Cost Plus Incentive Fee EMD contract was awarded to BAE Systems Land & Armaments.

March 24, 2015: The System Requirements Review (SRR) was completed. The SRR deemed the program ready to proceed into preliminary design.

May 12, 2015: APB approved.

June 18, 2015: The PDR was held and ensured that the allocated baseline was: properly documented, assessed to be consistent with CDD requirements and under configuration control. All PDR items were closed by the PCO on January 21, 2016.

Threshold Breaches

APB Breaches

Schedule		<input type="checkbox"/>
Performance		<input type="checkbox"/>
Cost	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
O&S Cost		<input type="checkbox"/>
Unit Cost	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

Nunn-McCurdy Breaches

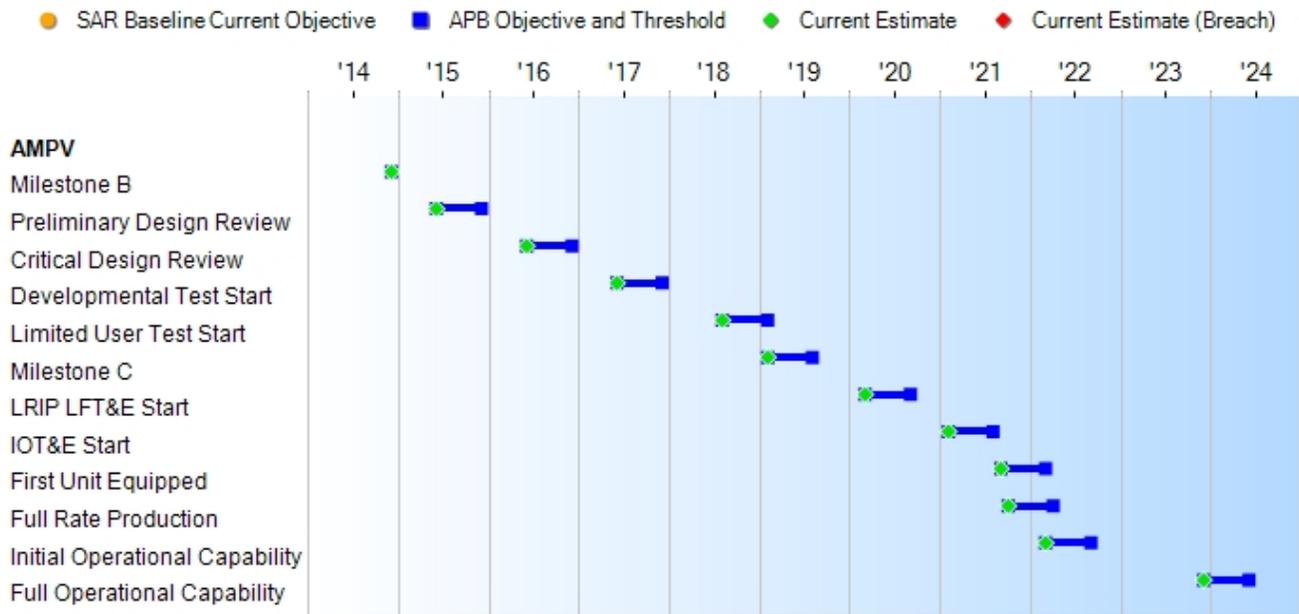
Current UCR Baseline

PAUC	None
APUC	None

Original UCR Baseline

PAUC	None
APUC	None

Schedule



Schedule Events				
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate
Milestone B	Dec 2014	Dec 2014	Dec 2014	Dec 2014
Preliminary Design Review	Jun 2015	Jun 2015	Dec 2015	Jun 2015
Critical Design Review	Jun 2016	Jun 2016	Dec 2016	Jun 2016
Developmental Test Start	Jun 2017	Jun 2017	Dec 2017	Jun 2017
Limited User Test Start	Aug 2018	Aug 2018	Feb 2019	Aug 2018
Milestone C	Feb 2019	Feb 2019	Aug 2019	Feb 2019
LRIP LFT&E Start	Mar 2020	Mar 2020	Sep 2020	Mar 2020
IOT&E Start	Feb 2021	Feb 2021	Aug 2021	Feb 2021
First Unit Equipped	Sep 2021	Sep 2021	Mar 2022	Sep 2021
Full Rate Production	Oct 2021	Oct 2021	Apr 2022	Oct 2021
Initial Operational Capability	Mar 2022	Mar 2022	Sep 2022	Mar 2022
Full Operational Capability	Dec 2023	Dec 2023	Jun 2024	Dec 2023

Change Explanations

None

Acronyms and Abbreviations

IOT&E - Initial Operational Test & Evaluation
LFT&E - Live Fire Test & Evaluation

Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
KPP 1 Net Ready				
The capability, system, and/or service must fully support execution of all operational activities and information exchanges identified in DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications 3) Compliant with GIG Technical Guidance to include IT standards identified in the TV-1 and implementation guidance of GESPs, necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) IA requirements including availability, integrity, authentication, confidentiality, and non-	The capability, system, and/or service must fully support execution of all operational activities and information exchanges identified in DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications 3) Compliant with GIG Technical Guidance to include IT standards identified in the TV-1 and implementation guidance of GESPs, necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) IA requirements including availability, integrity, authentication, confidentiality, and non-	The capability, system, and/or service must fully support execution of Joint critical operational activities and information exchanges identified in the DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP Communications 3) Compliant with GIG Technical Guidance to include IT standards identified in the TV-1 and implementation guidance of GESPs necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) IA requirements including availability, integrity, confidentiality, non-	TBD	AMPV Management estimates that the program will achieve the Threshold requirement.

repudiation, and issuance of an ATO by the DAA, and 5) Supportability requirements to include SAASM, spectrum, and JTRS requirements.	repudiation, and issuance of an ATO by the DAA, and 5) Supportability requirements to include SAASM, spectrum, and JTRS requirements.	repudiation, and issuance of an IATO or ATO by the DAA, and 5) supportability requirements to include SAASM, spectrum, and JTRS requirements.		
KPP 3 Force Protection				
Objective values listed in Table 6.1 and shall provide for spall reducing floor material or spall blanket.	Objective values listed in Table 6.1 and shall provide for spall reducing floor material or spall blanket.	The AMPV will provide protection for crew and occupant compartments to meet mission requirements. A kitting strategy can be used for selected threats as detailed in Table 6.1. The protection level from ballistic engagements shall be based on the most recent injury criteria thresholds provided by the ARL SLAD. At a minimum, the AMPV will provide integral protection for the crew and occupants from serious or greater injuries due to on-board fires, various blast, shock, overpressure, fragments and accelerative effects of attack by the threshold threats listed in the Table 6.1 for threat weapons systems. The AMPV shall prevent a sustained fuel fire when fuel container(s) are exposed to the RPG, IED, and EFP threats and conditions specified in Table 6.1. The AMPV shall minimize spall from overmatching threats.	TBD	AMPV Management estimates that the program will achieve the Threshold requirement.
KPP 4 Sustainment				
The AMPV, at full combat configuration (excluding failures and maintenance of the Government directed GFE/GFM MEP), shall achieve an Ao of at least 93.3% when measured continuously over a three-day mission (consistent with the General Purpose	The AMPV, at full combat configuration (excluding failures and maintenance of the Government directed GFE/GFM MEP), shall achieve an Ao of at least 93.3% when measured continuously over a three-day mission (consistent with the General Purpose	The AMPV, at full combat configuration (excluding failures and maintenance of the Government directed GFE/GFM MEP), shall achieve an Ao of at least 91.8% when measured continuously over a three-day mission (consistent with the General Purpose	TBD	AMPV Management estimates that the program will achieve the Threshold requirement.

<p>M113A3 Mission Profile defined in the HBCT OMS/MP) with only SA failures factored into the Ao assessment. The AMPV FDSC shall include all provisions necessary to fully address each vehicle variant with GFE/GFM MEP integrated therein, to support the supplementary assessment/evaluation of total vehicle system availability and hold accountable vehicle development for proper functional integration of the MEP (MEP failures caused by integration issues are chargeable to the host vehicle). Accordingly, availability of the MEP is not reduced (degraded or lessened) beyond that of its current performance as a result of integration into the host AMPV chassis. The AMPV at full combat configuration (excluding Department of the Army directed GFE/GFM MEP will achieve an Am of not less than 86.5% when assessed at the Army fleet level.</p>	<p>M113A3 Mission Profile defined in the HBCT OMS/MP) with only SA failures factored into the Ao assessment. The AMPV FDSC shall include all provisions necessary to fully address each vehicle variant with GFE/GFM MEP integrated therein, to support the supplementary assessment/evaluation of total vehicle system availability and hold accountable vehicle development for proper functional integration of the MEP (MEP failures caused by integration issues are chargeable to the host vehicle). Accordingly, availability of the MEP is not reduced (degraded or lessened) beyond that of its current performance as a result of integration into the host AMPV chassis. The AMPV at full combat configuration (excluding Department of the Army directed GFE/GFM MEP will achieve an Am of not less than 86.5% when assessed at the Army fleet level.</p>	<p>M113A3 Mission Profile defined in the HBCT OMS/MP) with only SA failures factored into the Ao assessment. The AMPV FDSC shall include all provisions necessary to fully address each vehicle variant with GFE/GFM MEP integrated therein, to support the supplementary assessment/evaluation of total vehicle system availability and hold accountable vehicle development for proper functional integration of the MEP (MEP failures caused by integration issues are chargeable to the host vehicle). Accordingly, availability of the MEP is not reduced (degraded or lessened) beyond that of its current performance as a result of integration into the host AMPV chassis. The AMPV at full combat configuration (excluding Department of the Army directed GFE/GFM MEP) will achieve an Am of not less than 81.5% when assessed at the Army fleet level.</p>		
<p>KPP 5 Energy</p>				
<p>Energy objective values are developed at a vehicle weight meeting the Survivability KPP and Force Protection KPP objectives and other performance KPP objectives while ensuring the vehicle can operate within fuel apportioned for the AMPV during the 72-hour mission cycle of HBCT OMS/MP (for each individual mission role). The AMPV, using standard (JP8) fuel, will consume fuel at, or better than, the</p>	<p>Energy objective values are developed at a vehicle weight meeting the Survivability KPP and Force Protection KPP objectives and other performance KPP objectives while ensuring the vehicle can operate within fuel apportioned for the AMPV during the 72-hour mission cycle of HBCT OMS/MP (for each individual mission role). The AMPV, using standard (JP8) fuel, will consume fuel at, or better than, the</p>	<p>Energy threshold values are developed at a vehicle weight meeting the Survivability KPP and Force Protection KPP thresholds and other performance KPP thresholds while ensuring the vehicle can operate within fuel apportioned for the AMPV during the 72-hour mission cycle of HBCT OMS/MP (for each individual mission role). The AMPV, using standard (JP8) fuel, will consume fuel at, or better than, the</p>	<p>TBD</p>	<p>AMPV Management estimates that the program will achieve the Threshold requirement.</p>

<p>level identified in Table 6.2 (O) at full combat configuration, when evaluated at sustained speeds of 30-MPH on primary roads, maneuvering the distance outlined in the HBCT OMS/MP for the 72-hour mission cycle without refueling, and while providing power sustained loads to support all electronic equipment with a 50% spare electrical capacity for all variants. The AMPV will consume fuel at, or better than, the level identified in Table 6.2 for stationary operations (Idle/GPH) when evaluated at providing power at sustained loads to support all electronic equipment with a 50% spare electrical capacity for all variants.</p>	<p>level identified in Table 6.2 (O) at full combat configuration, when evaluated at sustained speeds of 30-MPH on primary roads, maneuvering the distance outlined in the HBCT OMS/MP for the 72-hour mission cycle without refueling, and while providing power sustained loads to support all electronic equipment with a 50% spare electrical capacity for all variants. The AMPV will consume fuel at, or better than, the level identified in Table 6.2 for stationary operations (Idle/GPH) when evaluated at providing power at sustained loads to support all electronic equipment with a 50% spare electrical capacity for all variants.</p>	<p>level identified in Table 6.2 (T) at full combat configuration, when evaluated at sustained speeds of 30-MPH on primary roads, maneuvering the distance outlined in the HBCT OMS/MP for the 72-hour mission cycle without refueling, and while providing power at sustained loads to support all electronic equipment with a 20% spare electrical capacity for all variants. The AMPV will consume fuel at, or better than, the level identified in Table 6.2 for stationary operations (Idle/GPH) when evaluated at providing power at sustained loads to support all electronic equipment with a 20% spare electrical capacity for all variants.</p>		
<p>KPP 6 Mobility</p>				
<p>The AMPV mobility is aligned with Survivability and Force Protection KPP requirements. The vehicle must be capable of traversing steep hills, valleys, and man-made objects typical in cross-country and urban terrain. The AMPV must be able to maintain mobility threshold as outlined in the HBCT OMS/MP. The platform must have the speed and mobility to successfully fulfill its role in the BCT and maintain its doctrinal positioning within the ABCT formation.</p>	<p>The AMPV mobility is aligned with Survivability and Force Protection KPP requirements. The vehicle must be capable of traversing steep hills, valleys, and man-made objects typical in cross-country and urban terrain. The AMPV must be able to maintain mobility threshold as outlined in the HBCT OMS/MP. The platform must have the speed and mobility to successfully fulfill its role in the BCT and maintain its doctrinal positioning within the ABCT formation.</p>	<p>(T=O) The AMPV mobility is aligned with Survivability and Force Protection KPP requirements. The vehicle must be capable of traversing steep hills, valleys, and man-made objects typical in cross-country and urban terrain. The AMPV must be able to maintain mobility threshold as outlined in the HBCT OMS/MP. The platform must have the speed and mobility to successfully fulfill its role in the BCT and maintain its doctrinal positioning within the ABCT formation.</p>	<p>TBD</p>	<p>AMPV Management estimates that the program will achieve the Threshold requirement.</p>
<p>KPP 7 Training</p>				
<p>Upon completion of FUE NET the soldier, both operator and maintainer, will successfully accomplish >99% (O) of</p>	<p>Upon completion of FUE NET the soldier, both operator and maintainer, will successfully accomplish >99% (O) of</p>	<p>Upon completion of FUE NET the soldier, both operator and maintainer, will successfully accomplish >80% (T) of</p>	<p>TBD</p>	<p>AMPV Management estimates that the program will</p>

<p>the critical tasks and >80% (O) of the non-critical tasks required to operate and maintain the AMPV. Further, institutional and sustainment training will be IAW AR 71-70 and AR 350-1.</p>	<p>the critical tasks and >80% (O) of the non-critical tasks required to operate and maintain the AMPV. Further, institutional and sustainment training will be IAW AR 71-70 and AR 350-1.</p>	<p>the critical tasks and >70% (T) of the non-critical tasks required to operate and maintain the AMPV. Further, institutional and sustainment training will be IAW AR 71-70 and AR 350-1.</p>		<p>achieve the Threshold requirement.</p>
<p>KPP 8 Lethality</p>				
<p>The Lethality KPP addresses the GCV ICD Capability 3, Lethality. The AMPV MC will host and integrate the current M121 120-mm mortar system to provide indirect fires in support of maneuver units. The mortar system must accommodate a smoothbore 120-mm mortar system, which must be capable of firing the full family of mortar ammunition: HE, illumination, IR illumination, smoke, precision munitions, and future extended range munitions. The system will integrate the current M95 Mortar Fire Control System-Mounted and carry current ground mounting and firing equipment as utilized on the M1064 MC. The AMPV MC's lethality, responsiveness and accuracy will be equal to or greater than the M1064 MC.</p>	<p>The Lethality KPP addresses the GCV ICD Capability 3, Lethality. The AMPV MC will host and integrate the current M121 120-mm mortar system to provide indirect fires in support of maneuver units. The mortar system must accommodate a smoothbore 120-mm mortar system, which must be capable of firing the full family of mortar ammunition: HE, illumination, IR illumination, smoke, precision munitions, and future extended range munitions. The system will integrate the current M95 Mortar Fire Control System-Mounted and carry current ground mounting and firing equipment as utilized on the M1064 MC. The AMPV MC's lethality, responsiveness and accuracy will be equal to or greater than the M1064 MC.</p>	<p>(T=O) The Lethality KPP addresses the GCV ICD Capability 3, Lethality. The AMPV MC will host and integrate the current M121 120-mm mortar system to provide indirect fires in support of maneuver units. The mortar system must accommodate a smoothbore 120-mm mortar system, which must be capable of firing the full family of mortar ammunition: HE, illumination, IR illumination, smoke, precision munitions, and future extended range munitions. The system will integrate the current M95 Mortar Fire Control System-Mounted and carry current ground mounting and firing equipment as utilized on the M1064 MC. The AMPV MC's lethality, responsiveness and accuracy will be equal to or greater than the M1064 MC.</p>	<p>TBD</p>	<p>AMPV Management estimates that the program will achieve the Threshold requirement.</p>

Classified Performance information is provided in the classified annex to this submission.

Requirements Reference

Capability Development Document (CDD) dated June 21, 2013

Change Explanations

None

Notes

Detailed KPP information is available in the approved AMPV CDD, dated June 21, 2013, including Table 6.1 and Table 6.2 referenced in the Performance Characteristics above.

The AMPV program conducted a Preliminary Design Review and is now executing detailed design activities to re-assess compliance at the Critical Design Review.

Acronyms and Abbreviations

% - percent
 ABCT - Armor Brigade Combat Team
 Am - Materiel Availability
 Ao - Operational Availability
 AR - Army Regulation
 ARL - Army Research Laboratory
 ATO - Authorization To Operate
 BCT - Brigade Combat Team
 DAA - Designated Accrediting Authority
 DoDAF - Department of Defense Architecture Framework
 EFP - Explosively Formed Penetrator
 FDSC - Failure Definition and Scoring Criteria
 FUE - First Unit Equipped
 GCV - Ground Combat Vehicle
 GESP - GIG Enterprise Service Profile
 GFE - Government Furnished Equipment
 GFM - Government Furnished Material
 GIG - Global Information Grid
 GPH - Gallons Per Hour
 HBCT - Heavy Brigade Combat Team
 HE - High Explosive
 IA - Information Assurance
 IATO - Interim Authority To Operate
 IAW - In Accordance With
 ICD - Initial Capability Document
 IEA - Information Enterprise Architecture
 IED - Improvised Explosive Device
 IP - Internet Protocol
 IR - InfraRed
 IT - Information Technology
 JTRS - Joint Tactical Radio System
 MC - Mortar Carrier
 MEP - Mission Equipment Package
 mm - millimeter
 MPH - Miles Per Hour
 NET - New Equipment Training
 O - Objective
 OMS/MP - Operational Mode Summary/Mission Profile
 RPG - Rocket Propelled Grenade
 SA - System Abort
 SAASM - Selective Availability Anti-Spoofing Module
 SLAD - Survivability/Lethality Analysis Directorate
 T - Threshold
 TV - Technical View

Track to Budget

RDT&E

Appn	BA	PE
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Army 2040 05 0605028A

Project	Name
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EB5 Armored Multi-Purpose Vehicle (AMPV)

Procurement

Appn	BA	PE
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Army 2033 01 0211708A

Line Item	Name
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2944G80819 Armored Multi Purpose Vehicle (AMPV)

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2015 \$M			BY 2015 \$M	TY \$M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	988.2	988.2	1087.0	1013.0	1073.8	1073.8	1081.8
Procurement	9736.6	9736.6	10710.3	9736.8	12871.0	12871.0	12760.6
Flyaway	--	--	--	9183.8	--	--	12042.6
Recurring	--	--	--	9145.4	--	--	11999.8
Non Recurring	--	--	--	38.4	--	--	42.8
Support	--	--	--	553.0	--	--	718.0
Other Support	--	--	--	370.9	--	--	479.1
Initial Spares	--	--	--	182.1	--	--	238.9
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	10724.8	10724.8	N/A	10749.8	13944.8	13944.8	13842.4

Current APB Cost Estimate Reference

CAPE ICE dated December 08, 2014

Confidence Level

Confidence Level of cost estimate for current APB: 50%

This estimate, like all previous OSD CAPE estimates, is built upon a product-oriented work breakdown structure; is based on historical actual cost information to the maximum extent possible; and, most importantly, is based on conservative assumptions that are consistent with actual demonstrated contractor and Government performance for a series of acquisition programs in which the Department was successful.

It is difficult to calculate mathematically the precise confidence levels associated with life-cycle cost estimates prepared for Major Defense Acquisition Programs. Based on the rigor in methods used in building estimates, the strong adherence to the collection and use of historical cost information, and the review of applied assumptions, we project that it is about equally likely that the estimate will prove too low or too high for execution of the program described.

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	39	39	39
Procurement	2897	2897	2897
Total	2936	2936	2936

Quantity Notes

To support the development phase 39 AMPVs are required: 29 AMPV prototype vehicles for EMD and ten production representative AMPVs for Full Up System Level live fire tests; the live fire test assets are RDT&E-funded in LRIP.

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2017 President's Budget / December 2015 SAR (TY\$ M)									
Appropriation	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
RDT&E	155.2	226.2	184.2	200.8	124.3	95.9	95.2	0.0	1081.8
Procurement	0.0	0.0	0.0	193.7	397.3	495.7	691.2	10982.7	12760.6
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2017 Total	155.2	226.2	184.2	394.5	521.6	591.6	786.4	10982.7	13842.4
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Funding Notes

The ADM directed the Army to fund the AMPV program to the OSD CAPE ICE in the FY 2016 PB. The FY 2016 Omnibus Appropriations Bill decremented FY 2016 RDT&E funding by \$4M assigned to Program Management Growth. While this decrement will cause a slight re-prioritization of selected efforts in FY 2016, there is sufficient funding to execute critical planned FY 2016 work.

Quantity Summary										
FY 2017 President's Budget / December 2015 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
Development	39	0	0	0	0	0	0	0	0	39
Production	0	0	0	0	42	107	130	180	2438	2897
PB 2017 Total	39	0	0	0	42	107	130	180	2438	2936
	--	--	--	--	--	--	--	--	--	--

Cost and Funding

Annual Funding By Appropriation

Annual Funding							
2040 RDT&E Research, Development, Test, and Evaluation, Army							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2012	--	--	--	--	--	--	12.3
2013	--	--	--	--	--	--	26.8
2014	--	--	--	--	--	--	27.3
2015	--	--	--	--	--	--	88.8
2016	--	--	--	--	--	--	226.2
2017	--	--	--	--	--	--	184.2
2018	--	--	--	--	--	--	200.8
2019	--	--	--	--	--	--	124.3
2020	--	--	--	--	--	--	95.9
2021	--	--	--	--	--	--	95.2
Subtotal	39	--	--	--	--	--	1081.8

Annual Funding 2040 RDT&E Research, Development, Test, and Evaluation, Army							
Fiscal Year	Quantity	BY 2015 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2012	--	--	--	--	--	--	12.6
2013	--	--	--	--	--	--	27.0
2014	--	--	--	--	--	--	27.0
2015	--	--	--	--	--	--	86.4
2016	--	--	--	--	--	--	217.9
2017	--	--	--	--	--	--	174.2
2018	--	--	--	--	--	--	186.2
2019	--	--	--	--	--	--	113.0
2020	--	--	--	--	--	--	85.5
2021	--	--	--	--	--	--	83.2
Subtotal	39	--	--	--	--	--	1013.0

Annual Funding							
2033 Procurement Procurement of Weapons and Tracked Combat Vehicles, Army							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2018	42	166.2	3.5	18.1	187.8	5.9	193.7
2019	107	349.0	7.3	14.5	370.8	26.5	397.3
2020	130	411.2	38.1	6.6	455.9	39.8	495.7
2021	180	591.9	46.7	3.6	642.2	49.0	691.2
2022	180	569.6	67.6	--	637.2	55.1	692.3
2023	180	573.6	69.6	--	643.2	50.6	693.8
2024	180	580.2	71.7	--	651.9	35.9	687.8
2025	180	650.7	73.8	--	724.5	38.1	762.6
2026	180	662.8	76.0	--	738.8	39.4	778.2
2027	180	675.8	78.2	--	754.0	39.4	793.4
2028	180	689.6	80.5	--	770.1	40.4	810.5
2029	180	704.2	82.9	--	787.1	41.1	828.2
2030	180	719.4	85.4	--	804.8	41.9	846.7
2031	180	735.2	87.9	--	823.1	42.8	865.9
2032	180	751.7	90.5	--	842.2	43.8	886.0
2033	180	768.7	79.2	--	847.9	44.8	892.7
2034	180	786.4	61.2	--	847.6	45.8	893.4
2035	98	466.1	27.0	--	493.1	37.7	530.8
2036	--	--	20.4	--	20.4	--	20.4
Subtotal	2897	10852.3	1147.5	42.8	12042.6	718.0	12760.6

Annual Funding							
2033 Procurement Procurement of Weapons and Tracked Combat Vehicles, Army							
Fiscal Year	Quantity	BY 2015 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2018	42	152.3	3.2	16.5	172.0	5.4	177.4
2019	107	313.5	6.6	13.0	333.1	23.7	356.8
2020	130	362.1	33.6	5.8	401.5	35.0	436.5
2021	180	511.0	40.3	3.1	554.4	42.3	596.7
2022	180	482.1	57.2	--	539.3	46.6	585.9
2023	180	475.9	57.8	--	533.7	42.0	575.7
2024	180	472.0	58.3	--	530.3	29.2	559.5
2025	180	518.9	58.9	--	577.8	30.4	608.2
2026	180	518.2	59.5	--	577.7	30.8	608.5
2027	180	518.0	60.0	--	578.0	30.2	608.2
2028	180	518.3	60.5	--	578.8	30.3	609.1
2029	180	518.8	61.1	--	579.9	30.3	610.2
2030	180	519.7	61.6	--	581.3	30.3	611.6
2031	180	520.7	62.2	--	582.9	30.3	613.2
2032	180	521.9	62.8	--	584.7	30.4	615.1
2033	180	523.2	53.9	--	577.1	30.5	607.6
2034	180	524.8	40.8	--	565.6	30.6	596.2
2035	98	304.9	17.7	--	322.6	24.7	347.3
2036	--	--	13.1	--	13.1	--	13.1
Subtotal	2897	8276.3	869.1	38.4	9183.8	553.0	9736.8

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	12/23/2014	12/23/2014
Approved Quantity	289	289
Reference	Milestone B ADM	Milestone B ADM
Start Year	2018	2018
End Year	2022	2022

Foreign Military Sales

None

Nuclear Costs

None

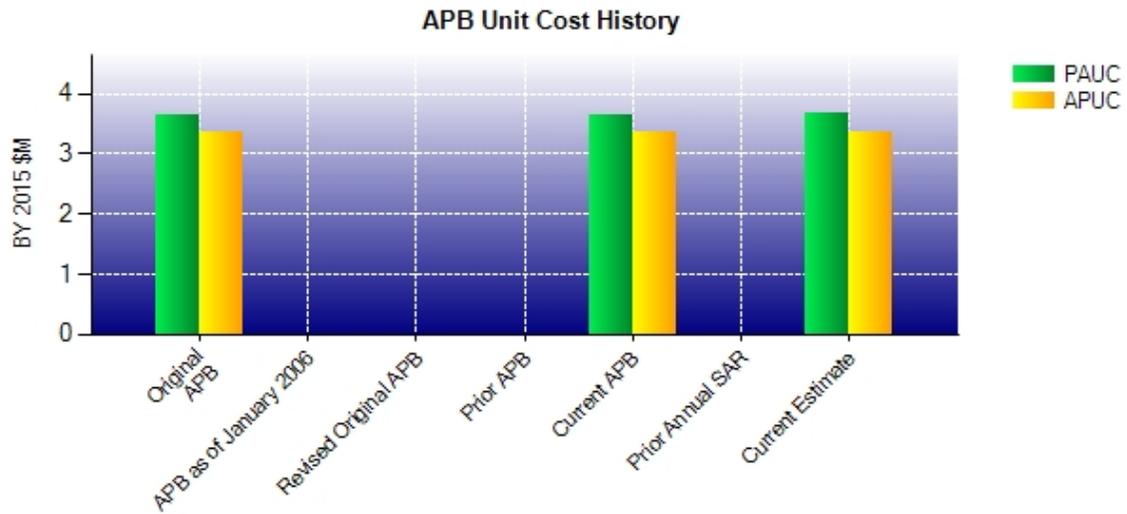
Unit Cost

Unit Cost Report

Item	BY 2015 \$M	BY 2015 \$M	% Change
	Current UCR Baseline (May 2015 APB)	Current Estimate (Dec 2015 SAR)	
Program Acquisition Unit Cost			
Cost	10724.8	10749.8	
Quantity	2936	2936	
Unit Cost	3.653	3.661	+0.22
Average Procurement Unit Cost			
Cost	9736.6	9736.8	
Quantity	2897	2897	
Unit Cost	3.361	3.361	0.00

Item	BY 2015 \$M	BY 2015 \$M	% Change
	Original UCR Baseline (May 2015 APB)	Current Estimate (Dec 2015 SAR)	
Program Acquisition Unit Cost			
Cost	10724.8	10749.8	
Quantity	2936	2936	
Unit Cost	3.653	3.661	+0.22
Average Procurement Unit Cost			
Cost	9736.6	9736.8	
Quantity	2897	2897	
Unit Cost	3.361	3.361	0.00

Unit Cost History



Item	Date	BY 2015 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	May 2015	3.653	3.361	4.750	4.443
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	N/A	N/A	N/A	N/A	N/A
Current APB	May 2015	3.653	3.361	4.750	4.443
Prior Annual SAR	N/A	N/A	N/A	N/A	N/A
Current Estimate	Dec 2015	3.661	3.361	4.715	4.405

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY \$M)									
Initial PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4.750	-0.044	0.000	0.000	0.000	0.009	0.000	0.000	-0.035	4.715

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4.443	-0.038	0.000	0.000	0.000	0.000	0.000	0.000	-0.038	4.405

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	Dec 2014	N/A	Dec 2014
Milestone C	N/A	Feb 2019	N/A	Feb 2019
IOC	N/A	Mar 2022	N/A	Mar 2022
Total Cost (TY \$M)	N/A	13944.8	N/A	13842.4
Total Quantity	N/A	2936	N/A	2936
PAUC	N/A	4.750	N/A	4.715

Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	1073.8	12871.0	--	13944.8
Previous Changes				
Economic	-13.4	-47.1	--	-60.5
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+27.8	-1.2	--	+26.6
Other	--	--	--	--
Support	--	-4.4	--	-4.4
Subtotal	+14.4	-52.7	--	-38.3
Current Changes				
Economic	-4.9	-63.0	--	-67.9
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-1.5	+0.9	--	-0.6
Other	--	--	--	--
Support	--	+4.4	--	+4.4
Subtotal	-6.4	-57.7	--	-64.1
Total Changes	+8.0	-110.4	--	-102.4
CE - Cost Variance	1081.8	12760.6	--	13842.4
CE - Cost & Funding	1081.8	12760.6	--	13842.4

Summary BY 2015 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	988.2	9736.6	--	10724.8
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+26.5	-1.9	--	+24.6
Other	--	--	--	--
Support	--	-3.1	--	-3.1
Subtotal	+26.5	-5.0	--	+21.5
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-1.7	+0.7	--	-1.0
Other	--	--	--	--
Support	--	+4.5	--	+4.5
Subtotal	-1.7	+5.2	--	+3.5
Total Changes	+24.8	+0.2	--	+25.0
CE - Cost Variance	1013.0	9736.8	--	10749.8
CE - Cost & Funding	1013.0	9736.8	--	10749.8

Previous Estimate: June 2015

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-4.9
Revised Estimate to align with FY 2017 PB. (Estimating)	-2.9	-2.7
Adjustment for current and prior escalation. (Estimating)	+1.2	+1.2
RDT&E Subtotal	-1.7	-6.4

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-63.0
Revised Estimate to align with FY 2017 PB. (Estimating)	+0.7	+0.9
Increase in Other Support to align Procurement estimate with the FY 2017 PB (Support)	+0.3	-0.2
Increase in Initial Spares to align Procurement estimate with the FY 2017 PB. (Support)	+4.2	+4.6
Procurement Subtotal	+5.2	-57.7

Contracts

Contract Identification

Appropriation: RDT&E
Contract Name: AMPV EMD Contract with LRIP Options
Contractor: BAE Systems Land & Armaments, L.P.
Contractor Location: 34201 Van Dyke Avenue
 Sterling Heights, MI 48312-4648
Contract Number: W56HZV-15-C-A001
Contract Type: Cost Plus Incentive Fee (CPIF)
Award Date: December 23, 2014
Definitization Date: December 23, 2014

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
383.0	N/A	29	383.0	N/A	29	397.4	397.4

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/31/2016)	-2.5	-5.1
Previous Cumulative Variances	-1.0	-0.4
Net Change	-1.5	-4.7

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to unplanned analysis related to requirement compliance (Human Factors Engineering, Reliability, Availability, and Maintainability Assessments, and Mobility Analyses) as well as under-budgeting and re-work associated with Preliminary Design Review deliverables (System Engineering, Software, Production Support).

The unfavorable net change in the schedule variance is due to subcontractor delays linked to extensions in the Smart Power Management Unit Test Readiness Review and delays in completion of drawings necessary for procurement of prototype hardware and Critical Design Review.

Notes

The change in Estimated Price at Completion is due to clarification and update to the contract Scope of Work, specifically tailoring language to articulate the Government's requirement for the contractor to produce designs for the hardware integration for all vehicle mission equipment within the AMPV Family of Vehicles.

The variant baseline concept change issued under modification P00004 to this contract is undefinitized. The negotiated value of this modification is \$11,448,341.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	39	0.00%
Production	0	0	2897	0.00%
Total Program Quantity Delivered	0	0	2936	0.00%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	13842.4	Years Appropriated	5
Expended to Date	136.4	Percent Years Appropriated	20.00%
Percent Expended	0.99%	Appropriated to Date	381.4
Total Funding Years	25	Percent Appropriated	2.76%

The above data is current as of February 09, 2016.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	December 08, 2014
Source of Estimate:	CAPE ICE
Quantity to Sustain:	2897
Unit of Measure:	Vehicle
Service Life per Unit:	26.00 Years
Fiscal Years in Service:	FY 2021 - FY 2062

The 39 development vehicles will not be sustained.

Sustainment Strategy

The AMPV sustainment concept leverages existing organic structures for maintenance and supply support to maximize commonality and minimize the logistics footprint. By using an existing base platform materiel solution, the common and unique Line Replaceable Units (LRU) will be sustained with the Two Level Maintenance and sustainment repair concepts. Field-level maintenance will maintain, handle, and support the LRUs with the same concept as the existing Armor Brigade Combat Team (ABCT) structure. Sustainment-level maintenance will use common repair programs, facilities, and depots wherever economical and feasible. Newly developed maintenance tasks and support will be determined and supported by results from the Logistic Support Analysis, Level of Repair Analysis, Source of Repair Analysis, and Business Case Analysis and/or Management Analysis, as required.

Any new operator and maintainer training requirements will be determined by task analysis and results from the Logistics Demonstration, Limited User Test, and other vehicle tests. AMPV will provide Operator New Equipment Training and Field Maintenance New Equipment Training to each gaining unit. Mission equipment training will be provided by the corresponding equipment representatives.

PEO Ground Combat Systems performed the analysis required by section 2464, title 10 U.S.C. and determined that AMPV is a core system. PM AMPV is committed to developing the detailed requirements for core depot-level maintenance and repair capabilities as well as the associated sustaining workloads required to support such requirements when the vehicle configuration is solidified. A preliminary estimate of core depot hours, using an existing tracked vehicle as the baseline, was included in the section 2366b, title 10 U.S.C. certification. The LRIP option scope of work contains the development of a National Maintenance Work Requirement, which will be in place within four years of IOC.

The O&S estimate assumes that the AMPV will support the 20 ABCT, Active and National Guard Units, across the range of military operations and will train in environments typical in cross-country and urban terrain. It replaces the M113 Family of Vehicles (FoV), which comprise 30% of the ABCT vehicle fleet.

Antecedent Information

The Antecedent system is the M113 FoV. Antecedent estimate is based on data from O&S Management Information System and Army Manpower Cost System.

Annual O&S Costs BY2015 \$M			
Cost Element	AMPV		M113 (Antecedent) Vehicle
	Average Annual Cost Per Vehicle		
Unit-Level Manpower	0.262		0.263
Unit Operations	0.033		0.030
Maintenance	0.074		0.058
Sustaining Support	0.023		0.027
Continuing System Improvements	0.012		0.003
Indirect Support	0.055		0.055
Other	--		--
Total	0.459		0.436

Item	Total O&S Cost \$M			
	AMPV			M113 (Antecedent)
	Current Development APB Objective/Threshold	Current Estimate		
Base Year	34540.1	37994.1	34540.1	32823.9
Then Year	55313.8	N/A	55313.8	N/A

Equation to Translate Annual Cost to Total Cost

Total Cost = # of systems * service life per system * average annual cost (BY 2015 \$M)

$\$34,540.1 = 2897 * 26 * \0.458565 (BY 2015 \$M)

O&S Cost Variance		
Category	BY 2015 \$M	Change Explanations
Prior SAR Total O&S Estimates - Jun 2015 SAR	34540.1	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	0.0	
Current Estimate	34540.1	

Disposal Estimate Details

Date of Estimate: December 08, 2014
Source of Estimate: CAPE ICE

Disposal/Demilitarization Total Cost (BY 2015 \$M): Total costs for disposal of all Vehicle are 128.0