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Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Army										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 5: System Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0604854A: Artillery Systems - EMD							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	120.032	167.797	80.613	-	80.613	92.844	130.804	28.638	6.568	Continuing	Continuing
516: PALADIN/FAASV	-	120.032	167.797	80.613	-	80.613	92.844	130.804	28.638	6.568	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

The M109 Family of Vehicles (FOV) Paladin/FAASV Integrated Management (PIM) program provides for the procurement of sustainment and obsolescence modifications to the current M109A6 Self Propelled Howitzer and FAASV, increase the reliability and maneuverability as well as reduce life cycle costs.

A. Mission Description and Budget Item Justification

Paladin Integrated Management (PIM) is an ACAT 1D Acquisition Program. The program is intended to replace the current fleet of M109 Family of Vehicles (FoV) consisting of the M109A6 Paladin Self Propelled Howitzer and M992A2 Field Artillery Ammunition Supply Vehicle (FAASV). PIM is an Army Modernization Program that addresses a critical capability gap created by the Non-Line of Sight Cannon termination in June of 2009 as well as obsolescence and size/weight and power (SWaP) issues in the M109 FoV current Fleet. The PIM system integrates current Bradley Fighting Vehicle suspension and drive train items, Future Combat Systems (FCS) developed Electric Gun Drive systems and current fleet (M109A6) fire control systems into a new chassis that provides better force protection, survivability and mobility over the current fleet. PIM is a two vehicle system: Self Propelled Howitzer (SPH) and Carrier Ammunition Tracked (CAT). The SPH has all characteristics listed above. The CAT utilizes all these same components and traits less those that relate directly to the cannon system. The PIM system replaces the current M109 FoV on a one for one basis, in the cannon fires battalions in the Armored Brigade Combat Team Formations and the Echelons above Brigade (EAB). The overall intent is to increase Soldier force protection, vehicle survivability, provide an appropriate amount of SWaP capacity to add future capabilities, reduce life cycle costs and extend the life of the M109 FoV through FY2050.

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APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
2040: Research, Development, Test & Evaluation, Army		PE 0604854A: Artillery Systems - EMD			
BA 5: System Development & Demonstration (SDD)					
B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	120.032	167.797	121.344	-	121.344
Current President's Budget	120.032	167.797	80.613	-	80.613
Total Adjustments	0.000	0.000	-40.731	-	-40.731
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-	-	-40.731	-	-40.731

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Army									DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 5: System Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0604854A: Artillery Systems - EMD				PROJECT 516: PALADIN/FAASV			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
516: PALADIN/FAASV	-	120.032	167.797	80.613	-	80.613	92.844	130.804	28.638	6.568	Continuing	Continuing
Quantity of RDT&E Articles												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Paladin Integrated Management (PIM) is an ACAT 1D Acquisition Program. The program is intended to replace the current fleet of M109 Family of Vehicles (FoV) consisting of the M109A6 Paladin Self Propelled Howitzer and M992A2 Field Artillery Ammunition Supply Vehicle (FAASV). PIM is an Army Modernization Program that addresses a critical capability gap created by the Non-Line of Sight Cannon termination in June of 2009 as well as obsolescence and size/weight and power (SWaP) issues in the M109 FoV current Fleet. The PIM system integrates current Bradley Fighting Vehicle suspension and drive train items, Future Combat Systems (FCS) developed Electric Gun Drive systems and current fleet (M109A6) fire control systems into a new chassis that provides better force protection, survivability and mobility over the current fleet. PIM is a two vehicle system: Self Propelled Howitzer (SPH) and Carrier Ammunition Tracked (CAT). The SPH has all characteristics listed above. The CAT utilizes all these same components and traits less those that relate directly to the cannon system. The PIM system replaces the current M109 FoV on a one for one basis, in the cannon fires battalions in the Armored Brigade Combat Team Formations and the Echelons above Brigade (EAB). The overall intent is to increase Soldier force protection, vehicle survivability, provide an appropriate amount of SWaP capacity to add future capabilities, reduce life cycle costs and extend the life of the M109 FoV through FY2050.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2012	FY 2013	FY 2014	
Title: Paladin/FAASV Integrated Management (PIM) Development									73.645	122.395	57.294	
									Articles: 0	0		
Description: Funding is provided for the following contractor effort:												
FY 2012 Accomplishments: Program management that includes the award of the comprehensive contract modification and key program reviews: Delta-Critical Design Review and Initial Baseline Review. Refurbishment of six prototypes and rebuilding of one prototype that includes all force protection and survivability changes; production of two Ballistic Hull and Turret (BH&T) surrogate vehicles. Continuance of developmental testing (DT) support. Soldier training and preparations for Limited User Testing (LUT). Developmental engineering for Software Phase III and analysis of test incident resolution efforts.												
FY 2013 Plans: Program management required for the completion of all program documentation, required reviews (Functional Configuration Audit, Product Readiness Review and System Verification Review). Execution of key testing support: LUT and other DT Phase												

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APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 ITEM NOMENCLATURE PE 0604854A: <i>Artillery Systems - EMD</i>		PROJECT 516: <i>PALADIN/FAASV</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2012	FY 2013	FY 2014
<p>II. Continuing Software Phase II maintenance efforts for Corrective Actions, Producibility, and Obsolescence (CPO) functionality. Engineering development for CPO changes required for LRIP and continuance of Software Phase III development. Development of logistical support products required for fielding (manuals, training). The production of 1.5 Sets of PIM for the execution of Full Up Systems Live-Fire (FUSL).</p> <p>FY 2014 Plans: Program management for the finalization of developmental fixes, sub-system qualification, and testing for production. Continuance of engineering development for CPOs and Software Phase III efforts required for LRIP production-continue Software Phase II maintenance efforts for CPO functionality. Executing Software Developmental Qualification Testing (DQT) for Software Phase III. Development of an Objective Underbelly Kit per guidance of the Defense Acquisition Executive (DAE.) Continued development of logistical support products (manuals and training) required for fielding. Execution of First Article Testing (FAT) of production vehicles.</p>					
<p>Title: Test and Evaluation</p> <p align="right">Articles:</p> <p>Description: Funding is provided for the following government effort:</p> <p>FY 2012 Accomplishments: Plan and execute Developmental Testing (DT) including qualification of subsystems, system safety, performance testing, live fire exploitation testing, logistics demonstration, and the first interaction of Soldiers with prototype vehicles (Green DT). Key test events include completion of Phase I and the start of Phase II DT encompassing automotive performance; firing performance; ammunition compatibility; durability; and Reliability, Availability, and Maintainability (RAM) testing to include the first two segments of the Reliability Growth Curve (RGC). Live fire events include coupon testing and initial Ballistic Hull and Turret (BH&T) exploitation testing. Testing also includes initial qualification of Line Replaceable Units (LRUs) and other subsystems, as well as logistics demonstration to develop and validate maintenance procedures and publications.</p> <p>FY 2013 Plans: Plan and execute operational testing and continued DT including qualification of subsystems, system safety, performance testing, live fire exploitation testing, logistics demonstration, and additional Green DT. Key tests include a Limited User Test (LUT) to evaluate suitability and effectiveness in an operational environment, and DT to include completion of the second segment of the RAM Growth Curve (RGC); extreme temperature testing; transportability testing; durability testing of the Carrier, Ammunition, Tracked (CAT) vehicle; automotive and firing performance; and initial testing to verify Corrective Action, Producibility, and Obsolescence (CPO) changes resulting from earlier testing and continued development. Live fire test events include</p>			9.532 0	15.296 0	7.379

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2012	FY 2013
<p>BH&T exploitation testing, fuel cell and Improvised Explosive Device (IED) testing, and behind armor debris testing. Logistics demonstration continues on prototype vehicles to develop maintenance procedures and publications.</p> <p>FY 2014 Plans: Plan and execute continued DT including qualification of subsystems, system safety, performance testing, live fire exploitation testing, and logistics demonstration. Key developmental tests events include continued verification of CPO changes to validate the LRIP production configuration. This testing consists of full load cooling test, software DQT, and automotive and firing performance testing on a production representative vehicle. Key live fire test events include final exploitation testing on a BH&T and production representative vehicle, component ballistic testing, and testing of the Automatic Fire Extinguisher System (AFES). Logistics demonstration is integrated with the test plan as CPO changes are verified.</p>			
<p>Title: Program Management</p> <p align="right">Articles:</p> <p>Description: Funding is provided for the following government effort:</p> <p>FY 2012 Accomplishments: Government System Engineering and Program Management for the total program including: Original Equipment Manufacturer (OEM) management consisting of weekly, monthly, and quarterly program management reviews; contract award processes and execution management, and execution of key program reviews (Delta CDR, IBR). Manages Government Developmental Test and Evaluation program. Management of the program cost, schedule, and performance metrics including making programmatic trade off decisions. Management of Other Governmental Agencies (OGAs) that support the PIM program.</p> <p>FY 2013 Plans: Government System Engineering and Program Management for the total program including: OEM management consisting of weekly, monthly, and quarterly program management reviews; continue contract execution management, and execution of key program reviews (FCA, SVR and PRR). Manages Government Developmental Test and Evaluation program. Management of LRIP contract award process. Complete all program documentation and reviews for the MS C (production) decision in JUN 2013. Management of the program cost, schedule, and performance metrics including making programmatic trade-off decisions. Management of Other Governmental Agencies (OGAs) that support the PIM program.</p> <p>FY 2014 Plans: Government System Engineering and Program Management for the total program including: OEM management consisting of weekly, monthly, and quarterly program management reviews; continue contract execution management for the EMD phase contract until completion of all efforts in FY 16. Manages Government Developmental Test and Evaluation program.</p>		36.855 0	16.890 0
			7.023

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2012	FY 2013	FY 2014	
Management of the program cost, schedule, and performance metrics including making programmatic trade-off decisions. Management of Other Governmental Agencies (OGAs) that support the PIM program.												
Title: Training Articles: Description: Funding is provided for the following government and contractor effort: FY 2013 Plans: PIM Training Development supports the development of Training Aids, Devices, Simulators and Simulations (TADSS) for crew and maintainers, New Equipment Training (NET) and fielding plans. FY 2014 Plans: Continue PIM training developmental efforts that support TADSS for crew and maintainers, NET, and fielding plans.									0.000	6.428 0	5.864	
Title: Data Articles: Description: Funding is provided for the following contractor effort: FY 2013 Plans: Contractor Technical Data Package Updates and Technical Publications FY 2014 Plans: Contractor Technical Data Package Updates and Technical Publications									0.000	6.788 0	3.053	
Accomplishments/Planned Programs Subtotals									120.032	167.797	80.613	
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost	
• Paladin/FAASV: Paladin/FAASV Mod	46.876	216.442	4.769		4.769	49.333	43.788			3,566.716	3,927.924	
• Paladin Integrated Management (PIM): PIM Mod In Service			260.177		260.177	302.299	297.624	471.658	614.821	0.000	1,946.579	
Remarks												

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<p><u>D. Acquisition Strategy</u></p> <p>The PIM Program was initiated on 16 August 07 under the BAE Systems, Inc., System Technical Support (STS) Contract W56HZV-07-C-0096. Subsequent work directives were awarded under BAE STS contract W56HZV-07-C-0256 to further define the configuration of the PIM vehicles. On 14 August 2009, a Research, Development, Test and Evaluation (RDT&E) Contract W56HZV-09-C-0550 was awarded to BAE Systems Inc. for the Prototype Development and Fabrication of 7 prototype vehicles (5 PIM Self Propelled Howitzer Systems (SPHS) and 2 PIM Carrier Ammunition Tracked (CAT) vehicles). A Comprehensive Contract Modification (CCM) award to the RDT&E contract was accomplished on 6 Jan 2012. This modification allows for the completion of the Engineering and Manufacturing Development (EMD) Phase and transfers the system responsibility for the program from the Government to BAE Systems Inc. Low-Rate Initial Production (LRIP) contract is Fixed Price Incentive Firm Target (FPIF) with a period of performance running from AUG 2013 through DEC 2018. The LRIP contract provides for four LRIP years with the initial base year including 19 SPHs and 18 CATs and the remaining three option years with 18 Sets each (one each SPH and CAT) of PIM vehicles. The Full Rate Production (FRP) contract is planned as a FPIF contract that converts to a Firm Fixed Price (FFP) contract after the second year of FRP. The FRP contract provides for the remaining PIM vehicles to fulfill the requirement up to the Army Acquisition Objective of 580 sets.</p> <p><u>E. Performance Metrics</u></p> <p>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.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Army												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 5: <i>System Development & Demonstration (SDD)</i>						R-1 ITEM NOMENCLATURE PE 0604854A: <i>Artillery Systems - EMD</i>						PROJECT 516: <i>PALADIN/FAASV</i>			
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PMO Support	MIPR	PM Paladin/FAASV:Picatinny, NJ/TACOM	41.016	36.855	Dec 2011	16.890	Dec 2012	7.023	Dec 2013	-		7.023	8.959	110.743	Continuing
Subtotal			41.016	36.855		16.890		7.023		0.000		7.023	8.959	110.743	
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Training	SS/CPIF	BAE Systems:York, PA	0.000	-		6.428	Dec 2012	5.864	Dec 2013	-		5.864	Continuing	Continuing	Continuing
Data	SS/CPIF	BAE:York, PA	0.000	-		6.788	Dec 2012	3.053	Dec 2013	-		3.053	Continuing	Continuing	Continuing
Small Business Innovative Research/Small Business Technology Transfer Program	Various	TACOM:Warren, MI	3.668	-		-		-		-		-	Continuing	Continuing	Continuing
PIM Development	SS/CPIF	BAE, Systems:York, PA	313.537	73.645	Feb 2012	122.395	Jun 2013	57.294	Jun 2014	-		57.294	Continuing	Continuing	Continuing
Subtotal			317.205	73.645		135.611		66.211		0.000		66.211			
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Level Testing	Various	Various OGAs:Various	29.017	9.532	Dec 2011	15.296	Dec 2012	7.379	Dec 2013	-		7.379	69.744	130.968	Continuing
Subtotal			29.017	9.532		15.296		7.379		0.000		7.379	69.744	130.968	
Project Cost Totals			387.238	120.032		167.797		80.613		0.000		80.613			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Army							DATE: April 2013			
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	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks										

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Army			DATE: April 2013		
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			PROJECT 516: <i>PALADIN/FAASV</i>		

	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	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
Delta Critical Design Review																												
Milestone C																												
Low Rate Initial Production Contract																												
Low Rate Initial Production Deliveries																												
Full Up System Live Fire Test																												
IOTE																												
Full Rate Production Decision																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Army			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604854A: <i>Artillery Systems - EMD</i>	PROJECT 516: <i>PALADIN/FAASV</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Delta Critical Design Review	3	2012	3	2012
Milestone C	3	2013	3	2013
Low Rate Initial Production Contract	3	2013	4	2018
Low Rate Initial Production Deliveries	2	2015	4	2018
Full Up System Live Fire Test	3	2015	4	2016
IOTE	4	2016	4	2016
Full Rate Production Decision	2	2017	2	2017