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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 2020 President's Budget

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

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## **Sensitivity Originator**

No originator information is 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)  
USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)

## Program Information

**Program Name**

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

**DoD Component**

Air Force

**Joint Participants**

Navy

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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 variant, 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

This is the final SAR submission for the AMRAAM program. AMRAAM is well beyond 90% delivered and expended against their original acquisition objective, but has been obligated to continue reporting a SAR given the recurring extension of procurements. AMRAAM has no history of cost growth or schedule delays, and continually meets reliability requirements. There is no value added by continuing to report a SAR, and therefore this is the final report for the program.

**Air Intercept Missile-120C7 (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. Tape 1 fielded in March 2018. For Tape 2, four of four Operational Test (OT) shots were conducted between June and October 2018. The Multi-Service Operational Test and Evaluation report stated AEPIP Tape 2 is effective, suitable, and mission capable. 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 in April 2017 and by the Air Force in May 2017. SIP 2 entered OT in September 2018. OT shots were planned in first quarter FY 2019 but were delayed due to Hurricane Michael damage sustained at Tyndall AFB, FL. OT activities will continue through fourth quarter FY 2019. SIP 2 fielding is projected for the first quarter FY 2020. SIP 3 conducted a critical design review on September 18, 2018. SIP 3 fielding is projected for the fourth quarter FY 2021. SIP 3F, a re-host of SIP 3 capabilities on the AMRAAM Form, Fit, Function Refresh (F3R) missile, is projected to field in first quarter FY 2023.

**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. Raytheon is resolving technical difficulties with hardware integration and testing; qualification and flight testing are planned for late 2019. F3R production is planned to cut in the latter part of Lot 33 in FY 2021.

**Common Air Launched Navigation System (CALNS):** Due to parts obsolescence of the current -4 CALNS, a -9 CALNS form, fit, function replacement is required until the new navigation system in F3R is cut into the production line. The -9 CALNS program is scheduled to receive engineering change proposal approval in fourth quarter FY 2019. The -9 CALNS will allow continued AIM-120D production from Lot 31 cut-in beginning fourth quarter FY 2019 until the planned F3R Lot 33 production cut-in.

**Safe and Arming Fuze (SAF) / 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. On November 2, 2018, a redesigned SAF was tested and passed Lot Acceptance Test levels, meeting FTS requirements.

### AIM-120 Production and Sustainment:

As of March 11, 2019, Raytheon has delivered 2,454 of 3,231 AIM-120D missiles on contract and has delivered 2,644 of 3,261 AIM-120C-7 FMS missiles on contract (through Lot 32). Lot 29 deliveries completed in July 2018. Lot 30 deliveries are planned for April 2018 through July 2019. Lot 31 deliveries are planned for October 2019 through April 2020. The Production Lot 32 pre-priced option on the Lot 31 contract was awarded on March 23, 2018. Deliveries are planned for July 2020 through April 2021. Production Lot 33 contract award anticipated in August 2019.

Program Support and Annual Sustainment is an Indefinite-Delivery-Indefinite-Quantity contract for program support, contractor logistics support, the Service Life Prediction Program, and non-warranty depot repair. As of March 2019, 11 Task

Orders have been awarded totaling \$104.1M.

Joint missile availability as of March 11, 2019 is 89.8% for tactical missiles against an APB threshold of 82%. The contractor has expanded capacity to increase and improve warfighter readiness.

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 (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

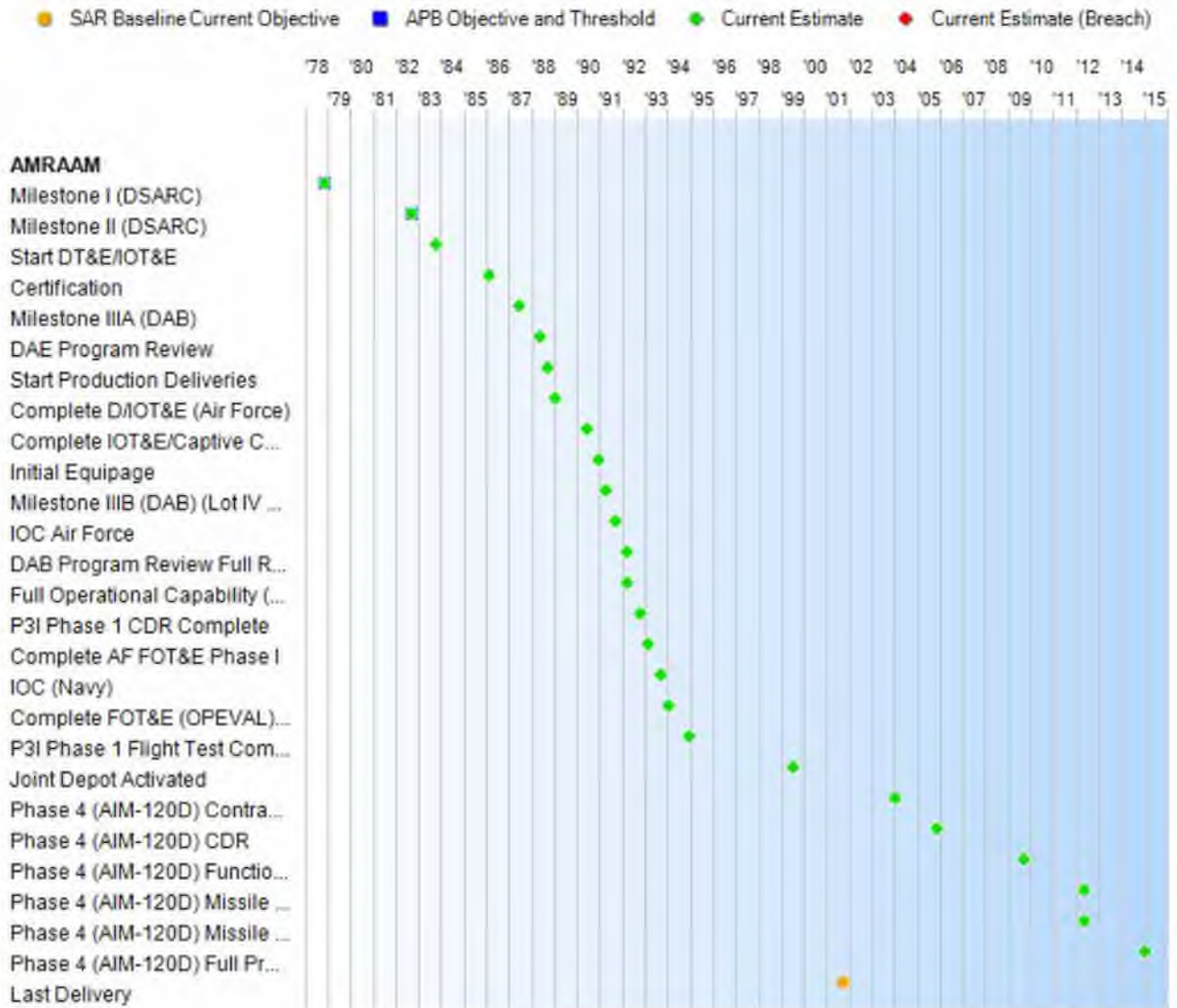
#### APB Breaches

- 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	N/A

(Ch-1)

**Change Explanations**

(Ch-1) The current estimate for Last Delivery changed from January 2027 to N/A to correct misinformation and reflects the accurate APB deletion of this event.

**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	89.8	89.8 (Ch-1)
<b>Captive-Carry (MTBM-Type I) (hrs)</b>				
600	600	450	1157	1157 (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
<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	Compatible in aircraft carrier electro-magnetic environment	Compatible in aircraft carrier electro-magnetic environment	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 90.7 to 89.8 due to increase in unserviceable missiles (condition code F).  
 (Ch-2) Captive-Carry current estimate changed from 1,329 to 1,157 hours due to increased failures versus flying hours.

#### 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	13870.4	11761.8	17499.8	18061.7
Flyaway	--	--	--	13077.7	--	--	17014.8
Recurring	--	--	--	11195.7	--	--	15112.0
Non Recurring	--	--	--	1882.0	--	--	1902.8
Support	--	--	--	792.7	--	--	1046.9
Other Support	--	--	--	659.6	--	--	880.0
Initial Spares	--	--	--	133.1	--	--	166.9
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	16284.1	13112.4	19747.0	20298.4

#### Current APB Cost Estimate Reference

POE dated May 12, 2014

#### Cost Notes

If an Independent Cost Estimate, Component Cost Estimate, or Program Office Estimate has been completed for the program in the previous year, list any program risks identified in the estimates, the potential impacts of the risks on program cost, and approaches to mitigate the risks. A Program Office Estimate was completed for the program in August 2018. The main programmatic risk is the Form, Fit, Function Refresh program. All anticipated risks and associated costs have been captured and are embedded within the current Cost Estimate Model.

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 2020 President's Budget / December 2018 SAR (TY\$ M)									
Appropriation	Prior	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
RDT&E	2225.0	1.8	2.0	1.9	2.0	2.0	2.0	0.0	2236.7
Procurement	12478.7	500.3	567.7	826.8	802.0	843.0	835.5	1207.7	18061.7
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 2020 Total	14703.7	502.1	569.7	828.7	804.0	845.0	837.5	1207.7	20298.4
PB 2019 Total	14769.3	558.9	685.7	819.7	789.8	801.4	870.0	985.9	20280.7
Delta	-65.6	-56.8	-116.0	9.0	14.2	43.6	-32.5	221.8	17.7

Quantity Summary										
FY 2020 President's Budget / December 2018 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Development	0	0	0	0	0	0	0	0	0	0
Production	0	12703	305	389	719	749	788	812	847	17312
PB 2020 Total	0	12703	305	389	719	749	788	812	847	17312
PB 2019 Total	0	12742	363	497	704	716	725	743	822	17312
Delta	0	-39	-58	-108	15	33	63	69	25	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	--	0.9	209.8	3.7	213.5	
2017	144	183.7	--	--	183.7	2.4	186.1	
2018	120	160.1	--	9.6	169.7	16.6	186.3	
2019	118	183.5	--	2.0	185.5	5.3	190.8	
2020	169	221.5	--	--	221.5	11.9	233.4	
2021	331	351.2	--	--	351.2	11.8	363.0	
2022	358	353.0	--	2.0	355.0	6.8	361.8	
2023	363	358.7	--	2.0	360.7	9.2	369.9	
2024	387	368.5	--	--	368.5	8.8	377.3	
Subtotal	4461	3990.4	--	396.5	4386.9	257.0	4643.9	

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	3.7	67.4
2013	67	55.7	--	--	55.7	3.2	58.9
2014	61	50.5	--	1.0	51.5	3.6	55.1
2015	--	--	--	1.2	1.2	0.2	1.4
2016	158	134.0	--	0.6	134.6	2.4	137.0
2017	144	115.5	--	--	115.5	1.6	117.1
2018	120	98.7	--	5.9	104.6	10.2	114.8
2019	118	110.9	--	1.2	112.1	3.2	115.3
2020	169	131.2	--	--	131.2	7.1	138.3
2021	331	204.0	--	--	204.0	6.9	210.9
2022	358	201.0	--	1.1	202.1	3.9	206.0
2023	363	200.3	--	1.1	201.4	5.1	206.5
2024	387	201.7	--	--	201.7	4.8	206.5
Subtotal	4461	2708.4	--	345.8	3054.2	204.0	3258.2

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	306.5	--	--	306.5	21.3	327.8
2018	185	239.9	--	--	239.9	26.5	266.4
2019	187	282.1	--	--	282.1	27.4	309.5
2020	220	310.6	--	--	310.6	23.7	334.3
2021	388	439.7	--	--	439.7	24.1	463.8
2022	391	415.6	--	--	415.6	24.6	440.2
2023	425	448.0	--	--	448.0	25.1	473.1

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2024	425	432.6	--	--	432.6	25.6	458.2
2025	425	573.4	--	--	573.4	26.2	599.6
2026	422	581.5	--	--	581.5	26.6	608.1
Subtotal	12851	11121.6	--	1506.3	12627.9	789.9	13417.8



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	16.6	134.7
2014	279	199.4	--	--	199.4	6.3	205.7
2015	223	197.6	--	--	197.6	9.5	207.1
2016	281	211.5	--	--	211.5	16.3	227.8
2017	256	191.7	--	--	191.7	13.3	205.0
2018	185	147.0	--	--	147.0	16.3	163.3
2019	187	169.5	--	--	169.5	16.5	186.0
2020	220	183.0	--	--	183.0	13.9	196.9
2021	388	254.0	--	--	254.0	13.9	267.9
2022	391	235.3	--	--	235.3	14.0	249.3
2023	425	248.7	--	--	248.7	13.9	262.6

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2024	425	235.5	--	--	235.5	13.9	249.4
2025	425	306.0	--	--	306.0	13.9	319.9
2026	422	304.2	--	--	304.2	13.9	318.1
Subtotal	12851	8487.3	--	1536.2	10023.5	588.7	10612.2

## 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**

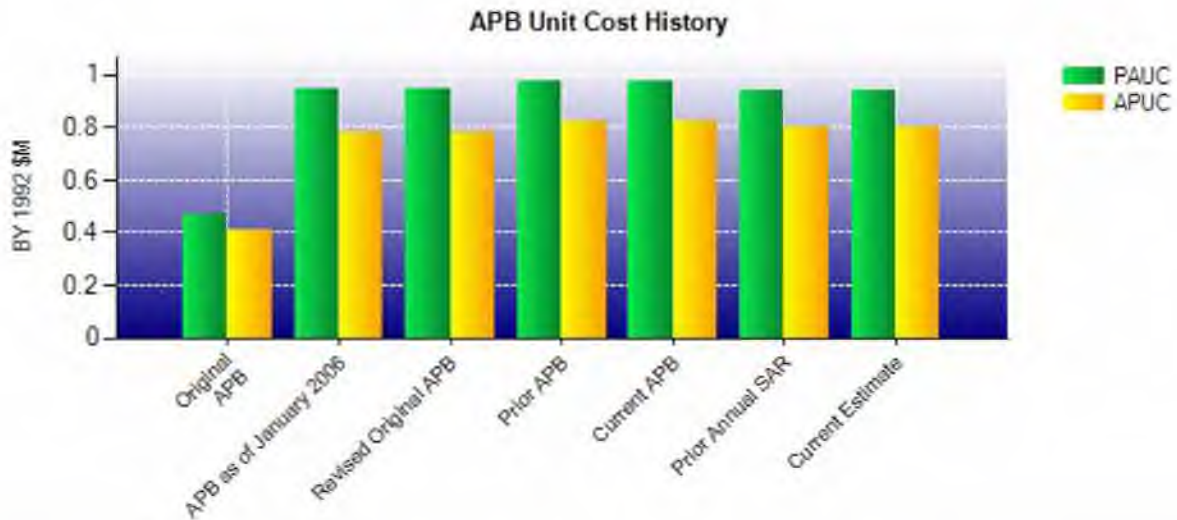
Classified FMS information is provided in the classified annex to this submission.

## **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 2018 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	15994.2	16284.1	
Quantity	16427	17312	
Unit Cost	0.974	0.941	-3.39
<b>Average Procurement Unit Cost</b>			
Cost	13574.7	13870.4	
Quantity	16427	17312	
Unit Cost	0.826	0.801	-3.03
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 2018 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	12302.9	16284.1	
Quantity	13038	17312	
Unit Cost	0.944	0.941	-0.32
<b>Average Procurement Unit Cost</b>			
Cost	10205.7	13870.4	
Quantity	13038	17312	
Unit Cost	0.783	0.801	+2.30



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 2017	0.943	0.804	1.171	1.042	
Current Estimate	Dec 2018	0.941	0.801	1.173	1.043	

### 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	-0.016	-0.008	0.171	0.068	0.080	0.000	0.029	0.324	1.173

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	-0.013	0.001	0.169	0.031	0.065	0.000	0.029	0.282	1.043

<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	20298.4
Total Quantity	N/A	24335	15450	17312
PAUC	N/A	0.476	0.849	1.173

**Cost Variance**

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1350.6	11761.8	--	13112.4
Previous Changes				
Economic	-50.8	-289.1	--	-339.9
Quantity	--	+1437.1	--	+1437.1
Schedule	+26.5	+2886.8	--	+2913.3
Engineering	+643.8	+541.9	--	+1185.7
Estimating	+266.6	+1182.1	--	+1448.7
Other	--	--	--	--
Support	--	+523.4	--	+523.4
Subtotal	+886.1	+6282.2	--	+7168.3
Current Changes				
Economic	--	+65.7	--	+65.7
Quantity	--	--	--	--
Schedule	--	+43.3	--	+43.3
Engineering	--	--	--	--
Estimating	--	-62.8	--	-62.8
Other	--	--	--	--
Support	--	-28.5	--	-28.5
Subtotal	--	+17.7	--	+17.7
Total Changes	+886.1	+6299.9	--	+7186.0
CE - Cost Variance	2236.7	18061.7	--	20298.4
CE - Cost & Funding	2236.7	18061.7	--	20298.4



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	+1273.6	--	+1287.2
Engineering	+510.9	+393.6	--	+904.5
Estimating	+163.5	+522.3	--	+685.8
Other	--	--	--	--
Support	--	+293.7	--	+293.7
Subtotal	+688.0	+3362.2	--	+4050.2
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	+7.0	--	+7.0
Engineering	--	--	--	--
Estimating	--	-36.1	--	-36.1
Other	--	--	--	--
Support	--	-15.2	--	-15.2
Subtotal	--	-44.3	--	-44.3
Total Changes	+688.0	+3317.9	--	+4005.9
CE - Cost Variance	2413.7	13870.4	--	16284.1
CE - Cost & Funding	2413.7	13870.4	--	16284.1

Previous Estimate: December 2017

Procurement	\$M	
	Base Year	Then Year
Current Change Explanations		
Revised escalation indices. (Economic)	N/A	+65.7
Stretch-out of procurement buy profile from FY 2017 to FY 2024 (Navy). (Schedule)	0.0	+7.6
Additional Schedule variance in FY 2024 as a result of PB FY 2020 procurement buy profile adjustments (Navy). (Schedule)	-58.0	-101.1
Shift of procurement buy profile across FY 2018 to FY 2026 (Air Force). (Schedule)	0.0	+8.8
Additional Schedule variance in FY 2024 as a result of PB FY 2020 procurement buy profile adjustments (Air Force). (Schedule)	+65.0	+128.0
Adjustment for current and prior escalation. (Estimating)	-10.2	-16.0
Revised estimate to reflect application of new outyear inflation indices (Navy). (Estimating)	-17.5	-33.4
Revised estimate to reflect application of new outyear inflation indices (Air Force). (Estimating)	-8.4	-13.4
Adjustment for current and prior escalation. (Support)	-0.4	-1.0
Decrease in Other Support to address shift of procurement buy profile across FY 2017 through FY 2024 (Navy). (Support)	-2.3	-5.1
Increase in Initial Spares due to shift in procurement buy profile in FY 2020 (Navy). (Support)	+2.6	+4.3
Decrease in Other Support to reflect test support actual costs (Air Force). (Support)	-15.1	-26.8
Decrease in Initial Spares due to application of new outyear inflation indices (Air Force). (Support)	0.0	+0.1
Procurement Subtotal	-44.3	+17.7

## 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

No additional task orders were awarded to this contract in 2018.

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

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** Program Support and Sustainment (PSAS 15)  
**Contractor:** Raytheon Company  
**Contractor Location:** 1151 East Hermans Road  
 Tucson, AZ 85706  
**Contract Number:** FA8675-15-D-0062  
**Contract Type:** Indefinite Delivery Definite Quantity (IDDO), Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** September 03, 2015  
**Definitization Date:** September 03, 2015

**Contract Price**

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
17.9	180.0	N/A	103.5	180.0	N/A	180.0	180.0

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to Task Orders that are continuously issued under this contract. The current 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 (IDDO/FPIF) contract.

**General Contract Variance Explanation**

Cost and schedule variances are not reported for this contract, because an earned value management (EVM) waiver was granted by Assistant Secretary of the Air Force for Acquisition on May 21, 2015. Under the Better Buying Power (BBP) goal to "Employ appropriate contract types," the AMRAAM program office is appropriately switching an FPIF contract in order to reduce the actual production/sustainment costs the Air Force pays. This approach does not require EVM information in order to properly execute this strategy.

**Notes**

This is the first time this contract is being reported.

The contract has met the \$40M SAR reporting threshold. The PSAS contract includes Air Force non warranty repairs, FMS non warranty repairs, program support and flight plug procurement.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** Form, Fit, Function Refrest (F3R) Phase 4A  
**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	137.3	N/A	0	140.7	140.7

**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 FMS Air Intercept Missile-120D-3 (AIM-120D-3) and AIM-120C-8 nomenclature changes. The Initial Contract Price Target only included the Phase 4A contract base. Currently \$38.0M cost overrun is on contract which includes a \$26.7M government share and \$11.4M Raytheon share (converted fee).

**Contract Variance**

Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/28/2019)	-36.4	-2.4
Previous Cumulative Variances	-19.8	-3.3
Net Change	-16.6	+0.9

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to ongoing efforts for an unplanned ASIC re-spin and additional lab test management hours.

The favorable net change in the schedule variance is due to integration issues encountered during the ASIC re-spin and efforts associated with resolving those issues.

**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:** Form, Fit, Function Referesh (F3R) Phase 4B  
**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	65.9	N/A	0	67.7	69.6

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to added scope for additional Air Force, Navy, and FMS technical data requirements.

**Contract Variance**

Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/28/2019)	-2.4	-8.1
Previous Cumulative Variances	-1.3	+1.7
Net Change	-1.1	-9.8

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to delays in the F3R-custom processor design verification and in completion of prototype hardware integration, testing, and design updates.

The unfavorable net change in the schedule variance is due to integration issues encountered in Phase 4A activities for which Phase 4B has linked dependencies.

**Notes**

This contract includes F3R Phase 4B to complete design and integration of the F3R hardware and software design through the 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:** 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	1768.9	1768.9	1856	1768.9	1768.9

**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 earned value management waiver was granted by the Assistant Secretary of the Air Force for Acquisition on September 19, 2014 due to the contract transition from a firm fixed price (FFP) contract type to a firm-fixed-price incentive (fixed target) contract type, in an effort to conform to the Better Buying Power initiative.

**Notes**

**Production Lot 28:** The following missiles were purchased on the Lot 28 contract: 190 Air Force and 2 Navy Air Intercept Missile-120D (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-120C-7 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-120C-7 AMRAAM missiles for FMS customers. Lot 29 missile deliveries completed in 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-120C-7 AMRAAM missiles for FMS customers. Lot 30 missile deliveries began in April 2018 and are projected to be complete by July 2019.

The current contract price was updated from \$1760.7M to \$1768.8M due to contract modifications that were within scope.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** AMRAAM Production LOTS 31, 32  
**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	1186.8	1186.8	1304	1186.8	1186.8

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the exercise of Lot 32 in March 2018, the Lot 32 additional spares (Field and Depot), additional Navy missiles, and Form, Fit, Function Refresh program transition to Production activities.

**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 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**

**Production Lot 31:** The following missiles were purchased on the Lot 31 contract: 246 Air Force, 144 Navy and 25 FMS Air Intercept Missile-120D (AIM-120D) missiles, 10 Air Force AIM-120D Instrumented Missiles, 184 Telemetry Kits and 283 FMS AIM-120C-7 AMRAAM missiles. Lot 31 missile deliveries begin in May 2019 and are projected to be complete by April 2020.

**Production Lot 32:** The following missiles were purchased on the Lot 32 contract: 185 Air Force, 120 Navy and 54 FMS AIM-120D missiles, 154 Telemetry Kits and 225 FMS AIM-120C-7 AMRAAM missiles. Lot 32 missile deliveries begin in July 2020 and are projected to be complete by January 2021.

The contract price was updated from \$634.2M to \$1186.8M due to the exercise of Lot 32 in March 2018, the Lot 32 additional spares (Field and Depot), additional Navy missiles, and Form, Fit, Function Refresh program transition to Production activities.



## Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	0	--
Production	12729	11984	17312	69.22%
Total Program Quantity Delivered	12729	11984	17312	69.22%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	20298.4	Years Appropriated	43
Expended to Date	13842.3	Percent Years Appropriated	86.00%
Percent Expended	68.19%	Appropriated to Date	15205.8
Total Funding Years	50	Percent Appropriated	74.91%

The above data is current as of March 11, 2019.

## Operating and Support Cost

### Cost Estimate Details

<b>Date of Estimate:</b>	August 27, 2018
<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	0.136	0.000
Unit Operations	0.335	0.627
Maintenance	7.062	4.290
Sustaining Support	15.391	4.615
Continuing System Improvements	14.707	1.192
Indirect Support	0.723	0.000
Other	0.000	0.000
<b>Total</b>	<b>38.354</b>	<b>10.724</b>

Item	Total O&S Cost \$M			
	AMRAAM		Current Estimate	AIM-7 (Antecedent)
	Current Production APB Objective/Threshold			
Base Year	2210.0	2431.0	2301.3	N/A
Then Year	3928.3	N/A	4037.5	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 = \$38.354 \* 60 years = \$2,301.26

O&S Cost Variance		
Category	BY 1992 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2017 SAR	2375.3	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	-71.6	Update to O&S Cost Model to fix redundancies and duplication of costs.
Cost Data Update	0.0	
Labor Rate	-2.4	Update to 2018 labor rates
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	-74.0	
Current Estimate	2301.3	

#### Disposal Estimate Details

Date of Estimate: August 27, 2018  
Source of Estimate: POE  
Disposal/Demilitarization Total Cost (BY 1992 \$M): 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.