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## Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-185



### **AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM)**

As of FY 2019 President's Budget

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

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## Sensitivity Originator

No originator info Available at this time.

## 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**

AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM)

**DoD Component**

Air Force

**Joint Participants**

Navy

## Responsible Office

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## References

### **SAR Baseline (Production Estimate)**

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated January 17, 1992

### **Approved APB**

Component Acquisition Executive (CAE) Approved Acquisition Program Baseline (APB) dated October 28, 2015

## Mission and Description

The Air Intercept Missile-120 (AIM-120) Advanced Medium Range Air-to-Air Missile (AMRAAM) program provides for the acquisition and upgrade of the most advanced all-weather, all-environment medium range air-to-air missile system in response to U.S. Air Force, U.S. Navy, North Atlantic Treaty Organization, and other Allied operational requirements. Designed to replace the AIM-7 Sparrow, the system is an active radar guided intercept missile with inherent Electronic Protection capabilities for air-to-air applications against massed penetration aircraft. The AIM-120D, currently in production, provides improved accuracy via Global Positioning System aided navigation, improved network compatibility, and enhanced aircrew survivability via a two-way datalink capability. The AIM-120D reached IOC for the Air Force and Navy in FY 2015.

## Executive Summary

### Program Highlights Since Last Report

**AIM-120C7 Advanced Electronic Protection Improvement Program (AEPIP):** AEPIP is structured to deliver combat capability for the AIM-120C7 via two incremental and complimentary software tapes, Tape 1 and Tape 2. Tape 1 provides enhanced capability to fielded systems. Tape 2 builds on the capabilities of Tape 1 and expands the system's performance envelope. Tape 1 and 2 performance probability of weapons effectiveness meets or exceeds requirements. For Tape 1, one Operational Test (OT) shot was accomplished in March 2017 and two OT shots were accomplished in June 2017. The Multiservice Operational Test and Evaluation report was signed in December 2017; fielding decisions are projected by February 2018. For Tape 2, two Integrated Test (IT) shots were accomplished in September and October 2017. Tape 2 planned fielding date is third quarter FY 2019.

**AIM-120D System Improvement Program (SIP):** SIP is a software upgrade program structured to deliver increased combat capability and counter advanced threats and electronic attack techniques on planned intervals to the AIM-120D. SIP 1 was fielded by the Navy on April 26, 2017 and by the Air Force on May 1, 2017. SIP 2 IT activities have begun and will continue through second quarter FY 2018. SIP 2 fielding is projected for the fourth quarter FY 2019. SIP 3 conducted a preliminary design review on June 14, 2017, completing Technology Maturation and Risk Reduction. The SIP 3 Engineering and Manufacturing Development contract was awarded to Raytheon on September 5, 2017. SIP 3 fielding is projected for the fourth quarter FY 2021. Due to delays to the AMRAAM Form, Fit, Function Refresh (F3R) program identified in March 2017, the Program Executive Officer approved the addition of a SIP 3F software release. The SIP 3F software tape will be a re-host of SIP 3 capabilities on the F3R missile with a projected contract award in second quarter FY 2020.

**Form, Fit, Function Refresh (F3R):** F3R is a comprehensive AMRAAM Diminishing Manufacturing Sources and Material Shortages project to mitigate obsolescence issues in the AMRAAM guidance section and enable missile production beyond Lot 32. Currently in Phases 4A/4B for integration, Raytheon has continued to experience technical difficulties with the Application Specific Integrated Circuit design verification, Circuit Card Assembly build, and hardware integration and testing. F3R production is planned to cut in the latter part of Lot 33 in FY 2021. Phases 4A and 4B are planned for completion in second quarter and fourth quarter FY 2019, respectively.

**Common Air Launched Navigation System (CALNS):** The objective of the -9 CALNS project is to replace the global positioning system receiver in the current -4 CALNS due to parts obsolescence. The -9 CALNS is a form, fit, and function replacement for the current -4 CALNS and planned to require minor changes to the missile software. The CALNS is used in AIM-120D missiles and will be replaced by a new navigation system in F3R. The -9 CALNS will provide a bridge beginning in Lot 31 for continued AIM-120D production until the planned F3R production cut-in. The Government's role is to perform bench, ground, and flight testing to verify system performance and certify the -9 CALNS for use in AIM-120D through approval of a Class I engineering change proposal (ECP). The project began in third quarter FY 2016 and is scheduled to complete with ECP approval in fourth quarter FY 2019.

**Safe and Arming Fuze (SAF) for F-35 / AMRAAM Flight Test:** The SAF is a component used to initiate the warhead in AMRAAM tactical missiles and the Flight Termination System (FTS) in instrumented flight test missiles. The FTS allows for the ability to terminate the flight of a test missile for safety reasons. In August 2015, it was identified that the current SAF did not meet FTS requirements. This issue is compounded by the fact that the F-35 test environment is more strenuous than legacy platforms (F-15, F-16, F-18 and F-22). The program office has taken a dual path approach to address this issue. In the near term, the program office is making minor design modification to ruggedize the current design to meet legacy platform requirements. This activity is on track to deliver a part that meets legacy requirements in April 2018. In the long term, to reduce risk, two simultaneous efforts are being undertaken to redesign the SAF to meet the more stringent F-35 environmental levels. Implementation of the robust redesign is anticipated by May 2020. To support tactical missile production, SAFs continue to be produced utilizing the existing design.

### AIM-120 Production and Sustainment:

As of February 12, 2018, Raytheon has delivered 1,996 of 2,918 AIM-120D missiles on contract and has delivered 2,395 of

2,959 AIM-120C7 FMS missiles on contract (through Lot 31). Lot 28 deliveries completed in October 2017. Lot 29 deliveries are planned for March 2017 through July 2018. Lot 30 deliveries are planned for April 2018 through March 2019. Production Lot 31 contract was awarded on December 28, 2017. Deliveries are planned for May 2019 through April 2020. The pre-priced option for Lot 32 has a planned contract award in March 2018.

Program Support and Annual Sustainment is an Indefinite-Delivery-Indefinite-Quantity contract for program support, contractor logistics support (CLS), the Service Life Prediction Program (SLPP), and non-warranty depot repair. The first task order for program support, CLS, and SLPP was awarded on September 21, 2015, for \$18M. Two additional task orders, valued at \$5.1M, were awarded in FY 2016. The fourth task order for additional infrastructure, CLS support and reliability testing, valued at \$20.8M, was awarded March 3, 2017.

Joint missile availability as of February 12, 2018 is 90.7% for tactical missiles against an APB threshold of 82%.

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
November 1978	Milestone I (Defense Systems Acquisition Review Council (DSARC))
September 1982	Milestone II (DSARC)
June 1987	Milestone IIIA (Defense Acquisition Board (DAB))
September 1988	Production Deliveries start
April 1991	Milestone IIIA (DAB) Lot IV Full Go-Ahead Rate Production
March 1992	DAB Program Review Full Rate Production Approval
January 2015	Air Intercept Missile (AIM)-120D variant Full Production Go-Ahead

### Threshold Breaches

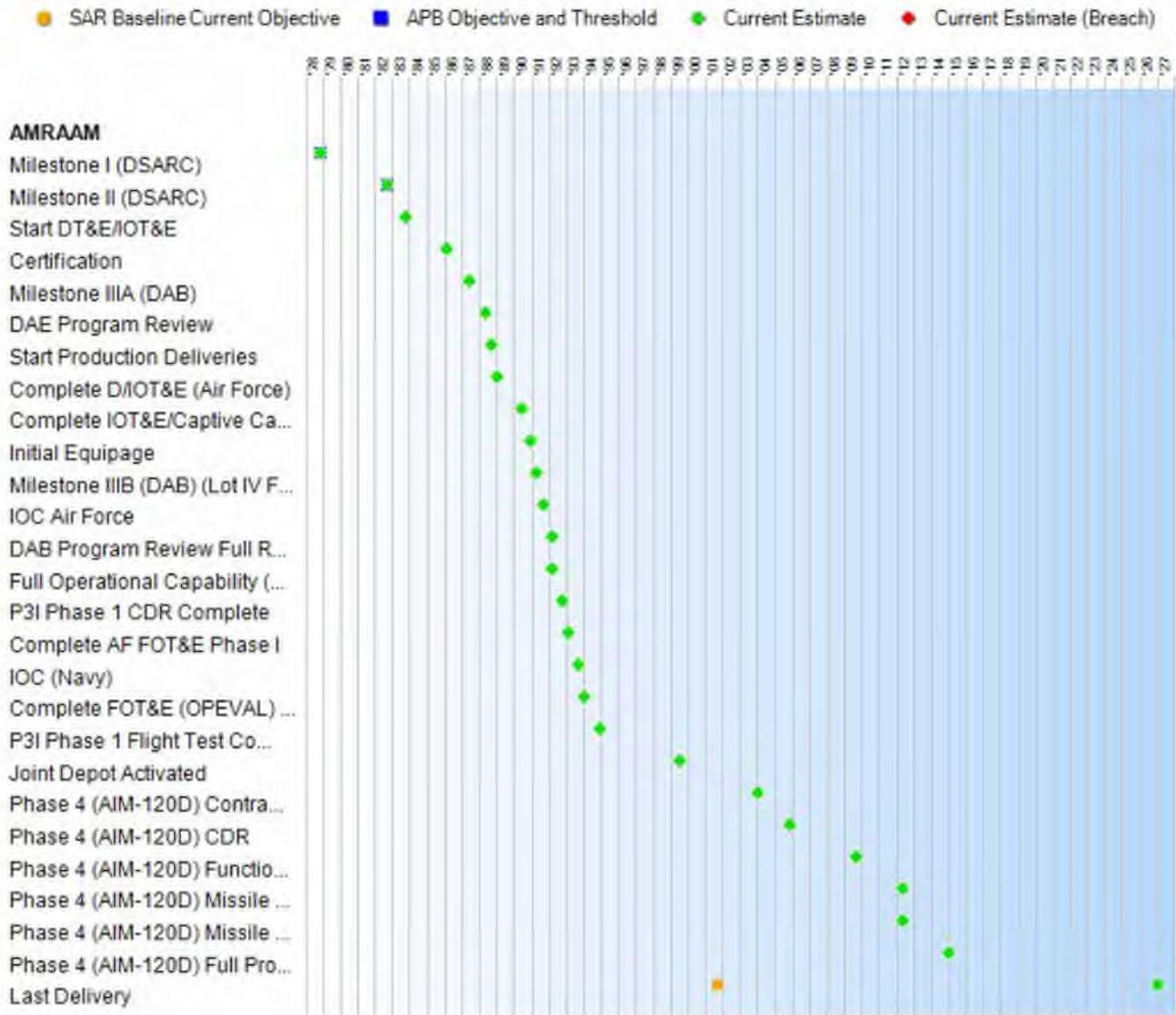
#### APB Breaches

- Schedule
- Performance
- Cost 
  - RDT&E
  - Procurement
  - MILCON
  - Acq O&M
- O&S Cost
- Unit Cost 
  - PAUC
  - APUC

#### Nunn-McCurdy Breaches

- Current UCR Baseline
  - PAUC None
  - APUC None
- Original UCR Baseline
  - PAUC None
  - APUC None

# Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate
Milestone I (DSARC)	Nov 1978	Nov 1978	Nov 1978	Nov 1978
Milestone II (DSARC)	Sep 1982	Sep 1982	Sep 1982	Sep 1982
Start DT&E/IOT&E	Oct 1983	N/A	N/A	Oct 1983
Certification	Feb 1986	Feb 1986	Feb 1986	Feb 1986
Milestone IIIA (DAB)	Jun 1987	Jun 1987	Jun 1987	Jun 1987
DAE Program Review	May 1988	May 1988	May 1988	May 1988
Start Production Deliveries	Sep 1988	Sep 1988	Sep 1988	Sep 1988
Complete D/IOT&E (Air Force)	Jan 1989	Jan 1989	Jan 1989	Jan 1989
Complete IOT&E/Captive Carry Reliability Program w/Lot 1 Assets (Air Force)	Jun 1990	Jun 1990	Jun 1990	Jun 1990
Initial Equipage	Dec 1990	Dec 1990	Dec 1990	Dec 1990
Milestone IIIB (DAB) (Lot IV Full Go-Ahead Rate Production)	Apr 1991	Apr 1991	Apr 1991	Apr 1991
IOC Air Force	Mar 1991	Sep 1991	Sep 1991	Sep 1991
DAB Program Review Full Rate Production Approval	Mar 1992	Mar 1992	Mar 1992	Mar 1992
Full Operational Capability (FOC) 1st F-16 Unit Fully Operational w/AMRAAMs	Mar 1992	Mar 1992	Mar 1992	Mar 1992
P3I Phase 1 CDR Complete	Oct 1992	Oct 1992	Oct 1992	Oct 1992
Complete AF FOT&E Phase I	Mar 1992	Feb 1993	Feb 1993	Feb 1993
IOC (Navy)	Sep 1992	Sep 1993	Sep 1993	Sep 1993
Complete FOT&E (OPEVAL) (Navy)	Mar 1992	Jan 1994	Jan 1994	Jan 1994
P3I Phase 1 Flight Test Completed	Dec 1994	Dec 1994	Dec 1994	Dec 1994
Joint Depot Activated	Sep 1994	Jul 1999	Jul 1999	Jul 1999
Phase 4 (AIM-120D) Contract Award	N/A	Jan 2004	Jan 2004	Jan 2004
Phase 4 (AIM-120D) CDR	N/A	Nov 2005	Nov 2005	Nov 2005
Phase 4 (AIM-120D) Functional Configuration Audit (FCA)	N/A	Sep 2009	Sep 2009	Sep 2009
Phase 4 (AIM-120D) Missile Deliveries to Meet F/A-18 RAA	N/A	May 2012	May 2012	May 2012
Phase 4 (AIM-120D) Missile Deliveries to Meet F-15C/D RAA	N/A	May 2012	May 2012	May 2012
Phase 4 (AIM-120D) Full Production Go-ahead	N/A	Jan 2015	Jan 2015	Jan 2015
Last Delivery	Sep 2001	N/A	N/A	Jan 2027

### Change Explanations

None

**Acronyms and Abbreviations**

AF - Air Force  
AIM - Air Intercept Missile  
CDR - Critical Design Review  
D/IOT&E - Development / Initial Operational Test & Evaluation  
DSARC - Defense Systems Acquisition Review Council  
DT&E - Development Test and Evaluation  
FOT&E - Follow-on Test and Evaluation  
IOT&E - Initial Operational Test and Evaluation  
OPEVAL - Operational Evaluation  
P3I - Pre-Planned Product Improvement  
RAA - Required Assets Available

## Performance

Performance Characteristics				
SAR Baseline Production Estimate	Current APB Production Objective/Threshold	Demonstrated Performance	Current Estimate	
<b>Weight (lbs)</b>				
327	327	350	344	345
<b>Reliability</b>				
<b>Ready Storage (hrs) (mature msl - 90K operational flight hours)</b>				
60000	60000	45000	45000	45000
<b>Availability (%)</b>				
86	86	82	90.7	90.7 (Ch-1)
<b>Captive-Carry (MTBM-Type I) (hrs)</b>				
600	600	450	1329	1329 (Ch-2)
<b>On Alert Storage MTBM</b>				
30000	30000	22500	N/A	30000
<b>Aircraft Configure/ Load - 3 Man Load Crew</b>				
<b>Install 4 Rail Launchers (mins)</b>				
20	20	25	21	21
<b>Load 4 Missiles from trailer (mins)</b>				
15	15	20	18	18
<b>Load 4 Missiles from container (mins)</b>				
20	20	30	22	22
<b>Missile checks (mins)</b>				
1	1	5	1	1
<b>All Weather Capability</b>				
Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds
<b>Aircraft Compatibility</b>				
F-15, F-16, F-14, F/A-18	F-15, F-16, F/A-18, F-35	F-15, F-16, F/A 18, F-22	F-15, F-16, F-14, F/A-18, F-22, F-35, AV-8B	F-15, F-16, F/A-18, F-22, F-35, AV-8B (Ch-3)
<b>All-Up Round</b>				
Control Surfaces field installed	Control Surfaces field installed	Control Surfaces field installed	Control Surfaces field installed	Control Surfaces field installed
<b>Net Ready</b>				
N/A	Satisfies NCOW-RM and GIG Information	Satisfies 100% of enterprise level or	Satisfies NCOW-RM and GIG Information	Satisfies 100% of enterprise level or

	assurance reqmts	critical information reqmts	assurance reqmts	critical information reqmts
<b>Shipboard Survivability</b>				
N/A	Compatible in aircraft carrier electro-magnetic environment			

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

#### Requirements Reference

Joint Service Operational Requirement dated May 22, 1991, ORD (Combat Air Forces 009-76-I/II/III-A) dated March 10, 1997 (revised January 21, 2004), and CPD Phase 4 (AIM-120D) dated June 16, 2005

#### Change Explanations

(Ch-1) Availability current estimate changed from 91.4 to 90.7 due to increase in unserviceable missiles (condition code F).  
 (Ch-2) Captive-Carry current estimate changed from 1,290 to 1,329 hours due to increased flying hours versus failures.  
 (Ch-3) Aircraft compatibility changed due to demonstrated performance on F-22, F-35, and AV-8A aircraft.

#### Acronyms and Abbreviations

AIM - Air Intercept Missile  
 GIG - Global Information Grid  
 hrs - Hours  
 K - Thousands  
 lbs - Pounds  
 mins - Minutes  
 msl - Missile  
 MTBM - Mean Time Between Maintenance  
 NCOW-RM - Net Centric Operations Warfare - Reference Model

## Track to Budget

**RDT&E**

Appn	BA	PE		
Navy	1319	07	0207163N	
	<b>Project</b>		<b>Name</b>	
	0981		AMRAAM	(Shared)
Navy	1319	07	0603370N	
	<b>Project</b>		<b>Name</b>	
	UNK		Beyond Visual Range, Air-to-Air Missile (BVRAAM), FY 1978-1981.	(Sunk)
Navy	1319	07	0604314N	
	<b>Project</b>		<b>Name</b>	
	W0981		(AMRAAM), FY 1982-1992	(Shared) (Sunk)
Air Force	3600	07	0207163F	
	<b>Project</b>		<b>Name</b>	
	673777		AMRAAM	(Shared) (Sunk)
Air Force	3600	07	0603370F	
	<b>Project</b>		<b>Name</b>	
	2437		(AMRAAM), FY 1978-1982	(Sunk)
Air Force	3600	07	0604314F	
	<b>Project</b>		<b>Name</b>	
	3096		(AMRAAM), FY 1982-1992	(Sunk)

**Procurement**

Appn	BA	PE		
Navy	1507	02	0204162N	
	<b>Line Item</b>		<b>Name</b>	
	2206		AMRAAM	
Navy	1507	02	0206138M	
	<b>Line Item</b>		<b>Name</b>	
	2206		AMRAAM	
Navy	1507	06	0204162N	
	<b>Line Item</b>		<b>Name</b>	
	6120		Spares and Repair Parts	(Shared)
Air Force	3020	04	0207163F	
	<b>Line Item</b>		<b>Name</b>	
	00099A		Initial Spares / Repair Parts	(Sunk)
	00099K		Initial Spares / Repair Parts	(Sunk)
Air Force	3020	01	0207163F	
	<b>Line Item</b>		<b>Name</b>	

	00099L		Missile Replacement Equipment - Ballistic	(Shared)	(Sunk)
Air Force	3020	04	0207163F		
	<b>Line Item</b>		<b>Name</b>		
	999		Replen Spares / Repair Parts	(Shared)	
Air Force	3020	02	0207163F		
	<b>Line Item</b>		<b>Name</b>		
	MAMRAO		AMRAAM		

## Cost and Funding

### Cost Summary

Total Acquisition Cost							
Appropriation	BY 1992 \$M			BY 1992 \$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	1725.7	2419.5	2661.5	2413.7	1350.6	2247.2	2236.7
Procurement	10552.5	13574.7	14932.2	13914.7	11761.8	17499.8	18044.0
Flyaway	--	--	--	13106.8	--	--	16971.7
Recurring	--	--	--	11227.5	--	--	15073.8
Non Recurring	--	--	--	1879.3	--	--	1897.9
Support	--	--	--	807.9	--	--	1072.3
Other Support	--	--	--	677.4	--	--	909.7
Initial Spares	--	--	--	130.5	--	--	162.6
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	12278.2	15994.2	N/A	16328.4	13112.4	19747.0	20280.7

#### Current APB Cost Estimate Reference

POE dated May 12, 2014

#### Cost Notes

In accordance with Section 842 of the National Defense Authorization Act for FY 2017, which amended title 10 U.S.C. §2334, the Director of Cost Assessment and Program Evaluation, and the Secretary of the military department concerned or the head of the Defense Agency concerned, must issue guidance requiring a discussion of risk, the potential impacts of risk on program costs, and approaches to mitigate risk in cost estimates for MDAPs and major subprograms. The information required by the guidance is to be reported in each SAR. This guidance is not yet available; therefore, the information on cost risk is not contained in this SAR.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	0	0	0
Procurement	15450	16427	17312
Total	15450	16427	17312

## Cost and Funding

### Funding Summary

Appropriation Summary									
FY 2019 President's Budget / December 2017 SAR (TY\$ M)									
Appropriation	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
RDT&E	2223.2	1.8	1.8	2.0	1.9	2.0	2.0	2.0	2236.7
Procurement	12037.4	506.9	557.1	683.7	817.8	787.8	799.4	1853.9	18044.0
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 2019 Total	14260.6	508.7	558.9	685.7	819.7	789.8	801.4	1855.9	20280.7
PB 2018 Total	14292.2	508.8	760.9	728.1	776.0	755.7	810.1	1326.4	19958.2
Delta	-31.6	-0.1	-202.0	-42.4	43.7	34.1	-8.7	529.5	322.5

Quantity Summary										
FY 2019 President's Budget / December 2017 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
Development	0	0	0	0	0	0	0	0	0	0
Production	0	12417	325	363	497	704	716	725	1565	17312
PB 2019 Total	0	12417	325	363	497	704	716	725	1565	17312
PB 2018 Total	0	12417	325	657	641	728	683	720	1141	17312
Delta	0	0	0	-294	-144	-24	33	5	424	0

## Cost and Funding

### Annual Funding By Appropriation

Annual Funding							
3600   RDT&E   Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1977	--	--	--	--	--	--	4.8
1978	--	--	--	--	--	--	6.7
1979	--	--	--	--	--	--	16.1
1980	--	--	--	--	--	--	26.2
1981	--	--	--	--	--	--	22.9
1982	--	--	--	--	--	--	137.9
1983	--	--	--	--	--	--	212.9
1984	--	--	--	--	--	--	197.3
1985	--	--	--	--	--	--	206.6
1986	--	--	--	--	--	--	91.1
1987	--	--	--	--	--	--	37.7
1988	--	--	--	--	--	--	26.7
1989	--	--	--	--	--	--	--
1990	--	--	--	--	--	--	11.9
1991	--	--	--	--	--	--	17.9
1992	--	--	--	--	--	--	30.3
1993	--	--	--	--	--	--	38.9
1994	--	--	--	--	--	--	64.8
1995	--	--	--	--	--	--	63.8
1996	--	--	--	--	--	--	44.2
1997	--	--	--	--	--	--	9.7
1998	--	--	--	--	--	--	39.2
1999	--	--	--	--	--	--	33.5
2000	--	--	--	--	--	--	49.4
2001	--	--	--	--	--	--	50.4
2002	--	--	--	--	--	--	53.5
2003	--	--	--	--	--	--	39.3
2004	--	--	--	--	--	--	31.0
2005	--	--	--	--	--	--	31.9
2006	--	--	--	--	--	--	25.1
2007	--	--	--	--	--	--	30.4
2008	--	--	--	--	--	--	32.3
2009	--	--	--	--	--	--	38.3
2010	--	--	--	--	--	--	44.8
2011	--	--	--	--	--	--	47.7

2012	--	--	--	--	--	--	58.2
2013	--	--	--	--	--	--	43.1
2014	--	--	--	--	--	--	40.2
Subtotal	--	--	--	--	--	--	1956.7

Annual Funding							
3600   RDT&E   Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	BY 1992 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1977	--	--	--	--	--	--	10.3
1978	--	--	--	--	--	--	13.2
1979	--	--	--	--	--	--	29.5
1980	--	--	--	--	--	--	43.2
1981	--	--	--	--	--	--	34.1
1982	--	--	--	--	--	--	192.0
1983	--	--	--	--	--	--	283.2
1984	--	--	--	--	--	--	252.7
1985	--	--	--	--	--	--	255.9
1986	--	--	--	--	--	--	110.2
1987	--	--	--	--	--	--	43.6
1988	--	--	--	--	--	--	30.1
1989	--	--	--	--	--	--	--
1990	--	--	--	--	--	--	12.4
1991	--	--	--	--	--	--	18.0
1992	--	--	--	--	--	--	29.6
1993	--	--	--	--	--	--	37.2
1994	--	--	--	--	--	--	60.9
1995	--	--	--	--	--	--	58.9
1996	--	--	--	--	--	--	40.1
1997	--	--	--	--	--	--	8.7
1998	--	--	--	--	--	--	34.8
1999	--	--	--	--	--	--	29.5
2000	--	--	--	--	--	--	42.8
2001	--	--	--	--	--	--	43.1
2002	--	--	--	--	--	--	45.2
2003	--	--	--	--	--	--	32.8
2004	--	--	--	--	--	--	25.2
2005	--	--	--	--	--	--	25.3
2006	--	--	--	--	--	--	19.3
2007	--	--	--	--	--	--	22.8
2008	--	--	--	--	--	--	23.8
2009	--	--	--	--	--	--	27.8
2010	--	--	--	--	--	--	32.1
2011	--	--	--	--	--	--	33.6
2012	--	--	--	--	--	--	40.3
2013	--	--	--	--	--	--	29.3
2014	--	--	--	--	--	--	27.0
Subtotal	--	--	--	--	--	--	2098.5

Annual Funding							
1319   RDT&E   Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1978	--	--	--	--	--	--	6.0
1979	--	--	--	--	--	--	18.3
1980	--	--	--	--	--	--	27.3
1981	--	--	--	--	--	--	24.2
1982	--	--	--	--	--	--	3.3
1983	--	--	--	--	--	--	4.3
1984	--	--	--	--	--	--	7.3
1985	--	--	--	--	--	--	7.8
1986	--	--	--	--	--	--	4.2
1987	--	--	--	--	--	--	5.0
1988	--	--	--	--	--	--	22.3
1989	--	--	--	--	--	--	12.4
1990	--	--	--	--	--	--	6.9
1991	--	--	--	--	--	--	3.5
1992	--	--	--	--	--	--	2.5
1993	--	--	--	--	--	--	3.1
1994	--	--	--	--	--	--	--
1995	--	--	--	--	--	--	7.8
1996	--	--	--	--	--	--	4.3
1997	--	--	--	--	--	--	2.1
1998	--	--	--	--	--	--	5.5
1999	--	--	--	--	--	--	4.5
2000	--	--	--	--	--	--	12.8
2001	--	--	--	--	--	--	11.3
2002	--	--	--	--	--	--	9.7
2003	--	--	--	--	--	--	7.7
2004	--	--	--	--	--	--	8.7
2005	--	--	--	--	--	--	8.5
2006	--	--	--	--	--	--	3.4
2007	--	--	--	--	--	--	3.5
2008	--	--	--	--	--	--	1.1
2009	--	--	--	--	--	--	5.2
2010	--	--	--	--	--	--	2.2
2011	--	--	--	--	--	--	1.2
2012	--	--	--	--	--	--	1.1
2013	--	--	--	--	--	--	1.2
2014	--	--	--	--	--	--	1.1
2015	--	--	--	--	--	--	1.5
2016	--	--	--	--	--	--	1.9
2017	--	--	--	--	--	--	1.8

2018	--	--	--	--	--	--	1.8
2019	--	--	--	--	--	--	1.8
2020	--	--	--	--	--	--	2.0
2021	--	--	--	--	--	--	1.9
2022	--	--	--	--	--	--	2.0
2023	--	--	--	--	--	--	2.0
2024	--	--	--	--	--	--	2.0
Subtotal	--	--	--	--	--	--	280.0

Annual Funding 1319   RDT&E   Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 1992 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1978	--	--	--	--	--	--	11.7
1979	--	--	--	--	--	--	32.3
1980	--	--	--	--	--	--	43.5
1981	--	--	--	--	--	--	35.4
1982	--	--	--	--	--	--	4.6
1983	--	--	--	--	--	--	5.7
1984	--	--	--	--	--	--	9.4
1985	--	--	--	--	--	--	9.7
1986	--	--	--	--	--	--	5.1
1987	--	--	--	--	--	--	5.9
1988	--	--	--	--	--	--	25.3
1989	--	--	--	--	--	--	13.5
1990	--	--	--	--	--	--	7.2
1991	--	--	--	--	--	--	3.5
1992	--	--	--	--	--	--	2.5
1993	--	--	--	--	--	--	3.0
1994	--	--	--	--	--	--	--
1995	--	--	--	--	--	--	7.2
1996	--	--	--	--	--	--	3.9
1997	--	--	--	--	--	--	1.9
1998	--	--	--	--	--	--	4.9
1999	--	--	--	--	--	--	4.0
2000	--	--	--	--	--	--	11.1
2001	--	--	--	--	--	--	9.7
2002	--	--	--	--	--	--	8.2
2003	--	--	--	--	--	--	6.4
2004	--	--	--	--	--	--	7.1
2005	--	--	--	--	--	--	6.7
2006	--	--	--	--	--	--	2.6
2007	--	--	--	--	--	--	2.6
2008	--	--	--	--	--	--	0.8
2009	--	--	--	--	--	--	3.8
2010	--	--	--	--	--	--	1.6
2011	--	--	--	--	--	--	0.8
2012	--	--	--	--	--	--	0.8
2013	--	--	--	--	--	--	0.8
2014	--	--	--	--	--	--	0.7
2015	--	--	--	--	--	--	1.0
2016	--	--	--	--	--	--	1.2
2017	--	--	--	--	--	--	1.2

2018	--	--	--	--	--	--	1.1
2019	--	--	--	--	--	--	1.1
2020	--	--	--	--	--	--	1.2
2021	--	--	--	--	--	--	1.1
2022	--	--	--	--	--	--	1.2
2023	--	--	--	--	--	--	1.1
2024	--	--	--	--	--	--	1.1
Subtotal	--	--	--	--	--	--	315.2

Annual Funding 1507   Procurement   Weapons Procurement, Navy								
Fiscal Year	Quantity	TY \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
1989	26	26.0	--	2.7	28.7	2.5	31.2	
1990	85	61.5	--	18.7	80.2	4.9	85.1	
1991	300	191.5	--	52.9	244.4	17.5	261.9	
1992	191	115.3	--	38.0	153.3	41.2	194.5	
1993	165	72.5	--	20.3	92.8	12.4	105.2	
1994	75	26.7	--	21.5	48.2	8.6	56.8	
1995	106	40.5	--	24.6	65.1	9.9	75.0	
1996	115	35.2	--	28.5	63.7	10.0	73.7	
1997	100	30.4	--	16.3	46.7	6.0	52.7	
1998	120	38.1	--	10.1	48.2	6.3	54.5	
1999	100	36.5	--	9.0	45.5	5.4	50.9	
2000	91	33.5	--	10.0	43.5	2.5	46.0	
2001	63	25.3	--	9.1	34.4	3.4	37.8	
2002	55	20.4	--	12.9	33.3	3.5	36.8	
2003	76	34.4	--	12.5	46.9	3.5	50.4	
2004	42	18.5	--	15.0	33.5	3.8	37.3	
2005	37	16.4	--	9.4	25.8	3.0	28.8	
2006	48	40.4	--	30.2	70.6	3.2	73.8	
2007	42	60.4	--	25.0	85.4	3.4	88.8	
2008	52	75.8	--	7.5	83.3	2.7	86.0	
2009	57	80.3	--	2.4	82.7	2.6	85.3	
2010	71	135.3	--	--	135.3	3.3	138.6	
2011	101	134.2	--	--	134.2	5.0	139.2	
2012	67	93.3	--	--	93.3	5.5	98.8	
2013	67	82.8	--	--	82.8	4.7	87.5	
2014	61	76.1	--	1.5	77.6	5.4	83.0	
2015	--	--	--	1.9	1.9	0.3	2.2	
2016	158	208.9	--	--	208.9	3.9	212.8	
2017	163	195.5	--	--	195.5	2.8	198.3	
2018	120	184.0	--	9.6	193.6	6.9	200.5	
2019	141	209.3	--	--	209.3	5.3	214.6	
2020	222	282.0	--	--	282.0	7.4	289.4	
2021	316	345.5	--	--	345.5	5.9	351.4	
2022	347	351.9	--	2.0	353.9	9.8	363.7	
2023	358	361.8	--	--	361.8	10.1	371.9	
2024	323	364.6	--	--	364.6	25.0	389.6	
Subtotal	4461	4104.8	--	391.6	4496.4	257.6	4754.0	

Annual Funding 1507   Procurement   Weapons Procurement, Navy							
Fiscal Year	Quantity	BY 1992 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1989	26	27.1	--	2.9	30.0	2.6	32.6
1990	85	62.0	--	18.9	80.9	4.9	85.8
1991	300	188.4	--	52.0	240.4	17.2	257.6
1992	191	110.6	--	36.5	147.1	39.5	186.6
1993	165	68.3	--	19.1	87.4	11.7	99.1
1994	75	24.7	--	19.9	44.6	7.9	52.5
1995	106	36.8	--	22.4	59.2	9.0	68.2
1996	115	31.6	--	25.6	57.2	9.0	66.2
1997	100	27.0	--	14.6	41.6	5.3	46.9
1998	120	33.5	--	8.9	42.4	5.5	47.9
1999	100	31.7	--	7.8	39.5	4.7	44.2
2000	91	28.7	--	8.5	37.2	2.2	39.4
2001	63	21.4	--	7.7	29.1	2.9	32.0
2002	55	17.1	--	10.7	27.8	3.0	30.8
2003	76	28.2	--	10.3	38.5	2.8	41.3
2004	42	14.7	--	12.0	26.7	3.0	29.7
2005	37	12.7	--	7.3	20.0	2.3	22.3
2006	48	30.6	--	22.8	53.4	2.4	55.8
2007	42	44.7	--	18.5	63.2	2.5	65.7
2008	52	55.2	--	5.6	60.8	1.9	62.7
2009	57	57.7	--	1.7	59.4	1.9	61.3
2010	71	95.5	--	--	95.5	2.4	97.9
2011	101	93.0	--	--	93.0	3.5	96.5
2012	67	63.7	--	--	63.7	3.8	67.5
2013	67	55.7	--	--	55.7	3.2	58.9
2014	61	50.6	--	1.0	51.6	3.5	55.1
2015	--	--	--	1.2	1.2	0.2	1.4
2016	158	134.6	--	--	134.6	2.5	137.1
2017	163	123.8	--	--	123.8	1.8	125.6
2018	120	114.4	--	6.0	120.4	4.3	124.7
2019	141	127.7	--	--	127.7	3.2	130.9
2020	222	168.7	--	--	168.7	4.5	173.2
2021	316	202.7	--	--	202.7	3.4	206.1
2022	347	202.4	--	1.2	203.6	5.6	209.2
2023	358	204.0	--	--	204.0	5.7	209.7
2024	323	201.5	--	--	201.5	13.9	215.4
Subtotal	4461	2791.0	--	343.1	3134.1	203.7	3337.8

Annual Funding							
3020   Procurement   Missile Procurement, Air Force							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1984	--	--	--	29.2	29.2	--	29.2
1985	--	--	--	74.1	74.1	--	74.1
1986	--	--	--	193.8	193.8	4.1	197.9
1987	180	405.2	--	170.4	575.6	20.5	596.1
1988	400	535.5	--	160.6	696.1	15.2	711.3
1989	874	667.3	--	102.6	769.9	16.3	786.2
1990	803	576.3	--	88.4	664.7	17.9	682.6
1991	600	397.5	--	190.2	587.7	24.2	611.9
1992	700	438.5	--	73.2	511.7	18.1	529.8
1993	1000	422.2	--	140.5	562.7	30.6	593.3
1994	983	347.1	--	81.5	428.6	18.4	447.0
1995	412	123.3	--	75.5	198.8	31.7	230.5
1996	291	146.2	--	21.7	167.9	11.9	179.8
1997	133	93.6	--	10.8	104.4	8.2	112.6
1998	173	53.6	--	44.6	98.2	4.8	103.0
1999	180	67.0	--	22.4	89.4	1.0	90.4
2000	163	68.4	--	6.2	74.6	9.2	83.8
2001	170	75.3	--	9.4	84.7	10.6	95.3
2002	190	80.5	--	7.1	87.6	12.6	100.2
2003	124	69.9	--	4.1	74.0	11.0	85.0
2004	159	84.6	--	--	84.6	13.8	98.4
2005	159	87.7	--	--	87.7	19.2	106.9
2006	84	99.9	--	--	99.9	2.2	102.1
2007	59	103.9	--	--	103.9	11.6	115.5
2008	133	167.2	--	--	167.2	27.2	194.4
2009	133	161.3	--	--	161.3	45.8	207.1
2010	170	248.4	--	--	248.4	29.1	277.5
2011	246	311.9	--	--	311.9	28.2	340.1
2012	112	146.7	--	--	146.7	20.9	167.6
2013	113	176.5	--	--	176.5	24.9	201.4
2014	279	302.5	--	--	302.5	9.5	312.0
2015	223	303.2	--	--	303.2	14.6	317.8
2016	281	330.5	--	--	330.5	25.5	356.0
2017	256	307.5	--	--	307.5	20.2	327.7
2018	205	280.1	--	--	280.1	26.3	306.4
2019	222	315.8	--	--	315.8	26.7	342.5
2020	275	367.0	--	--	367.0	27.3	394.3
2021	388	438.6	--	--	438.6	27.8	466.4
2022	369	395.8	--	--	395.8	28.3	424.1
2023	367	398.5	--	--	398.5	29.0	427.5

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2024	420	448.9	--	--	448.9	29.5	478.4
2025	420	473.0	--	--	473.0	30.1	503.1
2026	402	452.1	--	--	452.1	30.7	482.8
Subtotal	12851	10969.0	--	1506.3	12475.3	814.7	13290.0

Annual Funding								
3020   Procurement   Missile Procurement, Air Force								
Fiscal Year	Quantity	BY 1992 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
1984	--	--	--	36.0	36.0	--	36.0	
1985	--	--	--	88.9	88.9	--	88.9	
1986	--	--	--	222.1	222.1	4.7	226.8	
1987	180	445.0	--	187.1	632.1	22.6	654.7	
1988	400	567.6	--	170.2	737.8	16.1	753.9	
1989	874	677.3	--	104.0	781.3	16.6	797.9	
1990	803	574.4	--	88.1	662.5	17.8	680.3	
1991	600	384.9	--	184.2	569.1	23.4	592.5	
1992	700	419.5	--	70.0	489.5	17.3	506.8	
1993	1000	395.9	--	131.8	527.7	28.7	556.4	
1994	983	319.1	--	75.0	394.1	16.9	411.0	
1995	412	112.3	--	68.7	181.0	28.9	209.9	
1996	291	131.4	--	19.5	150.9	10.7	161.6	
1997	133	83.0	--	9.5	92.5	7.3	99.8	
1998	173	47.1	--	39.1	86.2	4.2	90.4	
1999	180	58.1	--	19.4	77.5	0.9	78.4	
2000	163	58.6	--	5.3	63.9	8.0	71.9	
2001	170	63.9	--	8.0	71.9	8.9	80.8	
2002	190	67.2	--	5.9	73.1	10.5	83.6	
2003	124	57.6	--	3.4	61.0	9.1	70.1	
2004	159	68.3	--	--	68.3	11.1	79.4	
2005	159	68.8	--	--	68.8	15.1	83.9	
2006	84	76.2	--	--	76.2	1.7	77.9	
2007	59	77.3	--	--	77.3	8.6	85.9	
2008	133	122.2	--	--	122.2	19.8	142.0	
2009	133	116.2	--	--	116.2	33.0	149.2	
2010	170	176.4	--	--	176.4	20.7	197.1	
2011	246	217.1	--	--	217.1	19.6	236.7	
2012	112	100.4	--	--	100.4	14.3	114.7	
2013	113	118.1	--	--	118.1	16.7	134.8	
2014	279	199.7	--	--	199.7	6.3	206.0	
2015	223	198.0	--	--	198.0	9.5	207.5	
2016	281	212.3	--	--	212.3	16.3	228.6	
2017	256	193.6	--	--	193.6	12.7	206.3	
2018	205	173.2	--	--	173.2	16.3	189.5	
2019	222	191.6	--	--	191.6	16.2	207.8	
2020	275	218.3	--	--	218.3	16.3	234.6	
2021	388	255.8	--	--	255.8	16.2	272.0	
2022	369	226.3	--	--	226.3	16.2	242.5	
2023	367	223.4	--	--	223.4	16.3	239.7	

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2024	420	246.7	--	--	246.7	16.2	262.9
2025	420	254.9	--	--	254.9	16.2	271.1
2026	402	238.8	--	--	238.8	16.3	255.1
Subtotal	12851	8436.5	--	1536.2	9972.7	604.2	10576.9

## Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
<b>Approval Date</b>	6/4/1987	5/23/1991
<b>Approved Quantity</b>	810	4159
<b>Reference</b>	Milestone IIIA ADM	Milestone IIIB ADM
<b>Start Year</b>	1987	1987
<b>End Year</b>	1989	1992

The Current Total LRIP Quantity is more than 10% of the total production quantity due to the LRIP extension to include six lots, FY 1987 through FY 1992. The follow-on DAB Program Review, held on April 23, 1992, resulted in approval of FRP for Lot VII (FY 1993) procurement. The original LRIP decision was made at the Milestone IIIA review by the DAB in June 1987 to procure 810 LRIP missiles which covered two lots. On May 23, 1991, the DAB for Milestone IIIB approved a procurement quantity of 4,159 missiles.

## **Foreign Military Sales**

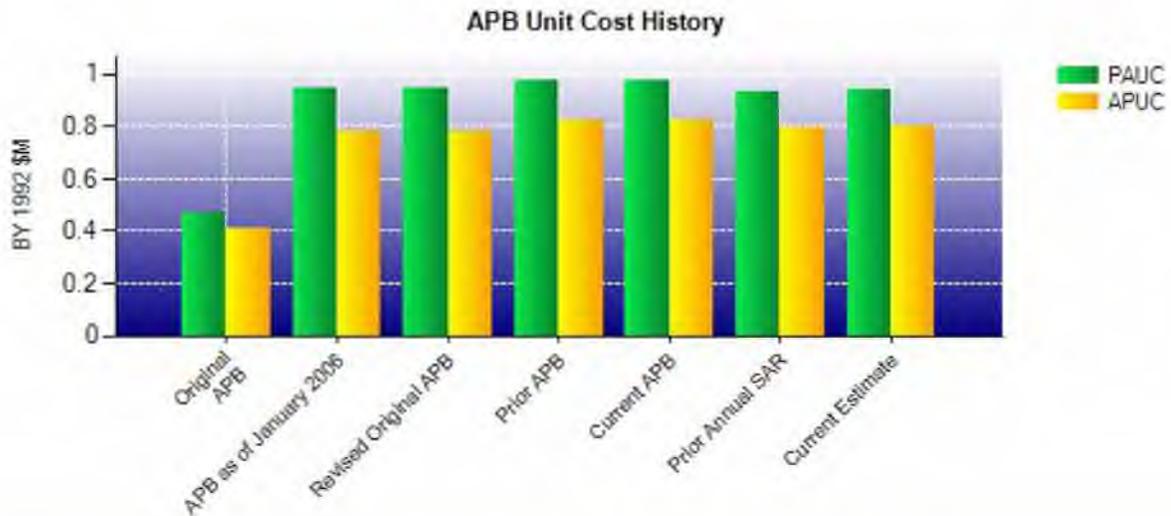
Classified FMS information is provided in the classified annex to this submission.

## **Nuclear Costs**

None

**Unit Cost**

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 1992 \$M	BY 1992 \$M	% Change
	Current UCR Baseline (Oct 2015 APB)	Current Estimate (Dec 2017 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	15994.2	16328.4	
Quantity	16427	17312	
Unit Cost	0.974	0.943	-3.18
<b>Average Procurement Unit Cost</b>			
Cost	13574.7	13914.7	
Quantity	16427	17312	
Unit Cost	0.826	0.804	-2.66
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 1992 \$M	BY 1992 \$M	% Change
	Revised Original UCR Baseline (Sep 1996 APB)	Current Estimate (Dec 2017 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	12302.9	16328.4	
Quantity	13038	17312	
Unit Cost	0.944	0.943	-0.11
<b>Average Procurement Unit Cost</b>			
Cost	10205.7	13914.7	
Quantity	13038	17312	
Unit Cost	0.783	0.804	+2.68



APB Unit Cost History						
Item	Date	BY 1992 \$M		TY \$M		
		PAUC	APUC	PAUC	APUC	
Original APB	Dec 1988	0.471	0.409	0.460	0.413	
APB as of January 2006	Sep 1996	0.944	0.783	1.022	0.883	
Revised Original APB	Sep 1996	0.944	0.783	1.022	0.883	
Prior APB	Mar 2015	0.974	0.826	1.202	1.065	
Current APB	Oct 2015	0.974	0.826	1.202	1.065	
Prior Annual SAR	Dec 2016	0.932	0.793	1.153	1.024	
Current Estimate	Dec 2017	0.943	0.804	1.171	1.042	

### SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY \$M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.849	-0.020	-0.008	0.168	0.068	0.084	0.000	0.030	0.322	1.171

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.761	-0.017	0.002	0.167	0.031	0.068	0.000	0.030	0.281	1.042

<b>SAR Baseline History</b>				
<b>Item</b>	<b>SAR Planning Estimate</b>	<b>SAR Development Estimate</b>	<b>SAR Production Estimate</b>	<b>Current Estimate</b>
Milestone I	N/A	Nov 1978	Nov 1978	Nov 1978
Milestone II	N/A	Nov 1982	Sep 1982	Sep 1982
Milestone III	N/A	Dec 1984	Apr 1991	Apr 1991
IOC	N/A	Sep 1986	Sep 1992	Sep 1993
Total Cost (TY \$M)	N/A	11591.6	13112.4	20280.7
Total Quantity	N/A	24335	15450	17312
PAUC	N/A	0.476	0.849	1.171

**Cost Variance**

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1350.6	11761.8	--	13112.4
Previous Changes				
Economic	-49.9	-229.9	--	-279.8
Quantity	--	+1437.1	--	+1437.1
Schedule	+26.5	+2572.6	--	+2599.1
Engineering	+643.8	+541.9	--	+1185.7
Estimating	+265.7	+1122.4	--	+1388.1
Other	--	--	--	--
Support	--	+515.6	--	+515.6
Subtotal	+886.1	+5959.7	--	+6845.8
Current Changes				
Economic	-0.9	-59.2	--	-60.1
Quantity	--	--	--	--
Schedule	--	+314.2	--	+314.2
Engineering	--	--	--	--
Estimating	+0.9	+59.7	--	+60.6
Other	--	--	--	--
Support	--	+7.8	--	+7.8
Subtotal	--	+322.5	--	+322.5
Total Changes	+886.1	+6282.2	--	+7168.3
CE - Cost Variance	2236.7	18044.0	--	20280.7
CE - Cost & Funding	2236.7	18044.0	--	20280.7

Summary BY 1992 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1725.7	10552.5	--	12278.2
Previous Changes				
Economic	--	--	--	--
Quantity	--	+879.0	--	+879.0
Schedule	+13.6	+1122.6	--	+1136.2
Engineering	+510.9	+393.6	--	+904.5
Estimating	+162.5	+487.0	--	+649.5
Other	--	--	--	--
Support	--	+290.7	--	+290.7
Subtotal	+687.0	+3172.9	--	+3859.9
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	+151.0	--	+151.0
Engineering	--	--	--	--
Estimating	+1.0	+35.3	--	+36.3
Other	--	--	--	--
Support	--	+3.0	--	+3.0
Subtotal	+1.0	+189.3	--	+190.3
Total Changes	+688.0	+3362.2	--	+4050.2
CE - Cost Variance	2413.7	13914.7	--	16328.4
CE - Cost & Funding	2413.7	13914.7	--	16328.4

Previous Estimate: December 2016

RDT&E	\$M	
	Base Year	Then Year
<b>Current Change Explanations</b>		
Revised escalation indices. (Economic)	N/A	-0.9
Adjustment for current and prior escalation. (Estimating)	+1.0	+0.9
<b>RDT&amp;E Subtotal</b>	<b>+1.0</b>	<b>0.0</b>

Procurement	\$M	
	Base Year	Then Year
<b>Current Change Explanations</b>		
Revised escalation indices. (Economic)	N/A	-59.2
Stretch-out of procurement buy due to realignment of missile buy profile from FY 2025 to FY 2026 (Air Force). (Schedule)	0.0	+44.2
Additional schedule variance due to a stretch-out of procurement buy profile from FY 2017 to FY 2026 (Air Force). (Schedule)	+89.3	+157.5
Shift of procurement buy profile across FY 2017 through FY 2024 (Navy). (Schedule)	0.0	+9.9
Additional schedule variance due to a shift of procurement buy profile across FY 2017 through FY 2024 (Navy). (Schedule)	+61.7	+102.6
Adjustment for current and prior escalation. (Estimating)	+9.3	+12.7
Revised estimate to reflect application of new outyear escalation indices (Navy). (Estimating)	+8.4	+15.0
Revised estimate to reflect application of new outyear escalation indices (Air Force). (Estimating)	+17.6	+32.0
Adjustment for current and prior escalation. (Support)	+0.5	+1.1
Decrease in Initial Spares to address Navy Higher priorities (Navy). (Support)	-0.3	-0.9
Decrease in Other Support due to increase in Diminishing Manufacturing Sources in FY 2017 (Navy). (Support)	-0.3	-0.6
Increase in Other Support to support increased requirement in training and sustainment services (Air Force). (Support)	+2.1	+6.3
Increase in Initial Spares due to program extension to FY 2026 (Air Force). (Support)	+1.0	+1.9
<b>Procurement Subtotal</b>	<b>+189.3</b>	<b>+322.5</b>

## Contracts

### Contract Identification

**Appropriation:** Procurement  
**Contract Name:** Program Support and Sustainment (PSAS)  
**Contractor:** Raytheon Company  
**Contractor Location:** 1151 East Hermans Road  
 Tucson, AZ 85706  
**Contract Number:** FA8675-14-C-0026  
**Contract Type:** Firm Fixed Price (FFP)  
**Award Date:** June 27, 2014  
**Definitization Date:** June 27, 2014

### Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
163.2	N/A	N/A	190.3	N/A	N/A	190.3	190.3

### Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to extending services for system engineering and support and service life prediction program. Additionally, other contract modifications were performed as needed and were within scope.

### Cost and Schedule Variance Explanations

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

### Notes

The Initial Contract Price was reported incorrectly in the December 2016 SAR.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** DMSMS Refresh Phase 4A F3R  
**Contractor:** Raytheon Company  
**Contractor Location:** 1151 East Hermans Road  
 Tuscon, AZ 85706  
**Contract Number:** FA8675-16-C-0044/0  
**Contract Type:** Cost Plus Incentive Fee (CPIF)  
**Award Date:** April 01, 2016  
**Definitization Date:** May 05, 2016

**Contract Price**

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
104.6	N/A	0	120.0	N/A	0	127.9	127.9

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to added scope for an unplanned Application Specific Integrated Circuit (ASIC) re-spin and additional lab test management hours, a Phase 4A cost overrun, execution of the priced Phase 4B option, and added scope for AIM-120D-3 and AIM-120C-8 nomenclature changes. The Initial Contract Price Target only included the Phase 4A contract base.

**Contract Variance**

Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/4/2018)	-19.8	-3.3
Previous Cumulative Variances	-10.8	-1.6
Net Change	-9.0	-1.7

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to cost growth in the Form, Fit, Function Refresh (F3R)-custom processor design verification; prototype hardware integration, testing, and design updates; and test equipment design and fabrication. Cost Variance also includes the costs to execute risk mitigation efforts for custom processor design emulation, second source qualification, and additional prototype hardware. Schedule Variance was reset in April 2017 following a Phase 4A schedule replan due to a critical design deficiency in the prototype processor chip.

The unfavorable net change in the schedule variance is due to delays in the F3R-custom processor design verification; prototype hardware integration, testing, and design updates; and test equipment design and fabrication.

**General Contract Variance Explanation**

Estimated Price At Completion includes the government share of the additional Phase 4A cost overrun.

**Notes**

This contract includes F3R Phase 4A to complete the F3R hardware and software design through the interim Test Readiness Review. This effort supports Air Force, Navy, and FMS customers to enable AMRAAM production beyond Lot 32.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** DMSMS Refresh Phase 4B F3R  
**Contractor:** Raytheon Company  
**Contractor Location:** 1151 East Hermans Road  
 Tuscon, AZ 85706  
**Contract Number:** FA8675-16-C-0044/1  
**Contract Type:** Cost Plus Incentive Fee (CPIF)  
**Award Date:** April 13, 2017  
**Definitization Date:** April 13, 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
64.6	N/A	0	64.6	N/A	0	57.4	57.4

**Contract Variance**

Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/4/2018)	-1.3	+1.7
Previous Cumulative Variances	--	--
Net Change	-1.3	+1.7

**Cost and Schedule Variance Explanations**

The unfavorable cumulative cost variance is due to the delays in the Form, Fit, Function Refresh (F3R)-custom processor design verification and in the completion of prototype hardware integration, testing, and design updates.

The favorable cumulative schedule variance is due to a delay in shifting resources from Phase 4A to Phase 4B tasks.

**Notes**

This is the first time this contract is being reported.

This contract includes F3R Phase 4B to complete design and integration of the F3R hardware and software design through TRR. This effort supports Air Force, Navy, and FMS customers to enable AMRAAM production beyond Lot 32.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** AMRAAM Production LOTS 28, 29, 30  
**Contractor:** Raytheon Company  
**Contractor Location:** 1151 E Hermans Road  
 Tucson, AZ 85756  
**Contract Number:** FA8675-15-C-0022  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** December 22, 2014  
**Definitization Date:** December 22, 2014

**Contract Price**

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1020.3	1020.3	1133	1760.7	1760.7	1856	1760.7	1760.7

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to additional Life of Type Buys, special tooling and equipment, Processor Replacement Program guidance sections, and test equipment. Additionally, other contract modifications were performed as needed and were within scope.

**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 Assistant Secretary of the Air Force for Acquisition on September 19, 2014. Under the Better Buying Power goal to "Employ appropriate contract types," the AMRAAM production lot contract transitioned from a Firm Fixed Price (FFP) contract type to an FPIF contract type. This approach allows the government to share expected cost savings with the contractor and does not require EVM information in order to properly execute this strategy.

**Notes**

**Production Lot 28:** The following missiles were purchased on the Lot 28 contract: 190 Air Force and 2 Navy AIM-120D AMRAAM Air Vehicles (AAVs), 10 Air Force AIM-120D AMRAAM Air Vehicles Instrumented (AAVIs), 18 Air Force and 54 Navy AIM-120D Captive Air Training Missiles (CATMs), 2 Air Force Instrumented Test Vehicles (ITVs), and 301 AIM-120C7 AMRAAM missiles for FMS customers. Lot 28 missile deliveries completed in October 2017.

**Production Lot 29:** The following missiles were purchased on the Lot 29 contract: 285 Air Force and 7 Navy AIM-120D AAVs and 334 AIM-120C7 AMRAAM missiles for FMS customers. Lot 29 missile deliveries began in March 2017 and are projected to be complete by July 2018.

**Production Lot 30:** The following missiles were purchased on the Lot 30 contract: 280 Air Force and 117 Navy AIM-120D AAVs, 1 Air Force AIM-120D AAVIs, 41 Navy AIM-120D CATMs, 2 Air Force ITVs and 212 AIM-120C7 AMRAAM missiles for FMS customers. Lot 30 missile deliveries begin in April 2018 and are projected to be complete by March 2019.

The current contract price was updated from \$1713.7M to \$1760.7M due to various contract modifications including the Non-Developmental Item/Airborne Instrumentation Unit conversion, the F3R hardware modification, AMRAAM Telemetry System LRIP, and test equipment purchase.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** AMRAAM Production LOT 31  
**Contractor:** Raytheon Missile Systems  
**Contractor Location:** 1151 East Hermans Road  
 Tucson, AZ 20191  
**Contract Number:** FA8675-18-C-0003  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** December 28, 2017  
**Definitization Date:** December 28, 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
634.2	634.2	708	634.2	634.2	708	634.2	634.2

**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 Principal Deputy Assistant Secretary of the Air Force for Acquisition on December 19, 2017 due to utilizing a firm-fixed-price incentive (fixed target) contract type, in an effort to conform to the Better Buying Power initiative.

**Notes**

This is the first time this contract is being reported.

**Production Lot 31:** The following missiles were purchased on the Lot 31 contract: 246 Air Force, 144 Navy and 25 FMS AIM-120D missiles, 10 USAF AIM-120D Instrumented Missiles, 184 Telemetry Kits and 283 FMS AIM-120C7 AMRAAM missiles. Lot 31 missile deliveries begin in May 2019 and are projected to be complete by April 2020.

## Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	0	--
Production	12418	11494	17312	66.39%
Total Program Quantity Delivered	12418	11494	17312	66.39%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	20280.7	Years Appropriated	42
Expended to Date	13354.1	Percent Years Appropriated	84.00%
Percent Expended	65.85%	Appropriated to Date	14769.3
Total Funding Years	50	Percent Appropriated	72.82%

The above data is current as of February 12, 2018.

## Operating and Support Cost

### Cost Estimate Details

<b>Date of Estimate:</b>	August 30, 2017
<b>Source of Estimate:</b>	POE
<b>Quantity to Sustain:</b>	17312
<b>Unit of Measure:</b>	Total Quantity
<b>Service Life per Unit:</b>	25.00 Years
<b>Fiscal Years in Service:</b>	FY 1991 - FY 2050

The O&S costs are the direct costs for the tactical missile, the Captive Carry Missile (CCM), and the Captive Air Training Missile associated with operating, supporting, and maintaining the AMRAAM missile over a 60-year deployment phase starting in FY 1991 for the Air Force and FY 1992 for the Navy. The Air Force estimate covers base operations including CCM, All-Up-Round (AUR) fault verification, operational firings, depot repairs (seven year Interim Contractor Support (ICS)), supply/item management, transportation, replenishment spares, and field software updates. The Navy estimate includes AMRAAM fleet operations and support, depot rework (five years ICS), technical support (fleet support, engineering services, quality surveillance, program management), supply support, replenishment spares, and contractor augmented support.

### Sustainment Strategy

The AUR maintenance concept calls for aircraft loading/unloading, removal/replacement of wings and fins and missile Built-In-Test (BIT). A missile failing BIT will be sent to the Intermediate-Level Shop for test verification on the Missile BIT Test Set (Air Force only), Common Field-Level Memory Reprogramming Equipment, or Common Munitions BIT Reprogramming Equipment Plus. Failed missiles will be returned to the contractor AMRAAM depot for repair.

### Antecedent Information

The antecedent system is the Air Intercept Missile-7 (AIM-7). The AIM-7 is the last semi-active air-to-air missile while the AIM-120 AMRAAM provides the first fully active and autonomous launch and leave medium range capability. The AIM-7 cost data was obtained from the Naval Visibility and Management of Operating and Support Cost database (FY 1990 - FY 2013) and is historical in nature.

Cost Element	Annual O&S Costs BY1992 \$M	
	AMRAAM Average Annual Cost Per Total Quantity	AIM-7 (Antecedent) Average Annual Cost For All Missiles
Unit-Level Manpower	0.176	0.000
Unit Operations	0.311	0.627
Maintenance	7.613	4.290
Sustaining Support	16.522	4.615
Continuing System Improvements	13.652	1.192
Indirect Support	1.314	0.000
Other	0.000	0.000
<b>Total</b>	<b>39.588</b>	<b>10.724</b>

Item	Total O&S Cost \$M			
	AMRAAM			AIM-7 (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	2210.0	2431.0	2375.3	N/A
Then Year	3928.3	N/A	4253.3	N/A

#### Equation to Translate Annual Cost to Total Cost

Total O&S Cost = Average Annual O&S Cost per Total Quantity \*total O&S years = \$39.588M \* 60 years = \$2,375.31M

O&S Cost Variance		
Category	BY 1992 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2016 SAR	2315.5	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	-0.2	Update to 2017 labor rates
Energy Rate	0.0	
Technical Input	60.0	RDT&E effort in Continuing Systems Improvement extended to FY 2028.
Other	0.0	
Total Changes	59.8	
Current Estimate	2375.3	

#### Disposal Estimate Details

**Date of Estimate:** August 30, 2017  
**Source of Estimate:** POE  
**Disposal/Demilitarization Total Cost (BY 1992 \$M):** Total costs for disposal of all Total Quantity are 2.4

Letterkenny Munitions Center is utilized to demilitarize AMRAAM. The decision to demilitarize individual missiles or entire lots in lieu of refurbishment or retrofit will be made by Air Combat Command for the Air Force and Navy Resource Sponsor for the Navy.

The disposal total cost was changed from \$2.5M to \$2.4M (BY 1992 \$M) due to an increase in planned Weapons Systems Evaluation Program shots; this results in a decrease of missiles to be demilitarized, lowering the disposal cost estimate.