



## Selected Acquisition Report (SAR)

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



### **Paladin Integrated Management (PIM)**

As of FY 2016 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

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**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 Paladin Integrated Management (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 buys-back 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 the Production and Deployment phase. The PIM program had a successful Milestone C DAB on October 18, 2013. The DAE signed the Milestone C ADM permitting the program to begin LRIP on October 21, 2013. An LRIP contract (Fixed Price Incentive Firm Target) was awarded to BAE Systems on October 30, 2013, followed by the First Option to this contract awarded on October 31, 2014. Production is underway at both the York, Pennsylvania and Elgin, Oklahoma facilities. RDT&E-funded work supporting LRIP continues under the EMD contract. An additional modification to the EMD contract was awarded July 31, 2014 to extend the EMD contract period of performance and add scope for contractor support to Production Qualification Testing (PQT), Initial Operational Test and Evaluation, and the Logistics Demonstration (LOGDEMO). PQT testing is on schedule to begin April 2015 followed by LOGDEMO in June 2015.

In the FY 2016 PB, the PIM program RDT&E funding was Congressionally reduced by \$3M in FY 2015. This decrement, along with the previous FY 2015 RDT&E reduction, increases risk to the FY 2015 test plans, however, start of PQT remains on schedule for the third Quarter FY 2015. Additionally, BAE Systems has experienced initial production schedule delays, but works diligently to reduce delays and the program remains on track to take delivery of two LRIP vehicle sets in the second Quarter FY 2015.

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

## Threshold Breaches

### APB Breaches

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

### Nunn-McCurdy Breaches

#### Current UCR Baseline

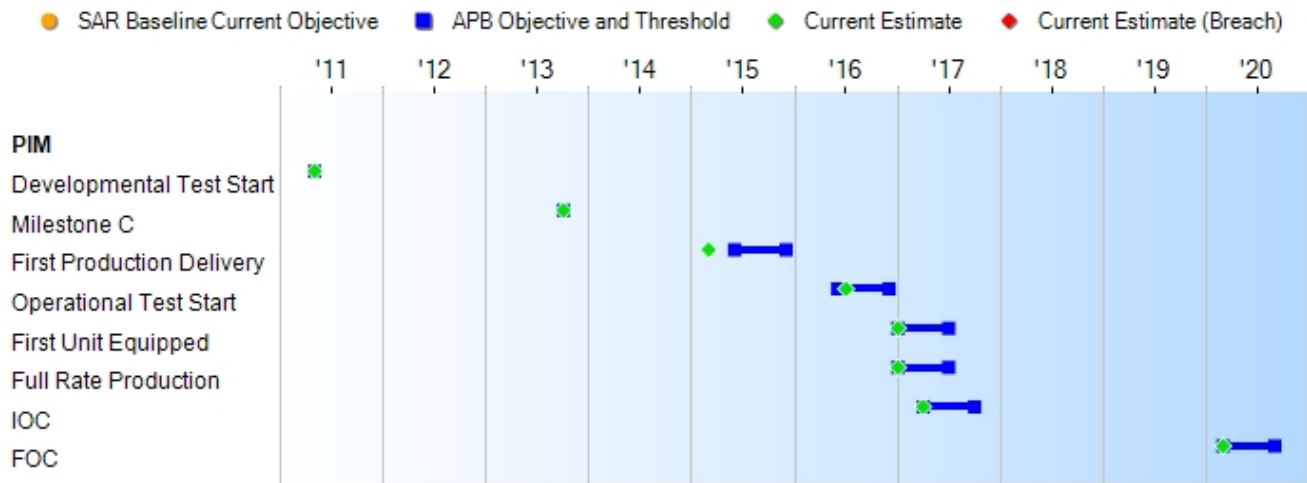
PAUC	None
APUC	None

#### 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	Jul 2016
First Unit Equipped	Jan 2017	Jan 2017	Jul 2017	Jan 2017
Full Rate Production	Jan 2017	Jan 2017	Jul 2017	Jan 2017
IOC	Apr 2017	Apr 2017	Oct 2017	Apr 2017
FOC	Mar 2020	Mar 2020	Sep 2020	Mar 2020

### Change Explanations

None

## Performance

Performance Characteristics				
SAR Baseline Production Estimate	Current APB Production Objective/Threshold	Demonstrated Performance	Current Estimate	
<b>KPP 1: Net-Ready</b>				
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	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	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	To be determined during IA Cyber Security Testing.	PIM management estimates that the program will achieve the Threshold requirement.

(Ch-1)

availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA, and 5) Support-ability requirements to include SAASM, Spectrum and JTRS requirements.	availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA, and 5) Support-ability requirements to include SAASM, Spectrum and JTRS requirements.	availability, integrity, 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.		
<b>KPP 4: Digital Fire Control System (DFCS)</b>				
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.
<b>KPP 5: Rate of Fire</b>				
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. (Ch-2)
<b>KPP 6: Range</b>				
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.
<b>KPP 7: Self-Propelled Howitzer Reliability</b>				
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.	
<b>KPP 8: Self-Propelled Howitzer Availability (Materiel Availability/Operational Availability)</b>					
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.	(Ch-3)
<b>KPP 9: Carrier Ammunition Tracked Reliability</b>					
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.	
<b>KPP 10: Carrier Ammunition Tracked Availability (Materiel Availability / Operational Availability)</b>					
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.	(Ch-4)

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

(Ch-1) The current estimate for the Net-Ready KPP changed from "...will continue to achieve..." to "...will achieve..." due to approval of Information Architecture design by the National Security Agency.

(Ch-2) The current estimate for the Rate of Fire KPP changed from "Threshold achieved" to "On track to achieve Threshold" to allow for verification in future planned testing.

(Ch-3) The KPP will be updated after IOT is completed when test data and analysis are available to support such an assessment.

(Ch-4) The KPP will be updated after IOT is completed when test data and analysis are available to support such an assessment.

## 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	
Army	2040	05	0210609A
	<b>Project</b>	<b>Name</b>	
	ED8	Paladin Integrated Management	
Army	2040	05	0604854A
	<b>Project</b>	<b>Name</b>	
	516	Artillery Systems - Engineering Manufacturing and Development	
			(Sunk)

**Procurement**

Appn	BA	PE	
Army	2033	01	0210609A
	<b>Line Item</b>	<b>Name</b>	
	2073GZ0410	Paladin PIM Mod In Service	
	<b>Notes:</b>	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	1085.3	1102.0	1102.0	1099.2
Procurement	5759.3	5759.3	6335.2	5800.9	6850.5	6850.5	6850.7
Flyaway	--	--	--	5350.1	--	--	6312.5
Recurring	--	--	--	5296.1	--	--	6255.1
Non Recurring	--	--	--	54.0	--	--	57.4
Support	--	--	--	450.8	--	--	538.2
Other Support	--	--	--	326.6	--	--	391.4
Initial Spares	--	--	--	124.2	--	--	146.8
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	6886.2	7952.5	7952.5	7949.9

#### 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	556
Total	558	558	558

#### 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 556 PIM systems.



## Cost and Funding

### Funding Summary

Appropriation Summary									
FY 2016 President's Budget / December 2014 SAR (TY\$ M)									
Appropriation	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
RDT&E	818.4	80.3	152.3	42.1	6.1	0.0	0.0	0.0	1099.2
Procurement	388.1	247.4	273.9	473.1	667.5	661.8	658.7	3480.2	6850.7
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 2016 Total	1206.5	327.7	426.2	515.2	673.6	661.8	658.7	3480.2	7949.9
PB 2015 Total	1206.5	330.7	556.3	507.5	671.8	667.8	651.7	3360.9	7953.2
Delta	0.0	-3.0	-130.1	7.7	1.8	-6.0	7.0	119.3	-3.3

Quantity Summary										
FY 2016 President's Budget / December 2014 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
Development	2	0	0	0	0	0	0	0	0	2
Production	0	17	18	30	36	60	60	60	275	556
PB 2016 Total	2	17	18	30	36	60	60	60	275	558
PB 2015 Total	2	17	18	30	36	60	60	60	275	558
Delta	0	0	0	0	0	0	0	0	0	0

## 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	--	--	--	--	--	--	42.1
2018	--	--	--	--	--	--	6.1
Subtotal	2	--	--	--	--	--	1099.2

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	--	--	--	--	--	--	178.8
2012	--	--	--	--	--	--	126.2
2013	--	--	--	--	--	--	146.9
2014	--	--	--	--	--	--	116.4
2015	--	--	--	--	--	--	75.6
2016	--	--	--	--	--	--	141.9
2017	--	--	--	--	--	--	38.5
2018	--	--	--	--	--	--	5.5
Subtotal	2	--	--	--	--	--	1085.3

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	130.6	30.6	18.2	179.4	20.1	199.5
2015	18	171.2	71.4	--	242.6	4.8	247.4
2016	30	188.5	55.6	7.2	251.3	22.6	273.9
2017	36	327.6	96.1	14.8	438.5	34.6	473.1
2018	60	506.4	120.4	--	626.8	40.7	667.5
2019	60	500.5	117.4	--	617.9	43.9	661.8
2020	60	489.9	120.0	--	609.9	48.8	658.7
2021	60	506.8	126.1	--	632.9	52.6	685.5
2022	60	513.2	132.8	--	646.0	49.9	695.9
2023	60	520.9	136.4	--	657.3	49.8	707.1
2024	60	529.4	143.7	--	673.1	52.5	725.6
2025	35	319.7	109.9	--	429.6	42.7	472.3
2026	--	--	69.3	--	69.3	31.9	101.2
2027	--	--	68.3	--	68.3	24.3	92.6
Subtotal	556	4828.2	1426.9	57.4	6312.5	538.2	6850.7

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	--	119.5	27.9	16.6	164.0	18.4	182.4
2014	17	124.8	29.3	17.4	171.5	19.2	190.7
2015	18	161.0	67.1	--	228.1	4.5	232.6
2016	30	173.6	51.3	6.6	231.5	20.8	252.3
2017	36	296.0	86.7	13.4	396.1	31.3	427.4
2018	60	448.5	106.7	--	555.2	36.0	591.2
2019	60	434.6	102.0	--	536.6	38.1	574.7
2020	60	417.1	102.2	--	519.3	41.5	560.8
2021	60	423.0	105.2	--	528.2	43.9	572.1
2022	60	419.9	108.7	--	528.6	40.8	569.4
2023	60	417.9	109.4	--	527.3	40.0	567.3
2024	60	416.4	113.0	--	529.4	41.3	570.7
2025	35	246.5	84.8	--	331.3	32.9	364.2
2026	--	--	52.4	--	52.4	24.1	76.5
2027	--	--	50.6	--	50.6	18.0	68.6
Subtotal	556	4098.8	1197.3	54.0	5350.1	450.8	5800.9

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	192.6
2015	18	159.9
2016	30	255.0
2017	36	290.0
2018	60	445.9
2019	60	437.6
2020	60	420.3
2021	60	416.5
2022	60	413.9
2023	60	412.2
2024	60	411.2
2025	35	243.7
2026	--	--
2027	--	--
Subtotal	556	4098.8

## Low Rate Initial Production

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



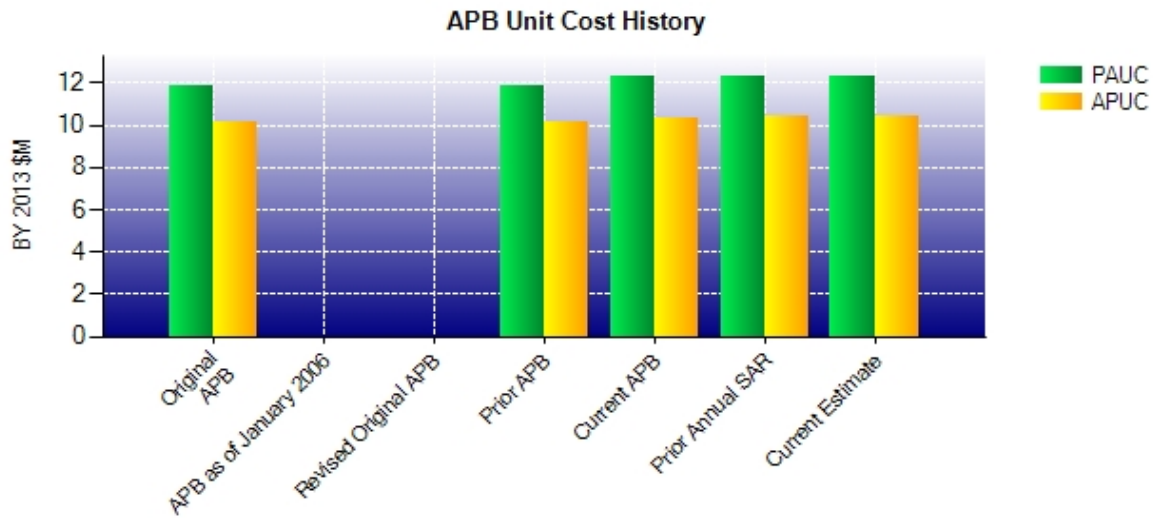
## Unit Cost

### Unit Cost Report

Item	BY 2013 \$M	BY 2013 \$M	% Change
	Current UCR Baseline (Mar 2014 APB)	Current Estimate (Dec 2014 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	6843.6	6886.2	
Quantity	558	558	
Item	12.265	12.341	+0.62
<b>Average Procurement Unit Cost</b>			
Cost	5759.3	5800.9	
Quantity	556	556	
Unit Cost	10.358	10.433	+0.72

Item	BY 2013 \$M	BY 2013 \$M	% Change
	Original UCR Baseline (Mar 2012 APB)	Current Estimate (Dec 2014 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	6902.6	6886.2	
Quantity	582	558	
Unit Cost	11.860	12.341	+4.05
<b>Average Procurement Unit Cost</b>			
Cost	5862.3	5800.9	
Quantity	580	556	
Unit Cost	10.107	10.433	+3.22

**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 2013	12.298	10.393	14.253	12.322
Current Estimate	Dec 2014	12.341	10.433	14.247	12.321

**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	-0.094	0.000	0.000	0.000	0.236	0.000	-0.147	-0.005	14.247

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	-0.087	0.000	0.000	0.000	0.235	0.000	-0.148	0.000	12.321

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	Apr 2017	
Total Cost (TY \$M)	N/A	7827.1	7952.5	7949.9	
Total Quantity	N/A	582	558	558	
PAUC	N/A	13.449	14.252	14.247	

## Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1102.0	6850.5	--	7952.5
Previous Changes				
Economic	+0.6	-4.3	--	-3.7
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-0.3	+90.6	--	+90.3
Other	--	--	--	--
Support	--	-85.9	--	-85.9
Subtotal	+0.3	+0.4	--	+0.7
Current Changes				
Economic	-4.6	-44.3	--	-48.9
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+1.5	+40.3	--	+41.8
Other	--	--	--	--
Support	--	+3.8	--	+3.8
Subtotal	-3.1	-0.2	--	-3.3
Adjustments	--	--	--	--
Total Changes	-2.8	+0.2	--	-2.6
CE - Cost Variance	1099.2	6850.7	--	7949.9
CE - Cost & Funding	1099.2	6850.7	--	7949.9

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	-0.4	+89.3	--	+88.9
Other	--	--	--	--
Support	--	-70.3	--	-70.3
Subtotal	-0.4	+19.0	--	+18.6
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+1.4	+20.6	--	+22.0
Other	--	--	--	--
Support	--	+2.0	--	+2.0
Subtotal	+1.4	+22.6	--	+24.0
Adjustments	--	--	--	--
Total Changes	+1.0	+41.6	--	+42.6
CE - Cost Variance	1085.3	5800.9	--	6886.2
CE - Cost & Funding	1085.3	5800.9	--	6886.2

Previous Estimate: December 2013

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-4.6
Adjustment for current and prior escalation. (Estimating)	+1.2	+1.2
Revised estimate to align with the FY 2016 PB. (Estimating)	+0.2	+0.3
<b>RDT&amp;E Subtotal</b>	<b>+1.4</b>	<b>-3.1</b>

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-44.3
Adjustment for current and prior escalation. (Estimating)	+2.9	+3.0
Revised estimate to align with the FY 2016 PB. (Estimating)	+17.7	+37.3
Adjustment for current and prior escalation. (Support)	+0.2	+0.2
Increase in Other Support to align Procurement estimate with the FY 2016 PB. (Support)	+3.1	+4.7
Decrease in Initial Spares to align Procurement estimate with the FY 2016 PB. (Support)	-1.3	-1.1
<b>Procurement Subtotal</b>	<b>+22.6</b>	<b>-0.2</b>

## 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	409.2	N/A	N/A	341.3	352.0

### 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 (1/21/2015)	+12.1	-3.2
Previous Cumulative Variances	+16.2	-6.6
Net Change	-4.1	+3.4

### Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to additional labor to support system verification testing and illustrators for technical manuals/publications. Negative cost trend is not expected to continue and program Variance at Completion remains positive.

The favorable net change in the schedule variance is due to fewer Test Incident Reports than expected from Corrective Actions, Producibility, and Obsolescence testing.

**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	359.3	345.1	37	332.6	332.6

**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.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/27/2015)	-8.6	-0.5
Previous Cumulative Variances	+1.1	-0.3
Net Change	-9.7	-0.2

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to Program Office/EVM (85%) for additional Consulting Labor and Travel, and Self Propelled Howitzer Hull/Chassis (Work Breakdown Structure 1.1.2) for additional support from the production support engineering group.

The unfavorable net change in the schedule variance is due to materials, subcontracts, Internal Work Orders or Production Support Engineering / Manufacturing labor dependent upon materials. Cumulative Schedule Performance Index is 0.993 up from 0.932 in November 2014, and closely aligned to, but exceeding the forecasted Return to Green Models presented in November 2014. Schedule Variance is (\$445K).

**Notes**

Forty 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 CLINs; however, the contract ceiling price represents FPIF CLINs only.



## Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	2	0.00%
Production	0	0	556	0.00%
Total Program Quantity Delivered	0	0	558	0.00%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	7949.9	Years Appropriated	9
Expended to Date	715.3	Percent Years Appropriated	42.86%
Percent Expended	9.00%	Appropriated to Date	1534.2
Total Funding Years	21	Percent Appropriated	19.30%

The above data is current as of January 31, 2015.

## Operating and Support Cost

### Cost Estimate Details

<b>Date of Estimate:</b>	October 21, 2013
<b>Source of Estimate:</b>	CAPE ICE
<b>Quantity to Sustain:</b>	556
<b>Unit of Measure:</b>	System
<b>Service Life per Unit:</b>	26.00 Years
<b>Fiscal Years in Service:</b>	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. 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 Operating and Support Management Information System, the Army Manpower Allocation Requirements Criteria Database, and historical actuals from the program office. Operational Tempos are based on the G -3/5/7 Forces Command model. The antecedent system assumes the same quantities and Economic Useful Life (EUL) as the PIM system.

Annual O&S Costs BY2013 \$K		
Cost Element	PIM Average Annual Cost Per System	M109A6 Paladin / M992A2 FAASV (Antecedent) Average Annual Cost Per System
Unit-Level Manpower	638.860	638.860
Unit Operations	133.246	133.110
Maintenance	127.171	98.377
Sustaining Support	108.544	108.544
Continuing System Improvements	82.097	56.080
Indirect Support	250.319	250.319
Other	0.000	0.000
<b>Total</b>	<b>1340.237</b>	<b>1285.290</b>

Item	Total O&S Cost \$M			
	PIM		Current Estimate	M109A6 Paladin / M992A2 FAASV (Antecedent)
	Current Production APB Objective/Threshold			
<b>Base Year</b>	19911.1	21902.2	19374.5	18580.2
<b>Then Year</b>	30867.8	N/A	28775.1	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 = \$1340.237K \* 556 systems \* 26 years = \$19374.5M (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 2013 SAR	19374.5	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
<b>Total Changes</b>	<b>0.0</b>	
Current Estimate	19374.5	

#### 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 62.3