



Selected Acquisition Report (SAR)

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



Paladin Integrated Management (PIM)

As of FY 2017 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Common Acronyms and Abbreviations for MDAP Programs

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

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

Program Information

Program Name

Paladin Integrated Management (PIM)

DoD Component

Army

Responsible Office

COL James Schirmer
6501 East Eleven Mile Road
Warren, MI 48397

james.w.schirmer.mil@mail.mil

Phone: 586-282-5927

Fax: 586-282-8892

DSN Phone: 786-5927

DSN Fax: 786-8892

Date Assigned: July 10, 2014

References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated March 09, 2014

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated March 9, 2014

Mission and Description

The M109 Family of Vehicles (FOV) 155-millimeter / 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, Infantry Brigade Combat Teams, and Stryker Brigade Combat Teams. The M109 FOV Carrier Ammunition Tracked (CAT) provides armored ammunition supply support to the SPH operating in support of full spectrum operations. Together, the M109 FOV is also referred to as Paladin Integrated Management (PIM) weapon (vehicle) system.

The M109A6 Paladin and the M992A2 Field Artillery Ammunition Support Vehicle (FAASV) are the currently fielded versions of the Army's SPH and CAT. The PIM SPH and CAT will replace the M109A6 Paladin and M992A2 FAASV. Together, the M109A6 and M992A2 are also referred to as Paladin/FAASV weapon (vehicle) system.

The PIM program allows growth for improved force protection and technology insertion. PIM regains lost performance in the M109 FOV 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 technology.

Executive Summary

PIM is a post-Milestone C program in Production and Deployment. The second option of an LRIP contract (Fixed Price Incentive Firm Target) was awarded to BAE Systems on October 30, 2015. The program received an ADM dated September 11, 2015 delegating program management of the M109A7 FOV from OSD to the Secretary of the Army. Production is underway at both the York, Pennsylvania and Elgin, Oklahoma facilities. RDT&E-funded work supporting LRIP continues under the EMD contract modification and Production Qualification Testing (PQT) began as scheduled in April 2015. FRP remains on schedule to start 2nd Quarter FY 2017. The original equipment manufacturer delivered all Technical and Operator Manuals needed to begin Logistics Demonstration (LOGDEMO) and Technical Manual Verification.

Despite quality control issues with the engine which forced the program to adjust the test schedule, the program is on track to achieve FRP in 2nd Quarter FY 2017. Testing continues at Aberdeen Proving Ground, Yuma Proving Ground, White Sands Missile Range, and Cold Region Test Center and preliminary results have been positive. However, we identified technical issues on some components that caused some delays in test events. As an example, some, but not all, vehicles demonstrate an overheating condition. The team determined the root cause and is in the process of making corrections on the vehicles.

Based on the above test delays, the program office and the Army Test and Evaluation Command are determining those test events that must be completed in order to enter Initial Operational Test and Evaluation (IOT&E). Those events will be our focus and used to set component replacement priority. The program is now meeting or exceeding all OSD goals for Obligations and Disbursements. The program is fully funded for FY 2016 in both RDT&E and Procurement to support PQT, IOT&E, and LOGDEMO.

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

Threshold Breaches

APB Breaches

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

Nunn-McCurdy Breaches

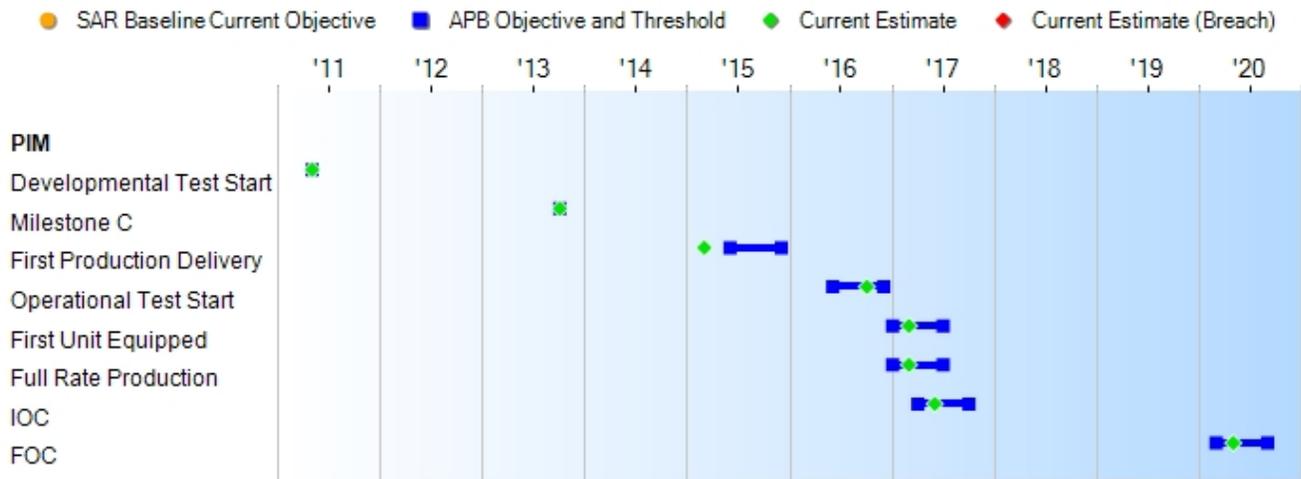
Current UCR Baseline

PAUC	None
APUC	None

Original UCR Baseline

PAUC	None
APUC	None

Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate
Developmental Test Start	May 2011	May 2011	May 2011	May 2011
Milestone C	Oct 2013	Oct 2013	Oct 2013	Oct 2013
First Production Delivery	Jun 2015	Jun 2015	Dec 2015	Mar 2015
Operational Test Start	Jun 2016	Jun 2016	Dec 2016	Oct 2016 (Ch-1)
First Unit Equipped	Jan 2017	Jan 2017	Jul 2017	Mar 2017 (Ch-1)
Full Rate Production	Jan 2017	Jan 2017	Jul 2017	Mar 2017 (Ch-1)
IOC	Apr 2017	Apr 2017	Oct 2017	Jun 2017 (Ch-1)
FOC	Mar 2020	Mar 2020	Sep 2020	May 2020 (Ch-1)

Change Explanations

(Ch-1) The Current Estimates for IOT&E, FUE, FRP, IOC and FOC changed from June 2016, January 2017, January 2017, April 2017 and March 2020 to October 2016, March 2017, March 2017, June 2017 and May 2020, respectively, as risk reduction responses to fact-of-life budgetary and programmatic changes.

Performance

Performance Characteristics				
SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
KPP 1: Net-Ready				
<p>The capability, system, and/or service must fully support execution of all operational activities and information exchanges identified in DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-I and implementation 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, authentication,</p>	<p>The capability, system, and/or service must fully support execution of all operational activities and information exchanges identified in DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-I and implementation 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, authentication,</p>	<p>The capability, system, and/or service must fully support execution of joint critical operational activities and information exchanges identified in the DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-I and implementation 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,</p>	<p>To be determined during IA Cyber Security Testing.</p>	<p>PIM management estimates that the program will achieve the Threshold requirement.</p>

confidentiality, and non-repudiation, and issuance of an ATO by the DAA, and 5) Support-ability requirements to include SAASM, Spectrum and JTRS requirements.	confidentiality, and non-repudiation, and issuance of an ATO by the DAA, and 5) Support-ability requirements to include SAASM, Spectrum and JTRS requirements.	authentication, confidentiality, and non-repudiation, and issuance of an IATO or ATO by the DAA, and 5) Support-ability requirements to include SAASM, Spectrum and JTRS requirements.		
KPP 4: Digital Fire Control System (DFCS)				
Must be able to independently compute and execute precision fire missions.	Must be able to independently compute and execute precision fire missions.	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.	PIM management estimates that the program will continue to achieve the Threshold requirement.
KPP 5: Rate of Fire				
6 rpm un-guided, 3 rpm guided	6 rpm un-guided, 3 rpm guided	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 tube temperature sensor.	On track to achieve Threshold.	PIM management estimates that the program will achieve the Threshold requirement.
KPP 6: Range				
Maximum range when firing guided munitions shall be no less than 40 km.	Maximum range when firing guided munitions shall be no less than 40 km.	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.	Threshold achieved.	PIM management estimates that the program will continue to achieve the Threshold requirement.
KPP 7: Self-Propelled Howitzer Reliability				
84 percent	84 percent	Will have a reliability of 75 percent probability of completing an 18-hour combat mission.	Threshold achieved.	PIM management estimates that the program will continue to achieve the Threshold

				requirement.
KPP 8: Self-Propelled Howitzer Availability (Materiel Availability/Operational Availability)				
Howitzer Am 83% and Ao 95%.	Howitzer Am 83% and Ao 95%.	The Howitzer shall demonstrate a Am of 81% and an Ao of 78%.	To be updated after IOT.	PIM management estimates that the program will achieve the Threshold requirement.
KPP 9: Carrier Ammunition Tracked Reliability				
90 percent	90 percent	Will have a reliability of 84 percent probability of completing an 18-hour combat mission.	Threshold achieved.	PIM management estimates that the program will continue to achieve the Threshold requirement.
KPP 10: Carrier Ammunition Tracked Availability (Materiel Availability / Operational Availability)				
CAT Am 72% and Ao 95%.	CAT Am 72% and Ao 95%.	The CAT shall demonstrate a Am of 66% and an Ao of 85%.	To be updated after IOT.	PIM management estimates that the program will achieve the Threshold requirement.

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

Requirements Reference

Capability Production Document (CPD) v3.3 dated August 19, 2012

Change Explanations

None

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
DoDAF - Department of Defense Architecture Framework
GESP - GIG Enterprise Service Profile
GIG - Global Information Grid
i.e. - id est, "that is"
IA - Information Assurance
IATO - Interim Approval to Operate
IAW - In Accordance With
ICAO - International Civil Aviation Organization
IEA - Information Enterprise Architecture
IOT - Initial Operational Test
IP - Internet Protocol
IT - Information Technology
JTRS - Joint Tactical Radio System
km - Kilometers
MACS - Modular Artillery Charge System
rpm - Rounds per Minute
SAASM - Selective Availability Anti-Spoofing Module
TV - Technical View

Track to Budget

RDT&E

Appn	BA	PE
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Army 2040 05 0210609A

Project	Name
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ED8 Paladin Integrated Management (PIM)

Army 2040 05 0604854A

Project	Name
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516 Paladin/Faasv

(Sunk)

Procurement

Appn	BA	PE
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Army 2033 01 0210609A

Line Item	Name
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2073GZ0410 Paladin Integrated Management (PIM)

Notes: Standard Study Number GZ0410

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2013 \$M			BY 2013 \$M	TY \$M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	1084.3	1084.3	1192.7	1087.3	1102.0	1102.0	1098.6
Procurement	5759.3	5759.3	6335.2	5916.8	6850.5	6850.5	6934.3
Flyaway	--	--	--	5457.8	--	--	6390.7
Recurring	--	--	--	5399.1	--	--	6328.4
Non Recurring	--	--	--	58.7	--	--	62.3
Support	--	--	--	459.0	--	--	543.6
Other Support	--	--	--	330.7	--	--	393.4
Initial Spares	--	--	--	128.3	--	--	150.2
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	6843.6	6843.6	N/A	7004.1	7952.5	7952.5	8032.9

Confidence Level

Confidence Level of cost estimate for current APB: 50%

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

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

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	2	2	2
Procurement	556	556	568
Total	558	558	570

Quantity Notes

A quantity of two PIM systems are the RDT&E-funded quantity. One and one-half PIM systems are RDT&E-funded LRIP which were procured in FY 2014 for Full Up System Live Fire Testing. The remaining one-half System represents a prototype Self-Propelled Howitzer 5A considered to be production-representative for PAUC calculation purposes.

The procurement quantity represents 568 PIM systems. This includes 12 PIM systems funded with FY 2017 Overseas Contingency Operations dollars.

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2017 President's Budget / December 2015 SAR (TY\$ M)									
Appropriation	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
RDT&E	898.7	152.3	41.5	6.1	0.0	0.0	0.0	0.0	1098.6
Procurement	594.0	273.9	594.4	662.4	656.6	653.5	663.2	2836.3	6934.3
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2017 Total	1492.7	426.2	635.9	668.5	656.6	653.5	663.2	2836.3	8032.9
PB 2016 Total	1534.2	426.2	515.2	673.6	661.8	658.7	685.5	2794.7	7949.9
Delta	-41.5	0.0	120.7	-5.1	-5.2	-5.2	-22.3	41.6	83.0

Quantity Summary										
FY 2017 President's Budget / December 2015 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
Development	2	0	0	0	0	0	0	0	0	2
Production	0	35	30	48	60	60	60	60	215	568
PB 2017 Total	2	35	30	48	60	60	60	60	215	570
PB 2016 Total	2	35	30	36	60	60	60	60	215	558
Delta	0	0	0	12	0	0	0	0	0	12

Cost and Funding

Annual Funding By Appropriation

Annual Funding							
2040 RDT&E Research, Development, Test, and Evaluation, Army							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2007	--	--	--	--	--	--	1.6
2008	--	--	--	--	--	--	34.8
2009	--	--	--	--	--	--	61.0
2010	--	--	--	--	--	--	147.5
2011	--	--	--	--	--	--	176.2
2012	--	--	--	--	--	--	126.3
2013	--	--	--	--	--	--	149.7
2014	--	--	--	--	--	--	121.3
2015	--	--	--	--	--	--	80.3
2016	--	--	--	--	--	--	152.3
2017	--	--	--	--	--	--	41.5
2018	--	--	--	--	--	--	6.1
Subtotal	2	--	--	--	--	--	1098.6

Annual Funding 2040 RDT&E Research, Development, Test, and Evaluation, Army							
Fiscal Year	Quantity	BY 2013 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2007	--	--	--	--	--	--	1.7
2008	--	--	--	--	--	--	37.0
2009	--	--	--	--	--	--	64.1
2010	--	--	--	--	--	--	152.7
2011	--	--	--	--	--	--	178.9
2012	--	--	--	--	--	--	126.2
2013	--	--	--	--	--	--	147.1
2014	--	--	--	--	--	--	116.9
2015	--	--	--	--	--	--	76.1
2016	--	--	--	--	--	--	142.9
2017	--	--	--	--	--	--	38.2
2018	--	--	--	--	--	--	5.5
Subtotal	2	--	--	--	--	--	1087.3

Annual Funding							
2033 Procurement Procurement of Weapons and Tracked Combat Vehicles, Army							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2013	--	123.5	28.9	17.2	169.6	19.0	188.6
2014	17	101.3	28.5	16.9	146.7	18.8	165.5
2015	18	163.7	71.4	--	235.1	4.8	239.9
2016	30	188.5	55.6	7.2	251.3	22.6	273.9
2017	48	425.9	107.4	21.0	554.3	40.1	594.4
2018	60	502.5	119.5	--	622.0	40.4	662.4
2019	60	496.5	116.5	--	613.0	43.6	656.6
2020	60	486.0	119.1	--	605.1	48.4	653.5
2021	60	490.3	122.0	--	612.3	50.9	663.2
2022	60	520.9	134.8	--	655.7	50.7	706.4
2023	60	528.7	138.5	--	667.2	50.5	717.7
2024	60	537.3	145.9	--	683.2	53.3	736.5
2025	35	324.0	111.6	--	435.6	43.4	479.0
2026	--	--	70.3	--	70.3	32.4	102.7
2027	--	--	69.3	--	69.3	24.7	94.0
Subtotal	568	4889.1	1439.3	62.3	6390.7	543.6	6934.3

Annual Funding							
2033 Procurement Procurement of Weapons and Tracked Combat Vehicles, Army							
Fiscal Year	Quantity	BY 2013 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2013	--	119.8	28.1	16.7	164.6	18.4	183.0
2014	17	97.3	27.4	16.2	140.9	18.1	159.0
2015	18	155.0	67.6	--	222.6	4.5	227.1
2016	30	174.9	51.6	6.7	233.2	21.0	254.2
2017	48	387.8	97.8	19.1	504.7	36.5	541.2
2018	60	448.6	106.8	--	555.4	36.0	591.4
2019	60	434.6	101.9	--	536.5	38.2	574.7
2020	60	417.0	102.2	--	519.2	41.6	560.8
2021	60	412.5	102.6	--	515.1	42.8	557.9
2022	60	429.6	111.1	--	540.7	41.9	582.6
2023	60	427.5	111.9	--	539.4	40.9	580.3
2024	60	425.9	115.7	--	541.6	42.2	583.8
2025	35	251.8	86.8	--	338.6	33.7	372.3
2026	--	--	53.6	--	53.6	24.7	78.3
2027	--	--	51.7	--	51.7	18.5	70.2
Subtotal	568	4182.3	1216.8	58.7	5457.8	459.0	5916.8

Cost Quantity Information 2033 Procurement Procurement of Weapons and Tracked Combat Vehicles, Army		
Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned With Quantity) BY 2013 \$M
2013	--	--
2014	17	196.6
2015	18	163.2
2016	30	260.2
2017	48	296.0
2018	60	455.0
2019	60	446.5
2020	60	428.9
2021	60	425.0
2022	60	422.4
2023	60	420.6
2024	60	419.5
2025	35	248.4
2026	--	--
2027	--	--
Subtotal	568	4182.3

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	10/21/2013	10/21/2013
Approved Quantity	67	67
Reference	Milestone C ADM	Milestone C ADM
Start Year	2014	2014
End Year	2017	2017

The Current Total LRIP Quantity is more than 10% of the total production quantity as authorized in the Milestone C ADM to provide enough test assets to complete all required tests and to provide a gradual ramp-up to FRP.

The planned LRIP buy is 66.5 PIM systems. One and one-half PIM systems are RDT&E-funded LRIP assets procured in FY 2014 for Full Up System Live Fire Testing. The remaining 65 PIM systems are Procurement-funded.

Foreign Military Sales

None

Nuclear Costs

None

Unit Cost

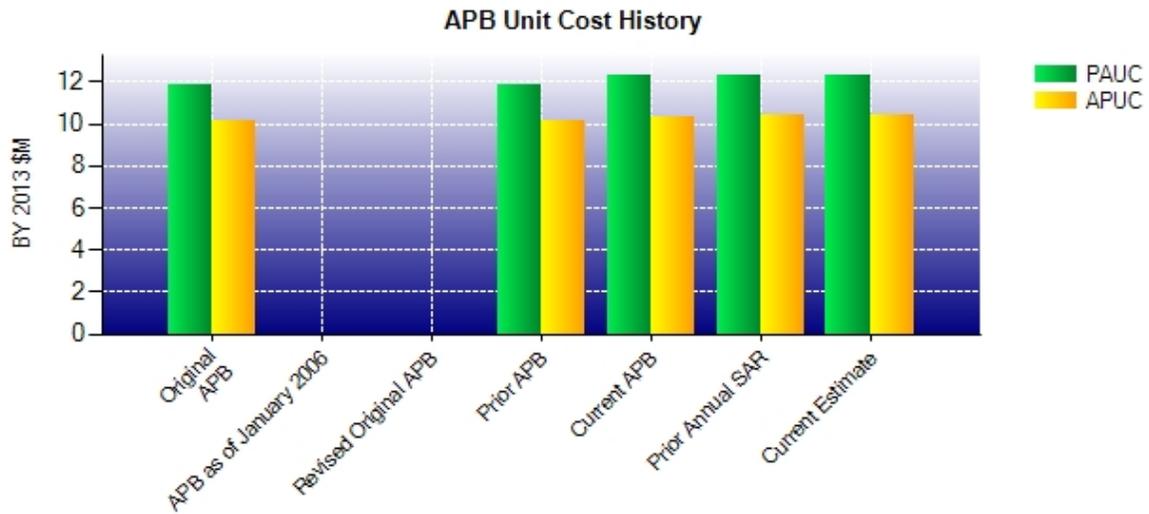
Unit Cost Report

Item	BY 2013 \$M	BY 2013 \$M	% Change
	Current UCR Baseline (Mar 2014 APB)	Current Estimate (Dec 2015 SAR)	
Program Acquisition Unit Cost			
Cost	6843.6	7004.1	
Quantity	558	570	
Unit Cost	12.265	12.288	+0.19
Average Procurement Unit Cost			
Cost	5759.3	5916.8	
Quantity	556	568	
Unit Cost	10.358	10.417	+0.57

Item	BY 2013 \$M	BY 2013 \$M	% Change
	Original UCR Baseline (Mar 2012 APB)	Current Estimate (Dec 2015 SAR)	
Program Acquisition Unit Cost			
Cost	6902.6	7004.1	
Quantity	582	570	
Unit Cost	11.860	12.288	+3.61
Average Procurement Unit Cost			
Cost	5862.3	5916.8	
Quantity	580	568	
Unit Cost	10.107	10.417	+3.07

The FY 2017 PB includes 12 vehicle systems funded with FY 2017 Overseas Contingency Operations dollars.

Unit Cost History



Item	Date	BY 2013 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Mar 2012	11.860	10.107	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	Mar 2012	11.860	10.107	13.449	11.699
Current APB	Mar 2014	12.265	10.358	14.252	12.321
Prior Annual SAR	Dec 2014	12.341	10.433	14.247	12.321
Current Estimate	Dec 2015	12.288	10.417	14.093	12.208

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial PAUC Development Estimate	Changes								PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
13.449	0.365	0.238	0.027	0.000	-0.085	0.000	0.258	0.803	14.252

Current SAR Baseline to Current Estimate (TY \$M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
14.252	-0.189	-0.122	-0.028	0.000	0.308	0.000	-0.128	-0.159	14.093

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
11.699	0.343	0.163	0.027	0.000	-0.169	0.000	0.258	0.622	12.321

Current SAR Baseline to Current Estimate (TY \$M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
12.321	-0.177	-0.083	-0.028	0.000	0.303	0.000	-0.128	-0.113	12.208

SAR Baseline History					
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate	
Milestone A	N/A	N/A	N/A	N/A	
Milestone B	N/A	N/A	N/A	N/A	
Milestone C	N/A	Jun 2013	Oct 2013	Oct 2013	
IOC	N/A	Apr 2017	Apr 2017	Jun 2017	
Total Cost (TY \$M)	N/A	7827.1	7952.5	8032.9	
Total Quantity	N/A	582	558	570	
PAUC	N/A	13.449	14.252	14.093	

Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1102.0	6850.5	--	7952.5
Previous Changes				
Economic	-4.0	-48.6	--	-52.6
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+1.2	+130.9	--	+132.1
Other	--	--	--	--
Support	--	-82.1	--	-82.1
Subtotal	-2.8	+0.2	--	-2.6
Current Changes				
Economic	-2.7	-52.2	--	-54.9
Quantity	--	+100.9	--	+100.9
Schedule	--	-15.9	--	-15.9
Engineering	--	--	--	--
Estimating	+2.1	+41.4	--	+43.5
Other	--	--	--	--
Support	--	+9.4	--	+9.4
Subtotal	-0.6	+83.6	--	+83.0
Adjustments	--	--	--	--
Total Changes	-3.4	+83.8	--	+80.4
CE - Cost Variance	1098.6	6934.3	--	8032.9
CE - Cost & Funding	1098.6	6934.3	--	8032.9

Summary BY 2013 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1084.3	5759.3	--	6843.6
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+1.0	+109.9	--	+110.9
Other	--	--	--	--
Support	--	-68.3	--	-68.3
Subtotal	+1.0	+41.6	--	+42.6
Current Changes				
Economic	--	--	--	--
Quantity	--	+78.4	--	+78.4
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+2.0	+29.3	--	+31.3
Other	--	--	--	--
Support	--	+8.2	--	+8.2
Subtotal	+2.0	+115.9	--	+117.9
Adjustments	--	--	--	--
Total Changes	+3.0	+157.5	--	+160.5
CE - Cost Variance	1087.3	5916.8	--	7004.1
CE - Cost & Funding	1087.3	5916.8	--	7004.1

Previous Estimate: December 2014

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-2.7
Revised estimate to align with the FY 2017 PB. (Estimating)	-0.3	-0.3
Adjustment for current and prior escalation. (Estimating)	+2.3	+2.4
RDT&E Subtotal	+2.0	-0.6

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-52.2
Acceleration of procurement buy profile due to 12 additional PIM vehicle systems in FY 2017. (Schedule) (QR)	0.0	-15.9
Quantity variance resulting from an increase of 12 PIM vehicle systems from 556 to 568. (Subtotal)	+79.1	+101.8
Quantity variance resulting from an increase of 12 PIM vehicle systems from 556 to 568. (Quantity)	(+78.4)	(+100.9)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(+0.7)	(+0.9)
Revised FY 2014 estimate to reflect the FY 2017 PB Above Threshold Reprogramming to M109A6 Paladin/Field Artillery Ammunition Support Vehicle program. (Estimating)	-32.7	-34.0
Revised estimate to align with the FY 2017 PB. (Estimating)	+34.9	+44.5
Congressional reduction of FY 2015 funds per FY 2016 Consolidated Appropriations Bill H.R. 2029. (Estimating)	-7.1	-7.5
Additional allocation to Estimating resulting from procurement of 12 additional PIM vehicle systems in FY 2017. (Estimating) (QR)	+28.8	+32.6
Adjustment for current and prior escalation. (Estimating)	+4.7	+4.9
Adjustment for current and prior escalation. (Support)	+0.4	+0.4
Increase in Other Support to align Procurement estimate with the FY 2017 PB. (Support)	+3.9	+4.9
Increase in Initial Spares to align Procurement estimate with the FY 2017 PB. (Support)	+3.9	+4.1
Procurement Subtotal	+115.9	+83.6

(QR) Quantity Related

Contracts

Contract Identification

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: W56HZV-09-C-0550/38
Contract Type: Cost Plus Incentive Fee (CPIF)
Award Date: January 06, 2012
Definitization Date: January 06, 2012

Contract Price							
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	407.9	N/A	N/A	389.5	389.5

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to awarding the EMD extension contract.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2015)	+9.3	-8.1
Previous Cumulative Variances	+12.1	-3.2
Net Change	-2.8	-4.9

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to additional labor for technical manuals/publications. The cumulative cost variance is positive and program Variance at Completion remains positive.

The unfavorable net change in the schedule variance is due to delays driven by Test and Evaluation. Planned material was delayed due to supplier conformance issues and quality inspections. The test schedule and recovery plans continue to be reviewed by the program office and BAE Systems. The recovery of schedule is expected through March 2016. The program is on track for an FRP decision in 2nd Quarter FY 2017.

Contract Identification

Appropriation: Procurement
Contract Name: PIM-LRIP BASE
Contractor: BAE Systems Land & Armaments L.P.
Contractor Location: 1100 Bairs Road
 York, PA 17408
Contract Number: W56HZV-14-C-0002
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: October 30, 2013
Definitization Date: October 30, 2013

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
217.5	197.5	19	362.0	347.0	55	362.0	362.0

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to awarding the LRIP Option 1 contract.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FPIF) contract.

General Contract Variance Explanation

Cost and schedule variances are not reported for this contract, because an EVM waiver was granted by the Army Acquisition Executive on December 24, 2015 due to incompatibility of using MIL STD 881C Work Breakdown Structure (WBS) for the PIM/M109A7 FOV LRIP contract. MIL STD 881C WBS structure is significantly different than the process-driven structure used by the contractor to capture cost, schedule and performance metrics in production. In order to remain compliant with EVM guidelines, the contractor would need to make significant changes to their Lean Manufacturing Process. These changes would increase cost to meet programmatic compliance requirements and create risk deficiencies with the recently approved EVM system.

Notes

Thirty-five percent of the Performance Measurement Baseline remains in Undistributed Budget (UB) for LRIP Option 1. The balance of the UB will continue to be detail planned in future reporting periods.

The Target Price includes data for all exercised FPIF and Cost Plus Fixed Fee Contract Line Items (CLIN); however, the contract Ceiling Price represents only FPIF CLINs.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	2	0.00%
Production	17	15	568	2.64%
Total Program Quantity Delivered	17	15	570	2.63%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	8032.9	Years Appropriated	10
Expended to Date	946.9	Percent Years Appropriated	47.62%
Percent Expended	11.79%	Appropriated to Date	1918.9
Total Funding Years	21	Percent Appropriated	23.89%

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

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	October 21, 2013
Source of Estimate:	CAPE ICE
Quantity to Sustain:	568
Unit of Measure:	System
Service Life per Unit:	26.00 Years
Fiscal Years in Service:	FY 2015 - FY 2053

System = PIM weapon system or vehicle set (one Self-Propelled Howitzer and one Carrier Ammunition Tracked)

A quantity of two PIM systems are RDT&E-funded and will not be sustained. One and one-half PIM systems are RDT&E-funded LRIP which were procured in FY 2014 for Full Up System Live Fire Testing. The remaining one-half system represents a prototype Self-Propelled Howitzer 5A considered to be production representative for PAUC calculation purposes.

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 the field
- Sustainment Maintenance - Repair and return to supply

Antecedent Information

O&S costs for the M109A6 Paladin / M992A2 Field Artillery Ammunition Support Vehicle (antecedent system) are based on various sources including the O&S Management Information System, the Army Manpower Allocation Requirements Criteria Database, and historical actuals from the program office. Operational Tempos are based on the Army G-3/5/7 Forces Command model. The antecedent system assumes the same quantities and Economic Useful Life (EUL) as the PIM system.

Cost Element	Annual O&S Costs BY2013 \$K	
	PIM Average Annual Cost Per System	M109A6 Paladin / M992A2 FAASV (Antecedent) Average Annual Cost Per System
Unit-Level Manpower	625.363	638.860
Unit Operations	130.412	133.110
Maintenance	125.764	98.377
Sustaining Support	106.241	108.544
Continuing System Improvements	80.932	56.080
Indirect Support	245.212	250.319
Other	0.000	0.000
Total	1313.924	1285.290

Item	Total O&S Cost \$M			
	PIM		Current Estimate	M109A6 Paladin / M992A2 FAASV (Antecedent)
	Current Production APB Objective/Threshold			
Base Year	19911.1	21902.2	19404.0	18580.2
Then Year	30867.8	N/A	29417.3	N/A

Equation to Translate Annual Cost to Total Cost

PIM Total O&S Cost = Average Annual O&S Cost Per System * Number of Systems * EUL = \$1313.924K * 568 systems * 26 years = \$19404.0M (BY 2013 \$M)

Paladin/FAASV Total O&S Cost = Average Annual O&S Cost Per System * Number of Systems * EUL = \$1285.290K * 556 systems * 26 years = \$18580.2M (BY 2013 \$M)

O&S Cost Variance		
Category	BY 2013 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2014 SAR	19374.5	
Programmatic/Planning Factors	29.5	An additional 12 PIM systems to be procured in FY 2017 with Overseas Contingency Operations funds will be sustained as Army Prepositioned Stock.
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	29.5	
Current Estimate	19404.0	

Disposal Estimate Details

Date of Estimate: October 21, 2013
Source of Estimate: CAPE ICE
Disposal/Demilitarization Total Cost (BY 2013 \$M): Total costs for disposal of all System are 63.8