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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Army **DATE:** February 2011

APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>				R-1 ITEM NOMENCLATURE PE 0203735A: <i>Combat Vehicle Improvement Programs</i>							
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	169.400	204.481	53.307	-	53.307	252.334	245.368	257.684	344.146	Continuing	Continuing
330: <i>ABRAMS TANK IMPROVE PROG</i>	93.832	107.479	9.657	-	9.657	78.675	79.737	189.415	262.548	Continuing	Continuing
371: <i>BRADLEY BASE SUSTAIN</i>	75.568	97.002	12.250	-	12.250	100.359	40.631	34.169	49.598	Continuing	Continuing
DS5: <i>Armored Multipurpose Vehicle</i>	-	-	31.400	-	31.400	73.300	125.000	34.100	32.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Army has completed a comprehensive Combat Vehicle (CV) modernization strategy, which includes the Abrams, Bradley and Armored Multi-Purpose Vehicle (AMPV) Platforms.

This Program Element (PE) corrects vehicle deficiencies identified in Army operations; continues technical system upgrades to include the integration of applicable technologies on ground systems; addresses needed evolutionary enhancements to tracked combat vehicles; and, develops technology improvements which have application to or insertion opportunities across multiple Ground Combat Systems vehicles. This PE provides combat effectiveness and Operating and Support (O&S) cost reduction enhancements for the Abrams tanks and Bradley Fighting Vehicles through a series of product improvements.

This project funds improvements to the Abrams Family of Vehicles (FOV). The Abrams mission is to provide necessary firepower, mobility and survivability to overmatch all current and emerging enemy threats in achieving decisive dominant maneuver. The M1A2 SEP (current production model) refers to a System Enhancement Package incorporated on the tank in 1998, which upgraded the M1A2's computer systems and its night vision capabilities. Since that time, the M1A2 SEP has virtually reached its upper limits for space, weight, and power (SWaP). The Abrams tank is expected to be in service through 2045 and will be modernized in accordance with a revised capabilities document to: (1) posture the tank infrastructure to enable incremental growth as a hedge against other risks and contingencies, (2) maintain threat overmatch to deter aggression, project power and protect US interests and allies around the globe - especially with regards to the lessons of counterinsurgency learned during the tank's successful campaigns during Operation Iraqi Freedom, and (3) leverage the mature and relevant technology enhancements from the Army Research & Development Technology base. The Abrams tank must embark on a modernization effort in order to remain relevant and maintain threat overmatch capability. The objective is to maintain Survivability, Combat Overmatch and reduce O&S costs through an evolutionary approach with incremental development.

The Bradley Fighting Vehicle System (BFVS) improvements will provide the Heavy Brigade Combat Team (HBCT) with an improved capability to effectively fight in current and future environments. The BFVS improvements achieve the Bradley Capability Development Document to maintain combat over match through a combination of enhanced survivability, mobility and situational awareness subsystems. Improved survivability will leverage and build on lessons learned from Operation Iraqi Freedom to ensure protection against current and future threats in both asymmetric and full spectrum warfare. This provides the Bradley fleet the capability to complement the Abrams Tank and Ground Combat Vehicle in the HBCT. This also provides the HBCT commander with the necessary capabilities

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APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0203735A: <i>Combat Vehicle Improvement Programs</i>
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to employ the Bradley and Abrams in a combined arms approach as well as appropriate mounted and dismounted schemes of maneuver on current and future battlefields.

The AMPV will provide the HBCT with a replacement for the M113 Family of Vehicles (FOVs) that is more survivable and mobile to accomplish operational support missions across the full spectrum of conflict. The AMPV will be designed with growth margin in anticipation of inbound and future interoperable capability. The AMPV will use a turretless Bradley A3 chassis and integrate the existing M113 Mission Equipment Packages (MEPs) for the General Purpose, Mortar and C2 vehicles. The MedEvac vehicle will integrate the CAIMAN Hagga system. This provides the AMPV fleet the capability to support the Abrams Tank, Bradley IFV and Ground Combat Vehicle in the HBCT. This also provides the HBCT commander with necessary capabilities to employ mounted and dismounted schemes of maneuver on current and future battlefields.

B. Program Change Summary (\$ in Millions)	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012 Base</u>	<u>FY 2012 OCO</u>	<u>FY 2012 Total</u>
Previous President's Budget	196.393	204.481	142.105	-	142.105
Current President's Budget	169.400	204.481	53.307	-	53.307
Total Adjustments	-26.993	-	-88.798	-	-88.798
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-9.514	-			
• SBIR/STTR Transfer	-6.478	-			
• Adjustments to Budget Years	-	-	-88.798	-	-88.798
• Other Adjustments 1	-11.001	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Army									DATE: February 2011		
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0203735A: Combat Vehicle Improvement Programs				PROJECT 330: ABRAMS TANK IMPROVE PROG			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
330: ABRAMS TANK IMPROVE PROG	93.832	107.479	9.657	-	9.657	78.675	79.737	189.415	262.548	Continuing	Continuing
Quantity of RDT&E Articles											
A. Mission Description and Budget Item Justification											
The Army is currently preparing a comprehensive Combat Vehicle modernization strategy of which the M1A2 Abrams is one component. There are multiple other combat vehicles covered by this comprehensive strategy. Once the strategy is complete and approved, the M1A2 Abrams modernization component will be prioritized in that strategy. The Abrams Fleet Modernization program will utilize an evolutionary acquisition approach with incremental development. This incremental approach will provide upgrades identified as critical from Operation Iraqi Freedom (OIF), emerging threats, and operational interoperability traced to approved requirement documents. The Abrams Fleet Modernization Program is anticipating a Materiel Development Decision (MDD) in Mid FY11. Following the MDD, the Analysis of Alternatives (AoA) will be completed, Army Cost Position (ACP) defined, and the engineering efforts for Increment 1 initiated, leading to a Preliminary Design Review in FY13.											
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2010	FY 2011	FY 2012
Title: Systems Engineering/project management Articles: Description: Systems Engineering/project management consists of requirements decomposition & flow down, trade studies, modeling & simulation and risk management FY 2010 Accomplishments: Requirements decomposition & flow down, trade studies, modeling & simulation, and risk management FY 2011 Plans: Requirements decomposition & flow down, trade studies, modeling & simulation, and risk management FY 2012 Plans: Requirements decomposition & flow down, trade studies, modeling & simulation, and risk management									16.004	22.500	9.657
									0	0	
Title: Vehicle Architecture & Software Articles: Description: Vehicle Architecture & Software, to include system concepting, vetronics and software subsystems, power distribution and management system, specification development, Net-Centric and Information Assurance compliance FY 2010 Accomplishments:									14.893	15.529	-
									0	0	

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Army		DATE: February 2011		
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 7: Operational Systems Development	R-1 ITEM NOMENCLATURE PE 0203735A: Combat Vehicle Improvement Programs	PROJECT 330: ABRAMS TANK IMPROVE PROG		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2010	FY 2011	FY 2012
Vehicle Architecture & Software, to include system concepting, vetronics and software subsystems, power distribution and management system, specification development, Net-Centric and Information Assurance compliance FY 2011 Plans: Vehicle Architecture & Software, to include system concepting, vetronics and software subsystems, power distribution and management system, specification development, Net-Centric and Information Assurance compliance				
Title: Lethality Systems Description: Lethality Systems, include cannon integration & characterization, fire control enhancements, future munitions integration, sensor development and integration, specification development FY 2010 Accomplishments: Cannon integration & characterization, fire control enhancements, future munitions integration, sensor development and integration, specification development FY 2011 Plans: Cannon integration & characterization, fire control enhancements, future munitions integration, sensor development and integration, specification development		6.900 0 Articles:	7.500 0	-
Title: Survivability Systems Description: Survivability Systems, to include armor development, system design and integration, hit avoidance and signature management, specification development FY 2010 Accomplishments: Survivability Systems, to include armor development, system design and integration, hit avoidance and signature management, specification development FY 2011 Plans: Survivability Systems, to include armor development, system design and integration, hit avoidance and signature management, specification development		6.200 0 Articles:	7.200 0	-
Title: Mobility Systems Articles:		7.700 0	7.900 0	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2010	FY 2011	FY 2012
Description: Mobility Systems, to include fuel efficiency, reliability/maintainability improvements, track & suspension design, specification development FY 2010 Accomplishments: Mobility Systems, to include fuel efficiency, reliability/maintainability improvements, track & suspension design, specification development FY 2011 Plans: Mobility Systems, to include fuel efficiency, reliability/maintainability improvements, track & suspension design, specification development				
Title: Auxiliary Systems Articles: Description: Auxiliary Systems, to include Auxiliary Power Unit development, Nuclear/ Biological/Chemical detection & protection technology, specification development FY 2010 Accomplishments: Auxiliary Systems, to include Auxiliary Power Unit development, Nuclear/ Biological/Chemical detection & protection technology, specification development FY 2011 Plans: Auxiliary Systems, to include Auxiliary Power Unit development, Nuclear/ Biological/Chemical detection & protection technology, specification development		9.000 0	9.000 0	-
Title: Battle Command/Communication Integration Articles: Description: Battle Command/Communication Integration FY 2010 Accomplishments: Battle Command/Communication Integration FY 2011 Plans: Battle Command/Communication Integration		3.000 0	0.500 0	-
Title: Mobility, Survivability, Vetronics and Software Integration Articles:		2.500 0	2.500 0	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2010	FY 2011	FY 2012
Description: Mobility, Survivability, Vetronics and Software Integration FY 2010 Accomplishments: Mobility, Survivability, Vetronics and Software Integration FY 2011 Plans: Mobility, Survivability, Vetronics and Software Integration				
Title: Improved Lethality Description: Improved Lethality (Sensor Integration, Advanced Munitions, Cannon Integration). FY 2010 Accomplishments: Sensor Integration, Advanced Munitions, Cannon Integration FY 2011 Plans: Sensor Integration, Advanced Munitions, Cannon Integration		Articles: 19.000 0	24.000 0	-
Title: Government Engineering Support Description: Government Engineering Support FY 2010 Accomplishments: Government Engineering Support FY 2011 Plans: Government Engineering Support		Articles: 0.840 0	6.500 0	-
Title: Transmission - Integral Generator Description: Transmission - Integral Generator FY 2011 Plans: Transmission - Integral Generator		Articles: -	4.200 0	-
Title: Test & Evaluation		Articles: 0.675 0	0.150 0	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2010	FY 2011
Description: Test and Evaluation FY 2010 Accomplishments: Test and Evaluation FY 2011 Plans: Test and Evaluation			
Title: Combat Vehicle Electrical Power - 21st Century (Combat Vehicle Evaluation Program (CVEP)-21) Description: Combat Vehicle Electrical Power - 21st Century (Combat Vehicle Evaluation Program (CVEP)-21) - This effort will be to demonstrate electrical power generation utilizing an X1100 Transmission integral generator. FY 2010 Accomplishments: This effort will be to demonstrate electrical power generation utilizing an X1100 Transmission integral generator operated in a test cell. The demonstration will encompass transmission basic function with an integral generator, electrical power generation and regulation, electrical characterization of the generator, and generator cooling. As vehicle power requirements continue to increase, the integral generator has the potential to provide future electrical power needs in a space efficient package.		3.120 0	-
Title: Current Force Common Active Protection System Radar Description: Radar Active Protection System is the conceptual approach to apply the Flashpoint Short-Range (SR) APS to the Abrams M1A2 SEP(v2) and the Abrams M1A1 SA as a means to address the Abrams Tank mid-range survivability needs. The intent would be to examine the potential for replacing the ARAT/ARAT 2 reactive tiles with an active protection system thus giving 360 degree protection, reducing the potential for fratricide, and reducing the overall vehicle weight. FY 2010 Accomplishments: This effort will fund the assessment and analysis to determine a cost effective conceptual approach to apply the Flashpoint Short-Range (SR) APS to the Abrams M1A2 SEP(v2) and the Abrams M1A1 SA as a means to address the Abrams Tank mid-range survivability needs. The intent would be to examine the potential for replacing the ARAT/ARAT 2 reactive tiles with an active protection system thus giving 360 degree protection, reducing the potential for fratricide, and reducing the overall vehicle weight.		1.600 0	-
Title: Vibration Management Enhancement Program Description:		2.400 0	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)												
<p>Description: The Vibration Management Enhancement Program (VMEP) will monitor the health and state of an Abrams AGT1500 engine as part of the TIGER (Total InteGrated Engine Revitalization) program. The commercial off-the-shelf VMEP system will be adapted to the AGT1500 engine parameters and the VMEP system will be tested and demonstrated on an Abrams tank. The system will ultimately provide diagnostic information to the maintainers and maintenance managers in the operating units. The intent of the system is to keep vibrations at their lowest possible level, provide health status of drive train components, extending or eliminating time between overhaul (TBO), eliminating scheduled inspections, consequently reducing Operations and Sustainment costs.</p> <p>FY 2010 Accomplishments: The commercial off-the-shelf VMEP system will be adapted to the AGT1500 engine parameters and the VMEP system will be tested and demonstrated on an Abrams tank. The system will ultimately provide diagnostic information to the maintainers and maintenance managers in the operating units. The intent of the system is to keep vibrations at their lowest possible level, provide health status of drive train components, extending or eliminating time between overhaul (TBO), eliminating scheduled inspections, consequently reducing Operations and Sustainment costs.</p>										FY 2010	FY 2011	FY 2012
Accomplishments/Planned Programs Subtotals										93.832	107.479	9.657
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost	
• GA0750: <i>Abrams Upgrade Program</i>	185.038	183.000	181.329		181.329				372.418	0.000	995.267	
• GA0700: <i>Abrams Vehicle Modification</i>	174.562	230.907	160.578		160.578		104.631	104.068	103.014	1,993.900	3,035.860	
• GE0161: <i>Spares (Initial) Abrams Upgrade</i>			7.219		7.219					0.000	7.219	
D. Acquisition Strategy Contractor selection for FY2012 and beyond pending Milestone A decision for Increment 1.												
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Army										DATE: February 2011			
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Product Development (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering/project management	SS/CPIF	TBD:TBD	22.985	22.500		3.157		-		3.157	Continuing	Continuing	Continuing
Vehicle Architecture & Software	Various	TBD:TBD	14.893	15.529		-		-		-	Continuing	Continuing	Continuing
Lethality Systems	Various	TBD:TBD	6.900	7.500		-		-		-	Continuing	Continuing	Continuing
Survivability Systems	Various	TBD:TBD	6.200	7.200		-		-		-	Continuing	Continuing	Continuing
Mobility Systems	Various	TBD:TBD	7.700	7.900		-		-		-	Continuing	Continuing	Continuing
Auxiliary Systems	Various	TBD:TBD	11.833	9.000		-		-		-	Continuing	Continuing	Continuing
Cannon Integration	Various	ARDEC:Various	14.088	-		-		-		-	Continuing	Continuing	Continuing
Sensor Integration	Various	CECOM-NVESD:Ft. Belvoir, VA	7.032	-		-		-		-	Continuing	Continuing	Continuing
Battle Command/Communication Integration	Various	CECOM/PEO C3T:Ft. Belvoir, VA	3.283	0.500		-		-		-	Continuing	Continuing	Continuing
Mobility/Survivability/Vetronics/Software Integration	Various	TARDEC:Warren, MI	2.964	2.500		-		-		-	Continuing	Continuing	Continuing
Improved Lethality	Various	PM, MAS:Picatinny, MJ	1.430	24.000		-		-		-	Continuing	Continuing	Continuing
Improved Situational Awareness/Supportability/Survivability	Various	General Dynamics:Sterling Heights, MI	18.845	-		-		-		-	Continuing	Continuing	Continuing
Advance Technology Insertion/ Systems Engineering, Electronic Architecture, Battle Command/Comms	Various	General Dynamics Land Systems:Sterling Heights, MI	38.185	-		-		-		-	Continuing	Continuing	Continuing
Transmission - Integral Generator	Various	Allison Transmission:Indianapolis, IN	-	4.200		-		-		-	Continuing	Continuing	Continuing
Ground Combat Systems (GCS) Open Architecture Electronic Enhancements	Various	Curtis Wright:Various	2.400	-		-		-		-	Continuing	Continuing	Continuing
Current Force Common Active Protection System Radar	Various	TBD:TBD	-	-		-		-		-	Continuing	Continuing	Continuing
	Various		-	-		-		-		-	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Army										DATE: February 2011			
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0203735A: Combat Vehicle Improvement Programs				PROJECT 330: ABRAMS TANK IMPROVE PROG					
Product Development (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Combat Vehicle Electrical Power - 21st Century (CVEP-21)		Allison Transmission:Indianapolis, IN											
Vibration Management Enhancement Program	Various	TBD:TBD	-	-		-		-		-	Continuing	Continuing	Continuing
Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)	Various	Various:Various	0.997	-		-		-		-	Continuing	Continuing	Continuing
Subtotal			159.735	100.829		3.157		-		3.157			
Remarks													
Contractor, award date and type of contract is to be determined (TBD) due to ongoing development of acquisition strategy.													
Support (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support	SS/LH	Various:Various	18.168	6.500		6.500		-		6.500	Continuing	Continuing	Continuing
Subtotal			18.168	6.500		6.500		-		6.500			
Test and Evaluation (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Advance Technology Preparation and Testing	Various	Aberdeen Proving Ground; Yuma Proving Ground; White Sands Missile Range,:Various	7.401	0.150		-		-		-	Continuing	Continuing	Continuing
Subtotal			7.401	0.150		-		-		-			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Army								DATE: February 2011					
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0203735A: Combat Vehicle Improvement Programs				PROJECT 330: ABRAMS TANK IMPROVE PROG					
			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			185.304	107.479		9.657		-		9.657			

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Army										DATE: February 2011			
APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>					R-1 ITEM NOMENCLATURE PE 0203735A: <i>Combat Vehicle Improvement Programs</i>					PROJECT 330: <i>ABRAMS TANK IMPROVE PROG</i>			

	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Increment 1																												
Management Decision Document (MDD)																												
Preliminary Design																												
Milestone A																												
Preliminary Design Review (PDR)																												
Detail Design and Prototype																												
MS B																												
Critical Design Review (CDR)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Army			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0203735A: <i>Combat Vehicle Improvement Programs</i>	PROJECT 330: <i>ABRAMS TANK IMPROVE PROG</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Increment 1	2	2011	2	2011
Management Decision Document (MDD)	2	2011	2	2011
Preliminary Design	4	2011	3	2013
Milestone A	1	2012	1	2012
Preliminary Design Review (PDR)	1	2013	1	2013
Detail Design and Prototype	3	2013	3	2015
MS B	3	2013	3	2013
Critical Design Review (CDR)	1	2014	1	2014

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APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0203735A: Combat Vehicle Improvement Programs				PROJECT 371: BRADLEY BASE SUSTAIN			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
371: BRADLEY BASE SUSTAIN	75.568	97.002	12.250	-	12.250	100.359	40.631	34.169	49.598	Continuing	Continuing
Quantity of RDT&E Articles											
A. Mission Description and Budget Item Justification											
The Army has completed a comprehensive Combat Vehicle modernization strategy, which includes the Bradley Vehicle. The Bradley Fighting Vehicle System (BFVS) improvements will provide the Heavy Brigade Combat Team (HBCT) with an improved capability to effectively fight in current and future environments. The BFVS improvements achieve the Bradley Capability Development Document to maintain combat over match through a combination of enhanced survivability, mobility and situational awareness subsystems. Improved survivability will leverage and build on lessons learned from Operation Iraqi Freedom to ensure protection against current and future threats in both asymmetric and full spectrum warfare. This provides the Bradley fleet the capability to complement the Abrams Tank and Ground Combat Vehicle in the HBCT. This also provides the HBCT commander with the necessary capabilities to employ the Bradley and Abrams in a combined arms approach as well as appropriate mounted and dismounted schemes of maneuver on current and future battlefields.											
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2010	FY 2011	FY 2012	
Title: Bradley Modernization Articles: Description: The Bradley Fighting Vehicle System (BFVS) improvements will provide the Heavy Brigade Combat Team (HBCT) with an improved capability to effectively fight in current and future environments. The BFVS improvements will focus on enhanced survivability, mobility, vetronics, situational awareness and software subsystems. FY 2010 Accomplishments: Pre MDD work and Program Documentation FY 2011 Plans: MDD approval expected in March 2011 to enter Technology Development Phase. Initiate Analysis of Alternatives (AoA) and Milestone Documentation required for Milestone A. Begin design and integration of subsystems focusing on survivability enhancements, mobility, vetronics, situational awareness and software subsystems.								63.568	77.102	-	
								0	0		
Title: Support Costs Articles: Description: Government System Engineering and Program Management Support Costs . These funds cover the costs of Government and contractor salaries, travel and the facilities required to effectively manage the program. FY 2010 Accomplishments:								12.000	19.900	12.250	
								0	0		

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APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>				R-1 ITEM NOMENCLATURE PE 0203735A: <i>Combat Vehicle Improvement Programs</i>			PROJECT 371: <i>BRADLEY BASE SUSTAIN</i>				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2010	FY 2011	FY 2012		
<p>Government System Engineering and Program Management Support Costs - Effort to begin initial requirement decomposition for the Bradley Modernization Program leading towards MDD in March 2011.</p> <p><i>FY 2011 Plans:</i> Government System Engineering and Program Management Support Costs - Develop required documentation to support decision to enter at Technology Development Phase. Formulate the Program Office cost estimate to support future budget development. Provide integrated program management to include planning, directing, tools and controlling functions for all supplier management activities. These activities will support data and supplier management, program control, government training, procurement and contracts management, operations management for the development of the Bradley Modernization Program. Develop and publish the detailed plans for cost analysis and management, budget management and execution, Earned Value Management and operations management with contractor. These funds also cover the costs of travel and the facilities/operational equipment required to effectively manage the program. TRADOC support is also included for requirement analysis, and Milestone Reviews.</p> <p><i>FY 2012 Plans:</i> Government System Engineering and Program Management Support Costs - Support Analysis of Alternatives (AoA) effort, concept development and cost estimate development. Prepare Milestone documentation required for Milestone A event in 4th quarter of FY12.</p>											
Accomplishments/Planned Programs Subtotals							75.568	97.002	12.250		
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• Bradley Mod Line: GZ2400 <i>Bradley Program (MOD)</i>		215.133	250.710		250.710		143.118	245.451	508.907	0.000	1,388.227
D. Acquisition Strategy											
The Acquisition Strategy for the Bradley Modernization Program will be addressed as part of the Materiel Development Decision in FY2011											
E. Performance Metrics											
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Army											DATE: February 2011		
APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>				R-1 ITEM NOMENCLATURE PE 0203735A: <i>Combat Vehicle Improvement Programs</i>				PROJECT 371: <i>BRADLEY BASE SUSTAIN</i>					

Product Development (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Bradley Modernization Program	C/CPIF	PMO:Warren, MI	94.900	77.102		-		-		-	Continuing	Continuing	Continuing
Subtotal			94.900	77.102		-		-		-			

Support (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PMO	MIPR	PMO:Bradley Modernization	12.997	6.500		3.250		-		3.250	Continuing	Continuing	Continuing
Government Engineering Support	MIPR	Various:Bradley Modernization	12.400	13.400		9.000		-		9.000	Continuing	Continuing	Continuing
Subtotal			25.397	19.900		12.250		-		12.250			

			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			120.297	97.002		12.250		-		12.250			

Remarks													

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Army			DATE: February 2011		
APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0203735A: <i>Combat Vehicle Improvement Programs</i>		PROJECT 371: <i>BRADLEY BASE SUSTAIN</i>	

	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Materiel Development Decision																												
Milestone A																												
Technology Development																												
System Requirements Review																												
Preliminary Design Review																												
Milestone B																												
Critical Design Review																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Army			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0203735A: <i>Combat Vehicle Improvement Programs</i>	PROJECT 371: <i>BRADLEY BASE SUSTAIN</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Materiel Development Decision	1	2011	1	2011
Milestone A	3	2012	3	2012
Technology Development	4	2012	2	2015
System Requirements Review	1	2013	1	2013
Preliminary Design Review	4	2014	4	2014
Milestone B	1	2015	1	2015
Critical Design Review	4	2016	4	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Army									DATE: February 2011		
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0203735A: Combat Vehicle Improvement Programs				PROJECT DS5: Armored Multipurpose Vehicle			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
DS5: Armored Multipurpose Vehicle	-	-	31.400	-	31.400	73.300	125.000	34.100	32.000	Continuing	Continuing
Quantity of RDT&E Articles											
Note Not applicable for this item											
A. Mission Description and Budget Item Justification The Army has completed a comprehensive Combat Vehicle modernization strategy, which includes the Armored Multi-Purpose Vehicle (AMPV). The AMPV will provide the HBCT with a replacement for the M113 Family of Vehicles (FOVs) that is more survivable and mobile to accomplish operational support missions across the full spectrum of conflict. The AMPV will be designed with growth margin in anticipation of inbound and future interoperable capability. The AMPV will use a turretless Bradley A3 chassis and integrate the existing M113 Mission Equipment Packages (MEPs) for the General Purpose, Mortar and C2 vehicles. The MedEvac vehicle will integrate the CAIMAN Hagga system. This provides the AMPV fleet the capability to support the Abrams Tank, Bradley IFV and Ground Combat Vehicle in the HBCT. This also provides the HBCT commander with necessary capabilities to employ mounted and dismounted schemes of maneuver on current and future battlefields.											
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2010	FY 2011	FY 2012	
Title: Armored Multi-Purpose Vehicle								-	-	31.400	
Description: The Army is currently preparing a comprehensive Combat Vehicle modernization strategy, of which the Armored Multi-Purpose Vehicle (AMPV) is one component. There are multiple other Combat Vehicles covered by this comprehensive strategy. Once the strategy is complete and approved, the AMPV will be prioritized in that strategy. The AMPV will provide the HBCT with a replacement for the M113 FOVs and recoup Space Weight and Power-Cooling (SWAP-C) and allow for growth potential. The AMPV will use a turretless Bradley A3 chassis and integrate the existing M113 MEPS for the General Purpose, Mortar and C2 vehicles. The MedEvac vehicle will integrate the CAIMAN Hagga system. This provides the AMPV fleet the capability to support the Abrams Tank, Bradley IFV and Ground Combat Vehicle in the HBCT. This also provides the HBCT commander with necessary capabilities to employ mounted and dismounted schemes of maneuver on current and future battlefields.											
FY 2012 Plans: MDD approval expected in March 2011 to allow for entry into Engineering and Manufacturing Development Phase. RFP will be released. Development of a competitive TDP for the conversion of M2A0 to a turretless M2A3											
Accomplishments/Planned Programs Subtotals								-	-	31.400	

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Army			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0203735A: <i>Combat Vehicle Improvement Programs</i>	PROJECT DS5: <i>Armored Multipurpose Vehicle</i>	

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• Bradley Mod Line: GZ2400 <i>Bradley Program (MOD)</i>							390.000	604.800	605.200	0.000	1,600.000

D. Acquisition Strategy

The Acquisition Strategy for the Armored Multi-Purpose Vehicle Program will be addressed as part of the Materiel Development Decision in March 2011.

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Army											DATE: February 2011			
APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>				R-1 ITEM NOMENCLATURE PE 0203735A: <i>Combat Vehicle Improvement Programs</i>				PROJECT DS5: <i>Armored Multipurpose Vehicle</i>						

Product Development (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Armored Multi-Purpose Vehicle	C/CPIF	PMO:Warren, MI	-	-		15.400		-		15.400	168.400	183.800	0.000
Subtotal			-	-		15.400		-		15.400	168.400	183.800	0.000

Support (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PMO	MIPR	PMO:Warren, MI	-	-		6.000		-		6.000	24.000	30.000	0.000
Government Engineering Support	MIPR	TACOM LCMC:Warren, MI	-	-		10.000		-		10.000	20.000	30.000	0.000
Subtotal			-	-		16.000		-		16.000	44.000	60.000	0.000

Test and Evaluation (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Test Support	MIPR	ATEC:various sites	-	-		-		-		-	52.000	52.000	0.000
Subtotal			-	-		-		-		-	52.000	52.000	0.000

			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-		31.400		-		31.400	264.400	295.800	0.000

Remarks													

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Army																DATE: February 2011			
APPROPRIATION/BUDGET ACTIVITY								R-1 ITEM NOMENCLATURE								PROJECT			
2040: Research, Development, Test & Evaluation, Army								PE 0203735A: Combat Vehicle Improvement Programs								DS5: Armored Multipurpose Vehicle			
BA 7: Operational Systems Development																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Army			DATE: February 2011		
APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>		R-1 ITEM NOMENCLATURE PE 0203735A: <i>Combat Vehicle Improvement Programs</i>		PROJECT DS5: <i>Armored Multipurpose Vehicle</i>	
Schedule Details					
		Start		End	
Events		Quarter	Year	Quarter	Year
Materiel Development Decision		1	2011	1	2011