



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



Paladin Integrated Management (PIM)

As of FY 2021 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

~~This document contains information that may be exempt from mandatory disclosure under the FOIA.~~

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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)
USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)

Program Information

Program Name

Paladin Integrated Management (PIM)

DoD Component

Army

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References

SAR Baseline (Production Estimate)

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

Approved APB

Army Acquisition Executive (AAE) Approved Acquisition Program Baseline (APB) dated November 5, 2017

Mission and Description

The mission of units equipped with the M109A7/M992A3 system is to destroy, neutralize, or suppress the enemy by indirect fire. The M109A7 howitzer and M992A3 ammunition carrier will enable the Army Armored Brigade Combat Teams (ABCTs) and Fire Brigades (FiB) to accomplish their relevant tasks in support of command and control, force application battle space awareness, protection and net-centric environment Joint Fighting Capabilities (JFC). The M109A7/M992A3 program is designed to provide the following operational outcomes: maintain battlefield mobility; enhanced supportability and sustainability; and improved force protection and vehicle survivability.

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 ABCTs, 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 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 replace the M109A6 Paladin and M992A2 FAASV. Together, the M109A6 and M992A2 are also referred to as Paladin/FAASV weapon 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

Program Highlights Since Last Report

PIM is a post-Milestone C program in Production and Deployment. The PIM program achieved Milestone C on October 18, 2013 permitting the program to begin LRIP on October 21, 2013. Production is underway at both the York, Pennsylvania and Elgin, Oklahoma facilities. In 2018, the program's Army Acquisition Objective increased by 109 weapon systems to 689 to meet an increase in Field Artillery force structure.

In accordance with Section 830 of the FY 2020 NDAA, FOUO data in this SAR section has been eliminated. This data is available upon Congressional request to OUSD(A&S).

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

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	Significant Development Description
June 2007	Start of the M109A7 Family of Vehicles (PIM) acquisition program
June 2011	PIM designated ACAT ID
October 2012	Completed Limited User Testing
October 2013	Achieved Milestone C,LRIP contract awarded
September 2015	Program delegated from OSD to Secretary of Army and designated ACAT IC
April 2017	Army Acquisition Executive signed ADM extending LRIP; authorizing 48 additional weapon systems
March 2018	Completed Initial Operational Testing
September 2018	Army Acquisition Executive signed ADM extending LRIP to procure up to 60 additional weapon systems
October 2018	Achieved Initial Operational Capability
December 2019	Army Acquisition Executive signed ADM extending LRIP; contract option exercised for 48 additional weapon systems

Threshold Breaches

APB Breaches

Schedule		<input checked="" type="checkbox"/>
Performance		<input type="checkbox"/>
Cost	RDT&E	<input type="checkbox"/>
	Procurement	<input checked="" 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"/>

Explanation of Breach

The schedule and procurement breaches were previously reported in the December 2018 SAR.

Nunn-McCurdy Breaches

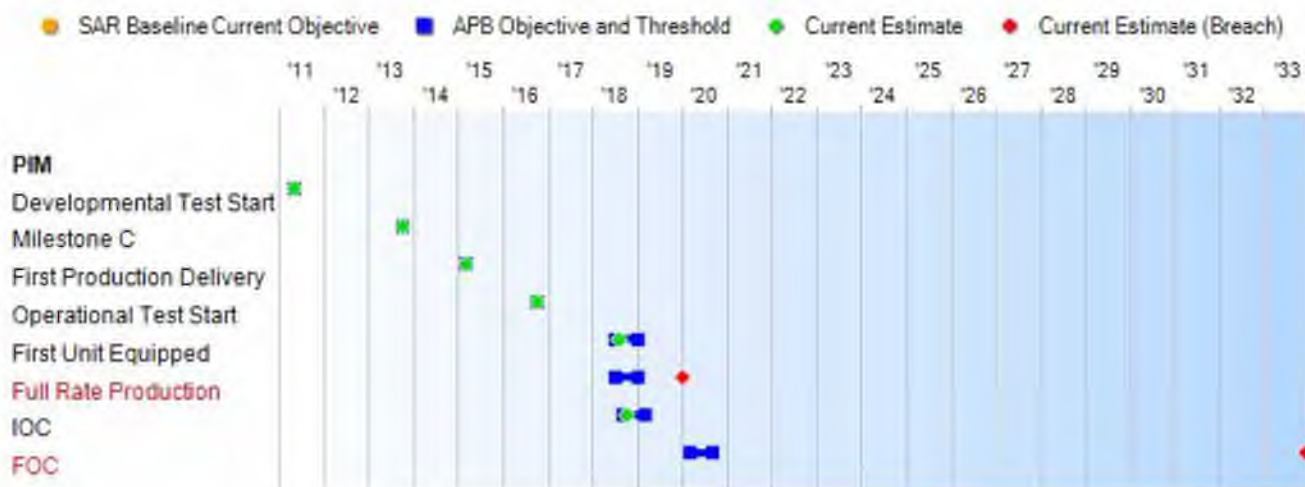
Current UCR Baseline

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	Mar 2015	Mar 2015	Mar 2015	
Operational Test Start	Jun 2016	Oct 2016	Oct 2016	Oct 2016	
First Unit Equipped	Jan 2017	Jul 2018	Jan 2019	Aug 2018	
Full Rate Production	Jan 2017	Jul 2018	Jan 2019	Jan 2020 ¹	(Ch-1)
IOC	Apr 2017	Sep 2018	Mar 2019	Oct 2018	
FOC	Mar 2020	Mar 2020	Sep 2020	Dec 2033 ¹	(Ch-2)

¹ APB Breach

Change Explanations

(Ch-1) The FRP current estimate changed from November 2019 to January 2020 to allow more time for the prime contractor to demonstrate FRP.

(Ch-2) The FOC current estimate changed from September 2033 to December 2033 to align with the end of M109A7 production run per February 21, 2019 TCM Brigade Combat Team (Fires) memorandum.

Track to Budget

RDT&E

Appn	BA	PE	
Army	2040	05	0210609A
	Project	Name	
	ED8	Paladin Integrated Management (PIM)	
			(Sunk)
Army	2040	05	0604854A
	Project	Name	
	516	Paladin/Faasv	
			(Sunk)

Procurement

Appn	BA	PE	
Army	2033	01	0210609A
	Line Item	Name	
	2073GZ0410	Paladin Integrated Management (PIM)	

Acq O&M

Appn	BA	PE	
Army	2020	04	0702806A
	Subactivity Group	Name	
	435	Acquisition & Management Support: PIM	
			(Shared)

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	1075.1	1102.0	1102.0	1085.6
Procurement	5759.3	5759.3	6335.2	7506.0 ¹	6850.5	6850.5	9233.0
Flyaway	--	--	--	7169.6	--	--	8816.4
Recurring	--	--	--	7149.8	--	--	8795.9
Non Recurring	--	--	--	19.8	--	--	20.5
Support	--	--	--	336.4	--	--	416.6
Other Support	--	--	--	223.5	--	--	276.2
Initial Spares	--	--	--	112.9	--	--	140.4
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	35.5	0.0	0.0	44.9
Total	6843.6	6843.6	N/A	8616.6	7952.5	7952.5	10363.5

¹ APB Breach

Cost Notes

A Program Office Estimate (POE) was prepared December 17, 2019. The cost risk associated with this program is considered moderate for the following reasons. Reference costs from Cost and Software Data Reports (CSDR) were used to develop the estimate from 2021 to 2031 for production. These production costs have no learning and a small rate improvement curve applied to materials. Future annual production rates are projected to be between 30 and 48 weapon systems per year and suggest the December 17, 2019 POE may be overestimating production costs. However, the first two production lots had welding issues which caused significant rework. The contractor is working to correct the welding process but there is no guarantee the welding mitigation solution will resolve all of the contractor's issues. Additionally, there are other programs competing for production assets which could cause capacity issues. The rework costs were not reported in the CSDRs used in this estimate. Program cost growth has been within accepted limits of cost growth as defined by 10 U.S.C. §2433.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	2	2	2
Procurement	556	556	689
Total	558	558	691

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2021 President's Budget / December 2019 SAR (TY\$ M)									
Appropriation	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
RDT&E	1085.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1085.6
Procurement	2749.5	553.4	435.8	603.6	591.3	618.3	619.3	3061.8	9233.0
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	3.6	3.2	3.3	3.5	3.6	3.6	3.7	20.4	44.9
PB 2021 Total	3838.7	556.6	439.1	607.1	594.9	621.9	623.0	3082.2	10363.5
PB 2020 Total	3838.3	555.4	508.8	514.6	595.2	622.4	525.2	2930.4	10090.3
Delta	0.4	1.2	-69.7	92.5	-0.3	-0.5	97.8	151.8	273.2

Quantity Summary										
FY 2021 President's Budget / December 2019 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Development	2	0	0	0	0	0	0	0	0	2
Production	0	237	48	30	44	43	45	45	197	689
PB 2021 Total	2	237	48	30	44	43	45	45	197	691
PB 2020 Total	2	238	53	37	35	43	45	38	200	691
Delta	0	-1	-5	-7	9	0	0	7	-3	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	--	--	--	--	--	--	77.2
2016	--	--	--	--	--	--	142.4
2017	--	--	--	--	--	--	41.5
2018	--	--	--	--	--	--	6.1
Subtotal	2	--	--	--	--	--	1085.6

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	--	--	--	--	--	--	73.2
2016	--	--	--	--	--	--	133.6
2017	--	--	--	--	--	--	38.2
2018	--	--	--	--	--	--	5.5
Subtotal	2	--	--	--	--	--	1075.1

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	100.7	58.6	--	159.3	6.2	165.5
2015	18	155.0	71.4	--	226.4	13.5	239.9
2016	30	247.0	12.6	3.3	262.9	11.7	274.6
2017	48	496.1	82.5	--	578.6	4.3	582.9
2018	73	670.7	81.4	--	752.1	20.0	772.1
2019	51	449.3	43.4	--	492.7	33.2	525.9
2020	48	428.2	91.2	--	519.4	34.0	553.4
2021	30	330.7	89.1	--	419.8	16.0	435.8
2022	44	478.9	92.5	--	571.4	32.2	603.6
2023	43	473.6	88.2	--	561.8	29.5	591.3
2024	45	495.1	94.3	--	589.4	28.9	618.3
2025	45	497.0	98.3	--	595.3	24.0	619.3
2026	36	384.4	105.3	--	489.7	15.0	504.7
2027	35	392.0	108.8	--	500.8	28.1	528.9
2028	39	441.4	110.1	--	551.5	22.7	574.2
2029	36	417.1	110.1	--	527.2	23.2	550.4
2030	37	435.9	103.1	--	539.0	14.3	553.3
2031	14	185.1	73.1	--	258.2	14.4	272.6
2032	--	0.5	26.8	--	27.3	8.4	35.7
2033	--	1.5	22.5	--	24.0	18.0	42.0
Subtotal	689	7203.7	1592.2	20.5	8816.4	416.6	9233.0

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	96.7	56.3	--	153.0	6.0	159.0
2015	18	146.7	67.6	--	214.3	12.7	227.0
2016	30	228.9	11.6	3.1	243.6	10.9	254.5
2017	48	450.8	74.9	--	525.7	3.9	529.6
2018	73	597.7	72.6	--	670.3	17.8	688.1
2019	51	392.6	37.9	--	430.5	29.0	459.5
2020	48	366.8	78.2	--	445.0	29.1	474.1
2021	30	277.7	74.8	--	352.5	13.5	366.0
2022	44	394.3	76.2	--	470.5	26.5	497.0
2023	43	382.3	71.2	--	453.5	23.8	477.3
2024	45	391.8	74.6	--	466.4	22.9	489.3
2025	45	385.6	76.3	--	461.9	18.6	480.5
2026	36	292.4	80.1	--	372.5	11.4	383.9
2027	35	292.3	81.2	--	373.5	20.9	394.4
2028	39	322.7	80.5	--	403.2	16.6	419.8
2029	36	299.0	78.9	--	377.9	16.6	394.5
2030	37	306.3	72.4	--	378.7	10.1	388.8
2031	14	127.5	50.3	--	177.8	10.0	187.8
2032	--	0.3	18.1	--	18.4	5.7	24.1
2033	--	1.0	14.8	--	15.8	12.0	27.8
Subtotal	689	5873.2	1276.6	19.8	7169.6	336.4	7506.0

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	192.5
2015	18	159.8
2016	30	254.8
2017	48	435.9
2018	73	597.7
2019	51	392.6
2020	48	366.8
2021	30	277.7
2022	44	394.3
2023	43	382.3
2024	45	391.8
2025	45	385.6
2026	36	292.4
2027	35	292.3
2028	39	322.7
2029	36	299.0
2030	37	306.3
2031	14	128.7
2032	--	--
2033	--	--
Subtotal	689	5873.2

Annual Funding		
2020 Acq O&M Operation and Maintenance, Army		
Fiscal Year	TY \$M	
	Total Program	
2019		3.6
2020		3.2
2021		3.3
2022		3.5
2023		3.6
2024		3.6
2025		3.7
2026		3.2
2027		3.3
2028		3.4
2029		3.4
2030		2.9
2031		2.4
2032		1.8
Subtotal		44.9

Annual Funding 2020 Acq O&M Operation and Maintenance, Army	
Fiscal Year	BY 2013 \$M
	Total Program
2019	3.2
2020	2.8
2021	2.8
2022	2.9
2023	3.0
2024	2.9
2025	2.9
2026	2.5
2027	2.5
2028	2.5
2029	2.5
2030	2.1
2031	1.7
2032	1.2
Subtotal	35.5

Risks

Significant Schedule and Technical Risks

Significant Schedule and Technical Risks	
Milestone C (October 2013)	
1.	Industrial base risk of meeting Engine Minimum Sustainment Rate
Current Estimate (December 2019)	
1.	If production inefficiencies are not addressed, then future production costs may be higher
2.	Demonstration of production rate capability, while maintaining quality, to support fielding schedule

Risks

Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Baseline Estimate (November 2017)	
1.	The M109A7 FoV (PIM) OSD CAPE ICE generated in support of Milestone C in October 2013, was used to establish the APB. It is difficult to calculate mathematically the precise confidence levels associated with cost estimates prepared for MDAP programs. Based on the rigor in methods used in building the estimate, the strong adherence to the collection and use of historical cost information and the review of applied assumptions, CAPE projects that it is about equally likely that the estimate will prove too low or too high for execution of the program. The most significant cost driver in the PIM cost estimate is the recurring manufacturing cost for vehicles. This recurring manufacturing cost estimate assumes high component design maturity. Selected parts are planned to be recovered from predecessor (M109A6 FoV) weapon systems, thereby reducing the number of new parts that must be procured during PIM production. The cost estimate would increase if changes in the planned design result in less mature components or if the assumed quantity of predecessor systems are not available for harvest of common components.
Original Baseline Estimate (March 2012)	
1.	Original Baseline APUC based on quantity of 580 PIM weapon systems. Varying quantity will likely cause fluctuations in APUC.
Revised Original Estimate (N/A)	
1.	N/A.
Current Procurement Cost (December 2019)	
1.	The M109A7 FoV current estimate reflects various time-phasing and budget adjustments; PAUC and APUC remain within 8% of the Original UCR Baseline.

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	10/21/2013	12/12/2019
Approved Quantity	67	223
Reference	Milestone C ADM	Extended LRIP ADM
Start Year	2014	2014
End Year	2017	2020

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

Notes

The Current Total LRIP Approved Quantity buy of 175 PIM systems includes two RDT&E-funded LRIP systems procured in FY 2014 for Full Up System Live Fire Testing and 173 Procurement-funded PIM systems.

PIM

December 2019 SAR

Foreign Military Sales

None

PIM

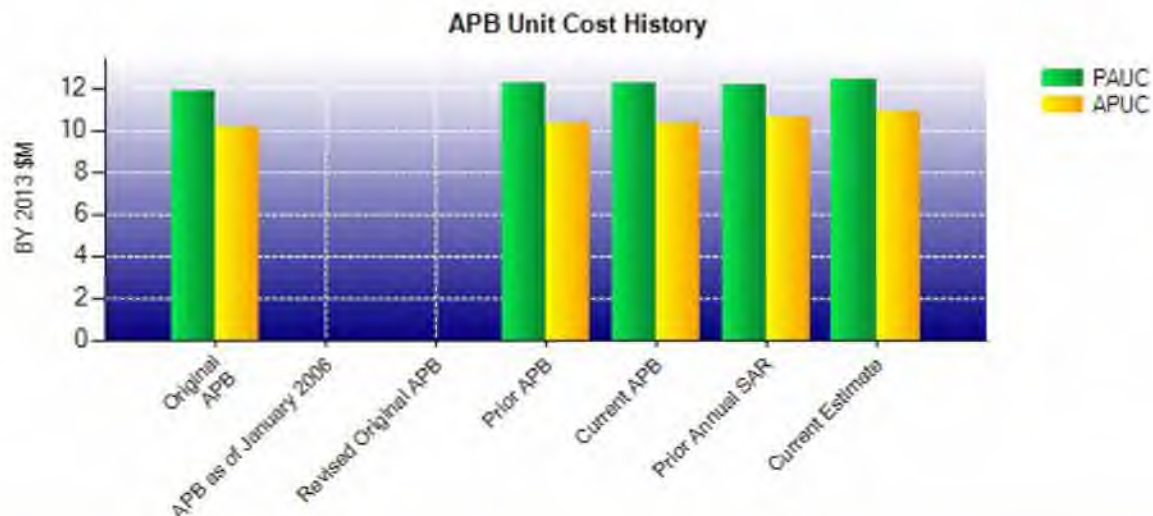
December 2019 SAR

Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2013 \$M	BY 2013 \$M	% Change
	Current UCR Baseline (Nov 2017 APB)	Current Estimate (Dec 2019 SAR)	
Program Acquisition Unit Cost			
Cost	6843.6	8616.6	
Quantity	558	691	
Unit Cost	12.265	12.470	+1.67
Average Procurement Unit Cost			
Cost	5759.3	7506.0	
Quantity	556	689	
Unit Cost	10.358	10.894	+5.17
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2013 \$M	BY 2013 \$M	% Change
	Original UCR Baseline (Mar 2012 APB)	Current Estimate (Dec 2019 SAR)	
Program Acquisition Unit Cost			
Cost	6902.6	8616.6	
Quantity	582	691	
Unit Cost	11.860	12.470	+5.14
Average Procurement Unit Cost			
Cost	5862.3	7506.0	
Quantity	580	689	
Unit Cost	10.107	10.894	+7.79



APB 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 2014	12.265	10.358	14.252	12.321
Current APB	Nov 2017	12.265	10.358	14.252	12.321
Prior Annual SAR	Dec 2018	12.166	10.613	14.602	13.036
Current Estimate	Dec 2019	12.470	10.894	14.998	13.401

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	-0.141	-1.014	0.071	0.000	2.121	0.000	-0.291	0.746	14.998

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	-0.131	-0.645	0.071	0.000	2.076	0.000	-0.291	1.080	13.401

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	Oct 2018
Total Cost (TY \$M)	N/A	7827.1	7952.5	10363.5
Total Quantity	N/A	582	558	691
PAUC	N/A	13.449	14.252	14.998

Cost Variance

Summary TY \$M					
Item	RDT&E	Procurement	MILCON	Acq O&M	Total
SAR Baseline (Production Estimate)	1102.0	6850.5	--	--	7952.5
Previous Changes					
Economic	-6.7	-82.7	--	+0.1	-89.3
Quantity	--	+1193.9	--	--	+1193.9
Schedule	--	+46.4	--	--	+46.4
Engineering	--	--	--	--	--
Estimating	-9.7	+1163.1	--	+23.1	+1176.5
Other	--	--	--	--	--
Support	--	-189.7	--	--	-189.7
Subtotal	-16.4	+2131.0	--	+23.2	+2137.8
Current Changes					
Economic	--	-7.8	--	--	-7.8
Quantity	--	--	--	--	--
Schedule	--	+2.8	--	--	+2.8
Engineering	--	--	--	--	--
Estimating	--	+267.6	--	+21.7	+289.3
Other	--	--	--	--	--
Support	--	-11.1	--	--	-11.1
Subtotal	--	+251.5	--	+21.7	+273.2
Total Changes	-16.4	+2382.5	--	+44.9	+2411.0
Current Estimate	1085.6	9233.0	--	44.9	10363.5

Summary BY 2013 \$M					
Item	RDT&E	Procurement	MILCON	Acq O&M	Total
SAR Baseline (Production Estimate)	1084.3	5759.3	--	--	6843.6
Previous Changes					
Economic	--	--	--	--	--
Quantity	--	+858.5	--	--	+858.5
Schedule	--	-1.0	--	--	-1.0
Engineering	--	--	--	--	--
Estimating	-9.2	+865.1	--	+18.8	+874.7
Other	--	--	--	--	--
Support	--	-169.3	--	--	-169.3
Subtotal	-9.2	+1553.3	--	+18.8	+1562.9
Current Changes					
Economic	--	--	--	--	--
Quantity	--	--	--	--	--
Schedule	--	--	--	--	--
Engineering	--	--	--	--	--
Estimating	--	+206.8	--	+16.7	+223.5
Other	--	--	--	--	--
Support	--	-13.4	--	--	-13.4
Subtotal	--	+193.4	--	+16.7	+210.1
Total Changes	-9.2	+1746.7	--	+35.5	+1773.0
Current Estimate	1075.1	7506.0	--	35.5	8616.6

Previous Estimate: December 2018

Procurement		\$M	
Current Change Explanations		Base Year	Then Year
Revised escalation indices. (Economic)		N/A	-7.8
Stretch-out of procurement buy profile to align with FY 2021 PB. (Schedule)		0.0	+2.8
Cost increase due to higher contractor unit cost as aligned with FY 2021 PB. (Estimating)		+204.8	+265.5
Adjustment for current and prior escalation. (Estimating)		+2.0	+2.1
Adjustment for current and prior escalation. (Support)		-0.1	+0.1
Decrease in Other Support to align with FY 2021 PB. (Support)		-32.5	-38.1
Increase in Initial Spares due to higher contractor costs and timing of fieldings as aligned with FY 2021 PB. (Support)		+19.2	+26.9
Procurement Subtotal		+193.4	+251.5

Acq O&M		\$M	
Current Change Explanations		Base Year	Then Year
Revised estimate to align with December 17, 2019 Program Office Estimate. (Estimating)		+12.1	+16.2
Revised estimate to align with FY 2021 PB. (Estimating)		+4.6	+5.5
Acq O&M Subtotal		+16.7	+21.7

Contracts

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	631.1	597.6	133	706.4	706.4

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 and LRIP Option 2 contracts.

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 earned value management waiver was granted by the Assistant Secretary of the Army (Acquisition, Logistics, and Technology) on December 24, 2015 due to the production phase of the contract. The PIM program currently uses a tailored Integrated Program Management Report to accomplish cost and schedule reporting.

Notes

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.

Contract Identification

Appropriation: Procurement
Contract Name: PIM FY17-20 Production
Contractor: BAE Systems Land & Armaments L.P.
Contractor Location: 1100 Bairs Road
 York, PA 17408
Contract Number: W56HZV-17-C-0001
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: December 21, 2017
Definitization Date: December 21, 2017

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
557.3	585.4	96	898.5	876.0	312	908.8	897.6

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to Award of FY 2018 Production October 2018 (planned 60 weapon systems) and FY 2019 Long Lead October 2019.

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 earned value management waiver was granted by the Assistant Secretary of the Army (Acquisition, Logistics, and Technology) on October 20, 2016 due to the production phase of the contract. The PIM program currently uses a tailored Integrated Program Management Report to accomplish cost and schedule reporting.

Notes

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.

The initial quantity changed from 48 to 96 to state quantity in vehicles rather than weapon systems. Contract quantities are tracked by vehicle.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	2	2	2	100.00%
Production	107	80	689	11.61%
Total Program Quantity Delivered	109	82	691	11.87%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	10363.5	Years Appropriated	14
Expended to Date	2495.4	Percent Years Appropriated	51.85%
Percent Expended	24.08%	Appropriated to Date	4395.3
Total Funding Years	27	Percent Appropriated	42.41%

The above data is current as of February 10, 2020.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	December 17, 2019
Source of Estimate:	POE
Quantity to Sustain:	689
Unit of Measure:	System
Service Life per Unit:	26.00 Years
Fiscal Years in Service:	FY 2015 - FY 2060

A system is defined as a PIM weapon system or vehicle set, comprised of one Self-Propelled Howitzer and one Carrier Ammunition Tracked.

A quantity of two PIM systems are RDT&E-funded and will not be sustained.

Sustainment Strategy

The PIM product support concept will consist of Operational/Field and Sustainment support. Operational/Field support will be through the use of Brigade Support Battalions (BSB) which use the Fires Forward Support Company and the Supply Support Activity. Maintainers from BSB will requisition spares using the Army Supply System. Outside the Continental U.S. support includes Army Pre-positioned Stock (APS), which are primarily static sets, in various locations in conjunction with Combat Support Agencies.

During LRIP, product support is expected to be via Contractor Logistics Support. During FRP and Sustainment, product support is expected to transition to organic support to the extent possible.

Maintenance support will consist of the Army two-level maintenance strategy; Field maintenance will include forward unit repair and component replacement; Depot support is expected to begin in FY 2023.

Supply Support will consist of rear supply (Army Retail Supply System) along with Depot and National Maintenance certified repair facilities developed in accordance with National Maintenance Work Requirements.

Software sustainment and support will be managed through the prime contractor and the Armament Research, Development and Engineering Center at Picatinny Arsenal, which is a software Center of Excellence.

Antecedent Information

The Antecedent System is the M109A6 Paladin / M992A2 Field Artillery Ammunition Support Vehicle (FAASV). O&S costs for the M109A6 Paladin / M992A2 FAASV 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's Forces Command model. The antecedent system estimate assumes 556 systems and Economic Useful Life (EUL) of 26 years.

Annual O&S Costs BY2013 \$M			
Cost Element	PIM		M109A6 Paladin / M992A2 FAASV
	Average Annual Cost Per System		(Antecedent) Average Annual Cost Per System
Unit-Level Manpower		0.496	0.639
Unit Operations		0.082	0.133
Maintenance		0.111	0.098
Sustaining Support		0.120	0.109
Continuing System Improvements		0.056	0.056
Indirect Support		0.171	0.250
Other		0.000	0.000
Total		1.036	1.285

Item	Total O&S Cost \$M			
	PIM			M109A6 Paladin / M992A2 FAASV (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	19911.1	21902.2	18571.0	18580.2
Then Year	30867.8	N/A	31916.7	N/A

Equation to Translate Annual Cost to Total Cost

PIM Total O&S Cost = Average Annual O&S Cost Per System x Number of Systems x EUL = \$1036.675K x 689 systems x 26 years = \$18,571.0M (BY 2013 \$M)

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

O&S Cost Variance		
Category	BY 2013 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2018 SAR	22375.4	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	-3804.4	Revised estimate due to lower manpower costs per the Army Military-Civilian Cost System as reflected in the December 17, 2019 Program Office Estimate.
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	-3804.4	
Current Estimate	18571.0	

Disposal Estimate Details

Date of Estimate:	December 17, 2019
Source of Estimate:	POE
Disposal/Demilitarization Total Cost (BY 2013 \$M):	50.6