Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-466

Paladin Integrated Management (PIM)

As of December 31, 2012

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Program Information

Program Name

Paladin Integrated Management (PIM)

DoD Component

Army

Responsible Office

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References

SAR Baseline (Development Estimate)

FY 2013 President's Budget, dated February 13, 2012

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated March 30, 2012

Mission and Description

The M109 Family of Vehicles (FOV) 155mm / 39 caliber Self-Propelled Howitzer (SPH) provides the primary indirect fire support for full spectrum operations. It has the ability to support Armored Brigade Combat Teams (ABCTs), Infantry Brigade Combat Teams (IBCTs), and Stryker Brigade Combat Teams (SBCTs). The M109 FOV Carrier Ammunition Tracked (CAT) provides armored ammunition supply support to the SPH operating in support of full spectrum operations.

The M109A6 Paladin and the M992A2 Field Artillery Ammunition Support Vehicle (FAASV) are the current fielded versions of the Army's SPH and CAT. The Paladin/FAASV Integrated Management (PIM) SPH and CAT will replace the M109A6 Paladin and M992A2 FAASV.

PIM Objectives:

The PIM program allows growth for improved force protection and technology insertion. PIM buys-back lost performance in the M109 Family of Vehicles by addressing size, weight, and power issues. The program helps to ensure greater vehicle supportability, maintainability, and interoperability by leveraging fleet commonality for key components, replacing aging and obsolete components, and leveraging Bradley and Non-Line-of-Sight Cannon (NLOS-C) technology.

Executive Summary

Paladin/Field Artillery Ammunition Support Vehicle (FAASV) Integrated Management (PIM) is a pre-Milestone C program in the Engineering and Manufacturing Development phase (EMD). PIM fielding will support the Army Force Generation (ARFORGEN) model. The Joint Requirements Oversight Council (JROC)-approved Capabilities Production Document (CPD) Increment 1, Revision 2 was signed August 19, 2012. The latest program Acquisition Decision Memorandum (ADM) was signed August 24, 2012 and directed the Army to design, develop, and test an underbelly kit meeting objective requirements for force protection and survivability. Continuing work on the Comprehensive Contract Modification (CCM), awarded January 6, 2012, is focused on Corrective action, Producibility, and Obsolescence (CPO) changes that will be implemented in the production configuration. Milestone C is scheduled for third quarter FY 2013, followed by award of a Low Rate Initial Production (LRIP) contract. The Product Manager Self-Propelled Howitzer Systems (PM-SPHS) intends to award a four-year LRIP contract for 145 total vehicles (142 WTCV funded, 3 RDT&E funded for full-up system level live fire testing).

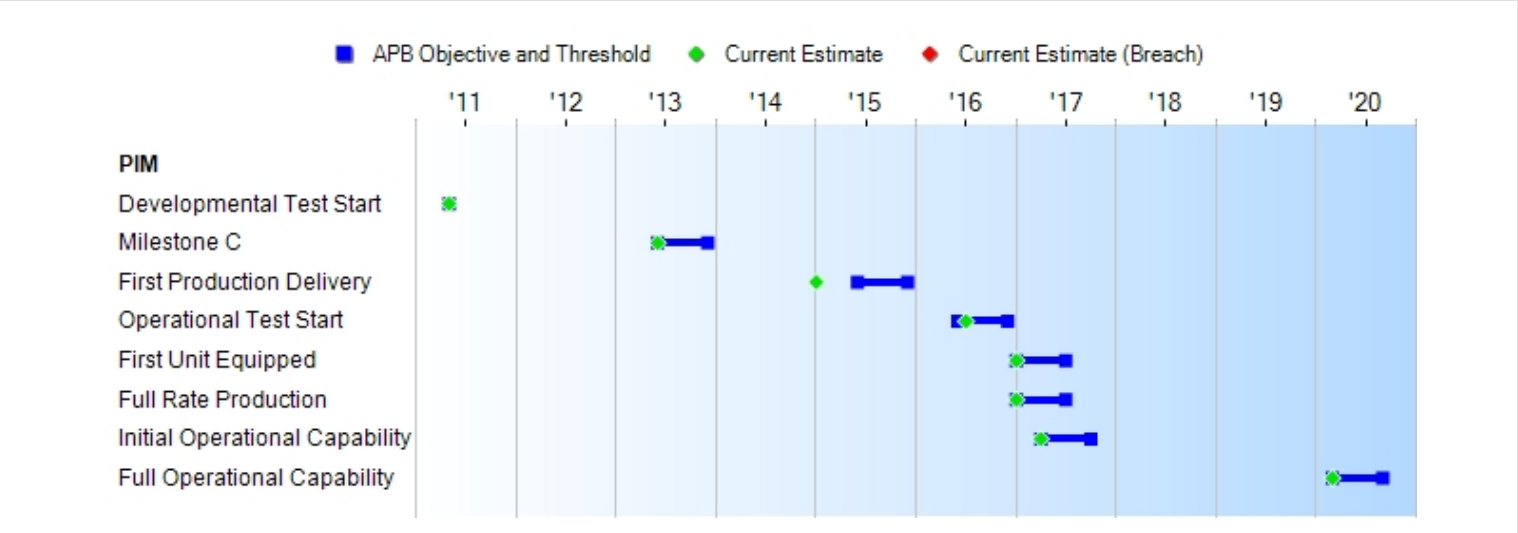
There are no significant software-related issues with this program at this time.

Threshold Breaches

APB Breaches		
Schedule		☐
Performance		☐
Cost	RDT&E	☐
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
O&S Cost		☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Schedule



Milestones	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Current Estimate	
Developmental Test Start	MAY 2011	MAY 2011	MAY 2011	MAY 2011	
Milestone C	JUN 2013	JUN 2013	DEC 2013	JUN 2013	
First Production Delivery	JUN 2015	JUN 2015	DEC 2015	JAN 2015	(Ch-1)
Operational Test Start	JUN 2016	JUN 2016	DEC 2016	JUL 2016	(Ch-2)
First Unit Equipped	JAN 2017	JAN 2017	JUL 2017	JAN 2017	
Full Rate Production	JAN 2017	JAN 2017	JUL 2017	JAN 2017	
Initial Operational Capability	APR 2017	APR 2017	OCT 2017	APR 2017	
Full Operational Capability	MAR 2020	MAR 2020	SEP 2020	MAR 2020	

Change Explanations

(Ch-1) First Production Delivery changed from June 2015 to January 2015 due to reduced production lead time estimate

(Ch-2) Operational Test Start changed from June 2016 to July 2016 to reflect updated test schedule

Performance

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
KPP 1: Net-Ready	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	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	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	Threshold achieved.	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 Information Enterprise Architecture (DoD IEA), excepting tactical and non-IP communicat-ions. 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-I and implementati on guidance of GESPs, necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) Information assurance requirements	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 communicat-ions. 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-I and implementati on 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, authenticat-ion,	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 communicat-ions. 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-I and implementati on guidance of GESPs necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) IA requirements including availability, authenticat-ion, confidentiality		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 Information Enterprise Architecture (DoD IEA), excepting tactical and non-IP communicat-ions. 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-I and implementati on guidance of GESPs, necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) Information assurance requirements

	including availability, integrity, authenticat-ion, confidential-ity, and non-repudiation, and issuance of an ATO by the DAA, and 5) Supportabil-ity requirements to include SAASM, Spectrum and JTRS require-ments.	confidentiality, and non-repudiation, and issuance of an ATO by the DAA, and 5) Supportabil-ity requirements to include SAASM, Spectrum and JTRS require-ments.	, and integrity, non-repudiation, and issuance of an IATO or ATO by the DAA, and 5) Supportabil-ity requirements to include SAASM, Spectrum and JTRS require-ments.		including availability, integrity, authenticat-ion, confidential-ity, and non-repudiation, and issuance of an ATO by the DAA, and 5) Supportabil-ity requirements to include SAASM, Spectrum and JTRS requirements	
KPP 4: Digital Fire Control System (DFCS)	Receive, process, and transmit technical fire control data from/to AFATDS to independent-ly compute and execute precision fire missions. Must be able to host current and future software upgrades.	Receive, process, and transmit technical fire control data from/to AFATDS to independent-ly compute and execute precision fire missions. Must be able to host current and future software upgrades.	Receive, process, compute and transmit technical fire control data from/to AFATDS to execute fire missions. Must be able to host current and future software upgrades.	Threshold Achieved.	Receive, process, compute and transmit technical fire control data from/to AFATDS to execute fire missions. Must be able to host current and future software upgrades.	(Ch-1)
KPP 5: Rate of Fire	For un-guided projectiles, max rate of fire 6 rpm for 3 minutes with a sustained rate of fire of 1 rpm until limited by	For un-guided projectiles, max rate of fire 6 rpm for 3 minutes with a sustained rate of fire of 1 rpm until limited by	For un-guided projectiles, max rate of fire 4 rpm for 3 minutes with a sustained rate of fire of 1 rpm until limited by	Threshold achieved.	For un-guided projectiles, max rate of fire 4 rpm for 3 minutes with a sustained rate of fire of 1 rpm until limited by	(Ch-1)

	tube temperature sensor. For guided munitions, fire 3 rpm.	tube temperature sensor. For guided munitions, fire 3 rpm.	tube temperature sensor. For guided munitions, fire 1 rpm.		tube temperature sensor. For guided munitions, fire 1 rpm.	
KPP 6: Range	Minimum indirect fire range using the M107 projectile and MACS propellant shall be no more than 4 km. Maximum range when firing the M795 projectile and MACS propellant shall be no less than 22 km. Maximum range when firing assisted (i.e. rocket assisted) projectile M549A1 shall be no less than 40 km, IAW ICAO standard conditions.	Minimum indirect fire range using the M107 projectile and MACS propellant shall be no more than 4 km. Maximum range when firing the M795 projectile and MACS propellant shall be no less than 22 km. Maximum range when firing assisted (i.e. rocket assisted) projectile M549A1 shall be no less than 40 km, IAW ICAO standard conditions.	Minimum indirect fire range using the M107 projectile and MACS propellant shall be no more than 4 km. Maximum range when firing the M795 projectile and MACS propellant shall be no less than 22 km. Maximum range when firing assisted (i.e. rocket assisted) projectile M549A1 shall be no less than 30 km, IAW ICAO standard conditions.	Min range = Threshold Achieved; Max range unassisted = Threshold Achieved; Max range assisted = Pending Excalibur testing but expected to be met since unassisted projectile met the requirement.	Minimum indirect fire range using the M107 projectile and MACS propellant is less than 4 km. Maximum range when firing the M795 projectile and MACS propellant is approaching 30 km. Maximum range when firing assisted (i.e. rocket assisted) projectile M549A1 shall be no less than 30 km, IAW ICAO standard conditions.	(Ch-2)
KPP 7: Self-Propelled Howitzer Reliability	Will have a reliability of 84% probability of completing an 18-hour combat mission.	Will have a reliability of 84% probability of completing an 18-hour combat mission.	Will have a reliability of 75% probability of completing an 18-hour combat mission.	Threshold Achieved.	Will have a reliability of 75% probability of completing an 18-hour combat mission.	(Ch-1)
KPP 8: Self-Propelled Howitzer Availability (Materiel	The Howitzer shall demonstrate	The Howitzer shall demonstrate	The Howitzer shall demonstrate	To be determined at IOT.	The Howitzer shall demonstrate	(Ch-1)

Availability/Operational Availability)	a Am of 83% and an Ao measured at the Fires Battalion level of 95%	a Materiel Availability (Am) of 83% and an Operational Availability (Ao) measured at the Fires Battalion level of 95%	a Materiel Availability (Am) of 81% and an Operational Availability (Ao) measured at the Fires Battalion level of 78%		a Materiel Availability (Am) of 81% and an Operational Availability (Ao) measured at the Fires Battalion level of 78%	
KPP 9: Carrier Ammunition Tracked Reliability	Will have a reliability of 90% probability of completing an 18-hour combat mission.	Will have a reliability of 90% probability of completing an 18-hour combat mission.	Will have a reliability of 84% probability of completing an 18-hour combat mission.	Threshold achieved.	Will have a reliability of 84% probability of completing an 18-hour combat mission.	(Ch-1)
KPP 10: Carrier Ammunition Tracked Availability (Materiel Availability / Operational Availability)	The CAT shall demonstrate a Am of 72% and an Ao measured at the Fires Battalion level of 95%	The CAT shall demonstrate a Materiel Availability (Am) of 72% and an Operational Availability (Ao) measured at the Fires Battalion level of 95%	The CAT shall demonstrate a Materiel Availability (Am) of 66% and an Operational Availability (Ao) measured at the Fires Battalion level of 85%	To be determined at IOT.	The CAT shall demonstrate a Materiel Availability (Am) of 66% and an Operational Availability (Ao) measured at the Fires Battalion level of 85%	(Ch-1)

Requirements Source: Capability Production Document (CPD) dated December 19, 2011

Acronyms And Abbreviations

AFATDS - Advanced Field Artillery Tactical Data System
Am - Materiel Availability
Ao - Operational Availability
ATO - Approval to Operate
CAT - Carrier Ammunition Tracked
DAA - Designated Accrediting Authority
DOD - Department of Defense
DOD IEA - Department of Defense Information Enterprise Architecture
DODAF - Department of Defense Architecture Framework
GESP - GIG Enterprise Service Profile
GIG - Global Information Grid
IATO - Interim Approval to Operate
IAW - In Accordance With
ICAO - International Civil Aviation Organization
IOT - Initial Operational Test
IP - Information Processing
IT - Information Technology
JTRS - Joint Tactical Radio System
KPP - Key Performance Parameter
MACS - Modular Artillery Charge System
rpm - Rounds per Minute
SAASM - Selective Availability Anti-Spoofing Module
TV - Technical View

Change Explanations

(Ch-1) The Program Manager is currently estimating the Threshold will be achieved for KPPs 6, 8 and 10. The Threshold is achieved for KPPs 1, 4, 5, 7 and 9.

(Ch-2) PM status update

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

Memo

Capabilities Production Document (CPD) approved by the Joint Requirements Oversight Council (JROC) December 19, 2011.

Track To Budget

RDT&E			
APPN 2040	BA 05	PE 0604854A	(Army)
	Project 516	Artillery Systems - Engineering Manufacturing and Development	

Procurement			
APPN 2033	BA 01	PE 0210600A	(Army)
	ICN 2073GZ0410	Paladin PIM Mod In Service	
	Standard Study Number GZ0410		

Cost and Funding

Cost Summary

Total Acquisition Cost and Quantity

	BY2011 $M			BY2011 $M	TY $M		
Appropriation	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Dev Est	Current APB Development Objective	Current Estimate
RDT&E	1000.9	1000.9	1101.0	997.1	1041.7	1041.7	1048.3
Procurement	5640.1	5640.1	6204.1	5546.1	6785.4	6785.4	6855.9
Flyaway	5259.9	--	--	5172.4	6320.1	--	6384.9
Recurring	5157.1	--	--	5071.6	6206.3	--	6271.1
Non Recurring	102.8	--	--	100.8	113.8	--	113.8
Support	380.2	--	--	373.7	465.3	--	471.0
Other Support	301.2	--	--	296.1	370.6	--	375.4
Initial Spares	79.0	--	--	77.6	94.7	--	95.6
MILCON	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
Total	6641.0	6641.0	N/A	6543.2	7827.1	7827.1	7904.2

Confidence Level for Current APB Cost 50% - The PIM Army Cost Position (ACP), approved December 2, 2011 by Assistant Secretary of the Army for Financial Management & Comptroller (ASA FM&C) was used to establish the Acquisition Program Baseline (APB). Cost are reflected at the 50% Confidence Level in accordance with Army Cost Guidance, AR 11-18.

It is difficult to calculate mathematically the precise confidence levels associated with life cycle cost estimates prepared for Major Defense Acquisition Programs (MDAPs). 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.

Quantity	SAR Baseline Dev Est	Current APB Development	Current Estimate
RDT&E	2	2	2
Procurement	580	580	580
Total	582	582	582

A quantity of 2 Paladin/Field Artillery Ammunition Supply Vehicle (FAASV) Integrated Management (PIM) sets is input for the Research Development Test & Evaluation (RDT&E) phase quantity. One and a half (1.5) PIM sets are RDT&E-funded Low Rate Initial Production (LRIP) assets to be procured in FY2013 for Full Up System Live Fire testing. The remaining half set (0.5) represents a prototype Self-Propelled Howitzer (SPH) 5A considered to be production-representative for Program Acquisition Unit Cost (PAUC) calculation purposes.

The procurement quantity represents 580 PIM Sets (1 SPH and 1 Carrier Ammunition Tracked (CAT)).

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2014 President's Budget / December 2012 SAR (TY$ M)

Appropriation	Prior	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	To Complete	Total
RDT&E	541.1	167.8	80.6	92.8	130.8	28.6	6.6	0.0	1048.3
Procurement	0.0	206.1	260.2	302.3	297.6	471.7	614.8	4703.2	6855.9
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 2014 Total	541.1	373.9	340.8	395.1	428.4	500.3	621.4	4703.2	7904.2
PB 2013 Total	541.1	373.9	381.5	370.7	412.1	500.3	620.4	4699.3	7899.3
Delta	0.0	0.0	-40.7	24.4	16.3	0.0	1.0	3.9	4.9

Program funding and production quantities listed in this SAR are consistent with the FY 2014 President's Budget (PB). The FY 2014 PB did not reflect the enacted DoD appropriation for FY 2013, nor sequestration; it reflected the President's requested amounts for FY 2013.

Quantity	Undistributed	Prior	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	To Complete	Total
Development	2	0	0	0	0	0	0	0	0	2
Production	0	0	17	18	18	18	36	60	413	580
PB 2014 Total	2	0	17	18	18	18	36	60	413	582
PB 2013 Total	2	0	17	18	18	18	36	60	413	582
Delta	0	0	0	0	0	0	0	0	0	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding TY$
2040 | RDT&E | Research, Development, Test, and Evaluation, Army

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2007	--	--	--	--	--	--	1.6
2008	--	--	--	--	--	--	34.8
2009	--	--	--	--	--	--	61.0
2010	--	--	--	--	--	--	223.8
2011	--	--	--	--	--	--	99.9
2012	--	--	--	--	--	--	120.0
2013	--	--	--	--	--	--	167.8
2014	--	--	--	--	--	--	80.6
2015	--	--	--	--	--	--	92.8
2016	--	--	--	--	--	--	130.8
2017	--	--	--	--	--	--	28.6
2018	--	--	--	--	--	--	6.6
Subtotal	**2**	**--**	**--**	**--**	**--**	**--**	**1048.3**

Annual Funding BY$
2040 | RDT&E | Research, Development, Test, and Evaluation, Army

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2011 $M	Non End Item Recurring Flyaway BY 2011 $M	Non Recurring Flyaway BY 2011 $M	Total Flyaway BY 2011 $M	Total Support BY 2011 $M	Total Program BY 2011 $M
2007	--	--	--	--	--	--	1.7
2008	--	--	--	--	--	--	35.8
2009	--	--	--	--	--	--	62.0
2010	--	--	--	--	--	--	224.0
2011	--	--	--	--	--	--	98.0
2012	--	--	--	--	--	--	115.4
2013	--	--	--	--	--	--	157.7
2014	--	--	--	--	--	--	73.7
2015	--	--	--	--	--	--	83.3
2016	--	--	--	--	--	--	115.2
2017	--	--	--	--	--	--	24.7
2018	--	--	--	--	--	--	5.6
Subtotal	**2**	**--**	**--**	**--**	**--**	**--**	**997.1**

Annual Funding TY$
2033 | Procurement | Procurement of Weapons and Tracked Combat Vehicles, Army

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2013	17	161.1	12.9	23.7	197.7	8.4	206.1
2014	18	162.5	59.3	23.9	245.7	14.5	260.2
2015	18	161.5	98.3	23.7	283.5	18.8	302.3
2016	18	163.7	93.4	20.0	277.1	20.5	297.6
2017	36	342.5	97.2	11.1	450.8	20.9	471.7
2018	60	474.3	111.4	1.5	587.2	27.6	614.8
2019	60	470.1	107.7	1.5	579.3	33.1	612.4
2020	60	457.0	122.3	1.4	580.7	32.8	613.5
2021	60	457.7	123.9	1.4	583.0	45.1	628.1
2022	60	462.5	136.3	1.4	600.2	44.1	644.3
2023	60	467.8	136.5	1.4	605.7	46.8	652.5
2024	58	458.3	140.7	1.4	600.4	41.5	641.9
2025	55	440.8	121.2	1.4	563.4	43.9	607.3
2026	--	0.9	115.0	--	115.9	34.5	150.4
2027	--	0.8	95.2	--	96.0	27.9	123.9
2028	--	0.8	17.5	--	18.3	10.6	28.9
Subtotal	**580**	**4682.3**	**1588.8**	**113.8**	**6384.9**	**471.0**	**6855.9**

Annual Funding BY$
2033 | Procurement | Procurement of Weapons and Tracked Combat Vehicles, Army

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2011 $M	Non End Item Recurring Flyaway BY 2011 $M	Non Recurring Flyaway BY 2011 $M	Total Flyaway BY 2011 $M	Total Support BY 2011 $M	Total Program BY 2011 $M
2013	17	148.8	11.9	21.9	182.6	7.8	190.4
2014	18	147.9	54.0	21.7	223.6	13.2	236.8
2015	18	144.2	87.8	21.2	253.2	16.8	270.0
2016	18	143.5	81.8	17.5	242.8	18.0	260.8
2017	36	294.6	83.6	9.5	387.7	18.0	405.7
2018	60	400.3	94.0	1.3	495.6	23.3	518.9
2019	60	389.4	89.2	1.2	479.8	27.4	507.2
2020	60	371.5	99.5	1.1	472.1	26.6	498.7
2021	60	365.1	98.8	1.1	465.0	36.0	501.0
2022	60	362.0	106.8	1.1	469.9	34.5	504.4
2023	60	359.4	104.8	1.1	465.3	36.0	501.3
2024	58	345.5	106.0	1.1	452.6	31.3	483.9
2025	55	326.1	89.7	1.0	416.8	32.5	449.3
2026	--	0.7	83.5	--	84.2	25.0	109.2
2027	--	0.6	67.8	--	68.4	19.9	88.3
2028	--	0.6	12.2	--	12.8	7.4	20.2
Subtotal	**580**	**3800.2**	**1271.4**	**100.8**	**5172.4**	**373.7**	**5546.1**

Cost Quantity Information
2033 | Procurement | Procurement of Weapons and Tracked Combat Vehicles, Army

Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned with Quantity) BY 2011 $M
2013	17	149.0
2014	18	148.0
2015	18	144.4
2016	18	143.7
2017	36	294.9
2018	60	400.7
2019	60	389.3
2020	60	371.3
2021	60	364.6
2022	60	361.6
2023	60	359.2
2024	58	345.1
2025	55	328.4
2026	--	--
2027	--	--
2028	--	--
Subtotal	**580**	**3800.2**

Low Rate Initial Production

The PIM program is pre-Milestone C and does not have an LRIP decision or an approved LRIP quantity. Per the PIM Acquistion Strategy approved in October 2012, PM Self-Propelled Howitzer Systems anticipates requesting approval for LRIP of PIM vehicles in FY13. 145 LRIP vehicles (72.5 sets) are planned to be procured from FY13 - FY16.

Foreign Military Sales

None

Nuclear Cost

None

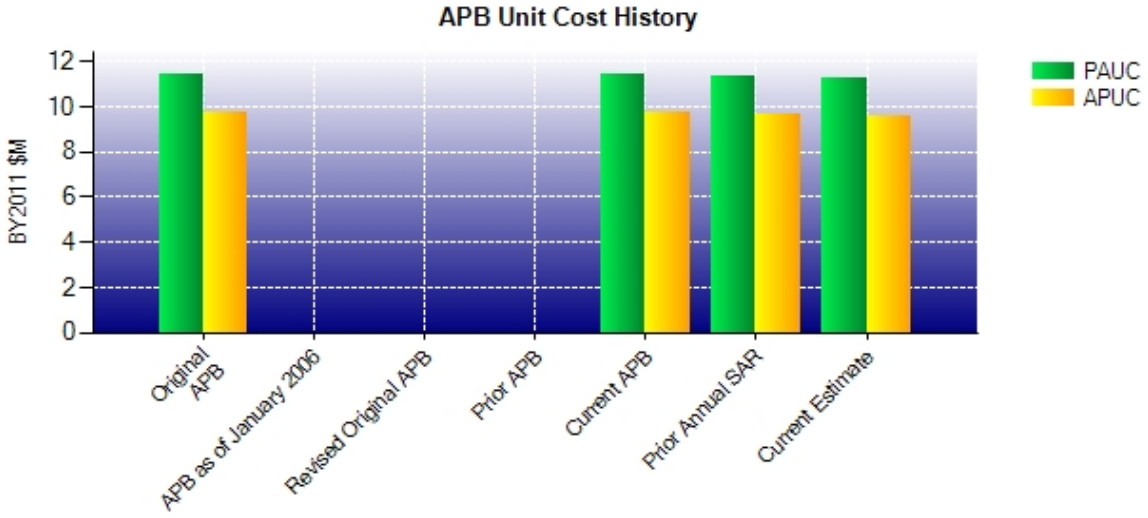
Unit Cost

Unit Cost Report

	BY2011 $M	BY2011 $M	
Unit Cost	**Current UCR Baseline (MAR 2012 APB)**	**Current Estimate (DEC 2012 SAR)**	**BY % Change**
Program Acquisition Unit Cost (PAUC)			
Cost	6641.0	6543.2	
Quantity	582	582	
Unit Cost	11.411	11.243	-1.47
Average Procurement Unit Cost (APUC)			
Cost	5640.1	5546.1	
Quantity	580	580	
Unit Cost	9.724	9.562	-1.67

	BY2011 $M	BY2011 $M	
Unit Cost	**Original UCR Baseline (MAR 2012 APB)**	**Current Estimate (DEC 2012 SAR)**	**BY % Change**
Program Acquisition Unit Cost (PAUC)			
Cost	6641.0	6543.2	
Quantity	582	582	
Unit Cost	11.411	11.243	-1.47
Average Procurement Unit Cost (APUC)			
Cost	5640.1	5546.1	
Quantity	580	580	
Unit Cost	9.724	9.562	-1.67

Unit Cost History



		BY2011 $M		TY $M	
	Date	PAUC	APUC	PAUC	APUC
Original APB	MAR 2012	11.411	9.724	13.449	11.699
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	MAR 2012	11.411	9.724	13.449	11.699
Prior Annual SAR	DEC 2011	11.392	9.706	13.573	11.820
Current Estimate	DEC 2012	11.243	9.562	13.581	11.821

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)

Initial PAUC Dev Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
13.449	0.346	0.000	0.000	0.000	-0.200	0.000	-0.014	0.132	13.581

Current SAR Baseline to Current Estimate (TY $M)

Initial APUC Dev Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
11.699	0.326	0.000	0.000	0.000	-0.190	0.000	-0.014	0.122	11.821

SAR Baseline History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	N/A	N/A	N/A
Milestone C	N/A	JUN 2013	N/A	JUN 2013
IOC	N/A	APR 2017	N/A	APR 2017
Total Cost (TY $M)	N/A	7827.1	N/A	7904.2
Total Quantity	N/A	582	N/A	582
Prog. Acq. Unit Cost (PAUC)	N/A	13.449	N/A	13.581

Cost Variance

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Dev Est)	1041.7	6785.4	--	7827.1
Previous Changes				
Economic	+5.8	+84.0	--	+89.8
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-3.8	-13.3	--	-17.1
Other	--	--	--	--
Support	--	-0.5	--	-0.5
Subtotal	+2.0	+70.2	--	+72.2
Current Changes				
Economic	+7.1	+104.9	--	+112.0
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-2.5	-96.9	--	-99.4
Other	--	--	--	--
Support	--	-7.7	--	-7.7
Subtotal	+4.6	+0.3	--	+4.9
Total Changes	+6.6	+70.5	--	+77.1
CE - Cost Variance	1048.3	6855.9	--	7904.2
CE - Cost & Funding	1048.3	6855.9	--	7904.2

Summary Base Year 2011 $M				
	RDT&E	**Proc**	**MILCON**	**Total**
SAR Baseline (Dev Est)	1000.9	5640.1	--	6641.0
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-0.4	-9.7	--	-10.1
Other	--	--	--	--
Support	--	-0.7	--	-0.7
Subtotal	-0.4	-10.4	--	-10.8
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-3.4	-77.8	--	-81.2
Other	--	--	--	--
Support	--	-5.8	--	-5.8
Subtotal	-3.4	-83.6	--	-87.0
Total Changes	-3.8	-94.0	--	-97.8
CE - Cost Variance	997.1	5546.1	--	6543.2
CE - Cost & Funding	997.1	5546.1	--	6543.2

Previous Estimate: December 2011

RDT&E	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+7.1
Adjustment for current and prior escalation. (Estimating)	-1.3	-1.4
Revised estimate to reflect application of new out year escalation indices. (Estimating)	-1.2	-1.1
Adjustment to meet budgetary controls. (Estimating)	-0.9	0.0
RDT&E Subtotal	-3.4	+4.6

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+104.9
Adjustment for current and prior escalation. (Estimating)	-2.1	-2.3
Revised estimate to reflect application of new out year escalation indices. (Estimating)	-75.7	-94.6
Adjustment for current and prior escalation. (Support)	-0.1	-0.1
Decrease in Other Support. (Support)	-4.7	-6.2
Decrease in Initial Spares. (Support)	-1.0	-1.4
Procurement Subtotal	-83.6	+0.3

Contracts

Appropriation: RDT&E	
Contract Name	**Base EMD Contract**
Contractor	BAE Systems Land & Armament L.P.
Contractor Location	1100 Bairs Road York, PA 17409
Contract Number, Type	W56HZV-09-C-0550, CPFF
Award Date	September 14, 2009
Definitization Date	September 14, 2009

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
63.9	N/A	N/A	206.0	N/A	N/A	206.0	206.0

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/22/2013)	+1.1	-0.9
Previous Cumulative Variances	-33.4	-9.1
Net Change	+34.5	+8.2

Cost And Schedule Variance Explanations

The favorable net change in the cost variance is due to a June 2012 rebaseline of the Base Engineering Manufacturing and Development (EMD) contract. A Single Point Adjustment (SPA) was established by setting Budgeted Cost for Work Scheduled (BCWS) and Budgeted Cost for Work Performed (BCWP) equal to Actual Cost of Work Performed (ACWP) for the completed effort and revised cost and schedule baselines were established from May 2012 forward to the end of the period of performance. The $1.1M cumulative cost variance is mainly due to rate adjustments.

The favorable net change in the schedule variance is due to a June 2012 rebaseline of the Base Engineering Manufacturing and Development (EMD) contract. A Single Point Adjustment (SPA) was established by setting Budgeted Cost for Work Scheduled (BCWS) and Budgeted Cost for Work Performed (BCWP) equal to Actual Cost of Work Performed (ACWP) for the completed effort and revised cost and schedule baselines were established from May 2012 forward to the end of the period of performance. The -$0.9M cumulative schedule variance is mainly due to a delay in the Tier-2 Armor Kit development effort.

Contract Comments

This contract is more than 90% complete; therefore, this is the final report for this contract.

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the following reasons. The PIM program was initially a follower of Non-Line-of-Sight Cannon (NLOS-C) regarding technological improvements. Once NLOS-C was canceled, PIM became an Army priority program and took the lead role for certain technological advancements. Additionally, changes in Force Protection / Survivability requirements resulted in a revised Capabilities Production Document and drove additional contract requirements. Finally, PIM transitioned from an Acquisition Category (ACAT) II to an ACAT ID program resulting in additonal documentation and administration costs.

5 Self-Propelled Howitzers (SPH) and 2 Carrier Ammunition Tracked (CAT) prototypes were acquired under the Base Engineering and Manufacturing Development Contract.

Appropriation: RDT&E

Contract Name	**Comprehensive Contract Modification (CCM)**
Contractor	BAE Systems Land & Armaments L.P.
Contractor Location	1100 Bairs Road York, PA 17408
Contract Number, Type	W56HZV-09-C-0550/38, CPIF
Award Date	January 06, 2012
Definitization Date	January 06, 2012

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
311.6	N/A	N/A	313.1	N/A	N/A	313.1	313.1

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/22/2013)	+15.5	-3.3
Previous Cumulative Variances	0.0	0.0
Net Change	+15.5	-3.3

Cost And Schedule Variance Explanations

The favorable net change in the cost variance is due to the less than planned effort required to complete scheduled tasks and adjustments to rates.

The unfavorable net change in the schedule variance is due to delays in Fire Control material, Systems Engineering support, Interdivisional Work Order (IWO) design activities in Vetronics, and additional work required to complete planned efforts for Power Package/Drive Train. The magnitude of schedule variance is expected to reduce and the cumulative Schedule Performance Index (SPI) has improved to 0.970.

Contract Comments

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to

a contract modification.

Deliveries and Expenditures

Deliveries To Date	Plan To Date	Actual To Date	Total Quantity	Percent Delivered
Development	0	0	2	0.00%
Production	0	0	580	0.00%
Total Program Quantities Delivered	0	0	582	0.00%

Expenditures and Appropriations (TY $M)			
Total Acquisition Cost	7904.2	Years Appropriated	7
Expenditures To Date	615.6	Percent Years Appropriated	31.82%
Percent Expended	7.79%	Appropriated to Date	915.0
Total Funding Years	22	Percent Appropriated	11.58%

The above data is current as of 3/31/2013.

Expenditure data reflects program obligations.

Operating and Support Cost

PIM

Assumptions and Ground Rules

Cost Estimate Reference:

Total Operating and Support (O&S) costs reported are per the December 2, 2011 PIM Army Cost Position (ACP) and include 4.0 Military Personnel and 5.0 Operations, Maintenance Army (OMA), 2.11 Training Ammunition, and 2.13 Modifications.

Sustainment Strategy:

The PIM product support concept will consist of Operational/Field and Sustainment support. Operation/Field support will be through the use of Brigade Support Battalions using the Fires Forward Support Company and the Supply Support Activity. Maintenance support will consist of the Army two-level maintenance strategy:

- Field Maintenance - Remove, replace, or repair, in field
- Sustainment Maintenance - Repair and return to supply

PIM O&S costs are based on the Army Acquisition Objective (AAO) of 580 fielded PIM sets and an operating life of 20 years.

Antecedent Information:

O&S costs for the M109A6 Paladin / M992A2 Field Artillery Ammunition Support Vehicle (FAASV) (antecedent system) are based on various sources including the Operating and Support Management Information System (OSMIS), the Army Manpower Allocation Requirements Criteria (MARC) Database, and historical actuals from the program office. Operational Tempos (OPTEMPOs) are based on the G-3/5/7 Forces Command (FORSCOM) model.

For the M109A6 Paladin and M992A2 FAASV, the BY11$ Total O&S Costs reflect a rough order of magnitude estimate based on 658 sets and vehicle operating life of 20 years.

Unitized O&S Costs BY2011 $K		
Cost Element	**PIM Average Annual Cost Per Set**	**M109A6 Paladin / M992A2 FAASV (Antecedent) Average Annual Cost Per Set**
Unit-Level Manpower	389.0	343.0
Unit Operations	161.0	142.0
Maintenance	150.0	105.0
Sustaining Support	86.0	76.0
Continuing System Improvements	78.0	45.0
Indirect Support	12.0	11.0
Other	0.0	0.0
Total	876.0	722.0

Unitized Cost Comments:

Operating and Support (O&S) Costs are presented as the Average Annual Cost Per Set. A set is comprised of one self-propelled howitzer and one ammunition carrier. The source of the PIM O&S information is the December 2, 2011 approved PIM Army Cost Position (ACP).

For PIM unitized cost calculations 580 sets are used, while 658 sets are used for M109A6 Paladin and M99A2 FAASV. Although the unitized O&S costs appear higher for PIM in all elements, the higher costs may not be representative of an increased cost to the Army. For example, PIM does not change the manpower requirements from M109A6 Paladin and M99A2 FAASV. However, dividing by the lower denominator (580 sets) causes a higher unitized cost for PIM.

	Total O&S Cost $M			
	Current Development APB Objective/Threshold		Current Estimate	
	PIM		PIM	M109A6 Paladin / M992A2 FAASV (Antecedent)
Base Year	10222.1	11244.3	10160.5	9488.5
Then Year	16686.8	N/A	14878.3	N/A

Total O&S Costs Comments:

The PIM O&S Current Estimate is per the December 2, 2011 PIM ACP and includes 4.0 Military Personnel, 5.0 Operations and Maintenance Army, 2.11 Training Ammunition, and 2.13 Modifications. The PIM O&S Current Estimate excludes Demilitarization / Disposal costs of $61.5M (BY 2011). However, Demilitarization / Disposal costs were included in the PIM Acquisition Program Baseline (APB).

The O&S cost variance from the prior SAR is due inclusion of 2.11 Training Ammunition and 2.13 Modifications, exclusion of Demilitarization / Disposal Costs, and a change in quantity assumptions.

Per the M109 Family of Vehicles (FOV) Army Acquisition Objective (AAO) memo issued by the G-3/5/7 Deputy Chief of Staff on May 24, 2011 and the Army Force Generation (ARFORGEN) model, the AAO of 580 PIM sets does not fully fill each Armored Brigade Combat Team (ABCT) and Enhanced Artillery Brigade (EAB). In order to fully fill the Force Structure, a total of 658 PIM sets is required. To calculate complete Total O&S Costs for PIM under ARFORGEN, 658 PIM sets were used for military pay and benefits, training ammunition, and OPTEMPO-based Army cost elements.

Disposal Costs

PIM Lifecycle Demilitarization / Disposal costs of $61.5M (BY 2011) are excluded from the O&S estimate.