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RCS: DD-A&T(Q&A)823-607



Advanced Anti-Radiation Guided Missile - Extended Range (AARGM-ER)

As of FY 2021 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Common Acronyms and Abbreviations for MDAP Programs

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

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

Program Information

Program Name

Advanced Anti-Radiation Guided Missile - Extended Range (AARGM-ER)

DoD Component

Navy

Responsible Office

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Date Assigned: June 29, 2017

References

SAR Baseline (Development Estimate)

Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated February 27, 2019

Approved APB

Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated February 27, 2019

Mission and Description

The AGM-88G Advanced Anti-Radiation Guided Missile-Extended Range (AARGM-ER) is an air-launched missile with the capability to rapidly engage air-defense threats. The AARGM-ER configuration will leverage previous investments on the AGM-88E AARGM and incorporate a new solid rocket motor for increased range. AARGM-ER will be integrated on the F/A-18E/F Super Hornet and EA-18G Growler aircraft and configured for internal carriage on the F-35 Lightning II. AARGM-ER requirements are documented in the AARGM-ER CDD that was approved via Joint Requirements Oversight Committee Memorandum (JROCM) serial number 052-16, dated June 16, 2016.

Executive Summary

Program Highlights Since Last Report

The Knowledge Point (KP) 2 (Milestone B equivalent) ADM was issued on March 4, 2019 that approved entry into the EMD phase and award of the EMD contract. The EMD contract was awarded to Northrop Grumman on March 7, 2019.

Rocket Motor Design Verification Test (DVT) events were successfully completed at the most environmentally stressing conditions in November 2019 and February 2020. The remaining rocket motor DVT events will complete by April 2020 and manufacturing of Pre-Flight Reliability Testing (PFRT) rocket motors will begin. The first warhead test successfully completed in January 2020 and demonstrated sufficient lethality for the projected targets.

Aircraft integration and developmental testing began with ordnance loading and handling tests of an AARGM-ER representative Dummy Air Training Missile on the F/A-18E/F and EA-18G in July and October 2019 at Patuxent River Naval Air Station. The first AARGM-ER instrumented Measurement Vehicle was provided in December 2019 and will be used for aircraft integration and risk reduction flight testing to support airworthiness testing and certification.

The program completed Weapon System Explosive Safety Review Board (WESERB) and Fuze and Initiation System Technical Review Panel (FISTRP) reviews of the safety elements of design.

The first of four planned missile software builds was developed and successfully tested by Northrop Grumman. The first F/A-18 and EA-18G agile software development cycle was completed by Boeing and the China Lake Advanced Weapons Lab.

All subsystems finalized design elements in support of a system level Design Review in February 2020. The Technical Data Package (TDP) was finalized in February 2020 and will be in final configuration control by April 2020.

The FY 2020 National Defense Appropriation Act enacted a program reduction of \$6.06 million in FY 2020.

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
March 2019	Program initiation at Milestone B.
March 2019	Engineering and Manufacturing Development (EMD) contract award.

Threshold Breaches

APB Breaches

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

Nunn-McCurdy Breaches

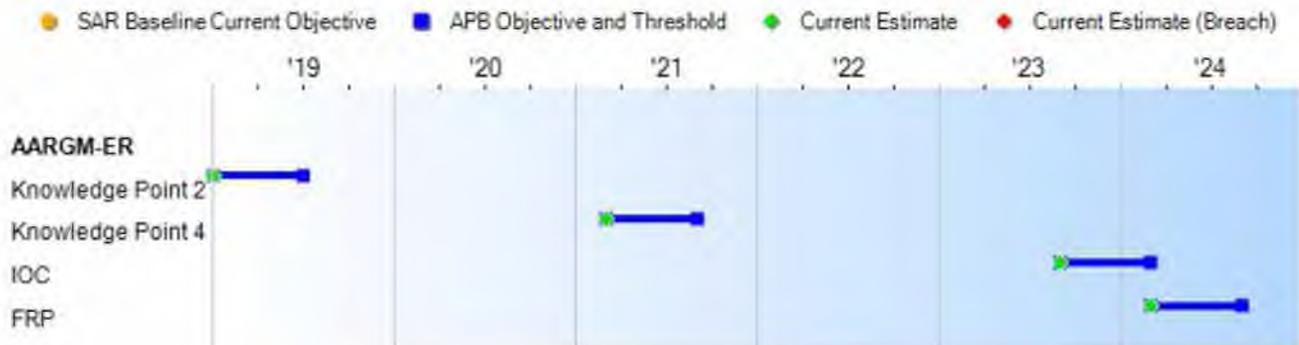
Current UCR Baseline

PAUC	None
APUC	None

Original UCR Baseline

PAUC	None
APUC	None

Schedule



Schedule Events					
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	
Knowledge Point 2	Jan 2019	Jan 2019	Jul 2019	Jan 2019	
Knowledge Point 4	Mar 2021	Mar 2021	Sep 2021	Mar 2021	
IOC	Sep 2023	Sep 2023	Mar 2024	Sep 2023	
FRP	Mar 2024	Mar 2024	Sep 2024	Mar 2024	

Change Explanations

None

Notes

KP-2 represents the program's entrance into EMD (equivalent to Milestone B). KP-4 represents the program's LRIP Decision (equivalent to Milestone C).

Acronyms and Abbreviations

KP - Knowledge Point(s)

Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
Availability Ao				
(T=O) >=0.9	(T=O) >=0.9	>=0.9	TBD	(T=O) >=0.9
Availability Am				
(T=O) >=0.8	(T=O) >=0.8	>=0.8	TBD	(T=O) >=0.8

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

Requirements Reference

CDD dated June 16, 2016

Change Explanations

None

Acronyms and Abbreviations

Am - Materiel Availability
Ao - Operational Availability

Track to Budget

RDT&E

Appn	BA	PE	
Navy	1319	07	0205601N
	Project	Name	
	2189	HARM Improvement (Shared)	
Air Force	3600	05	0207328F
	Project	Name	
	653133	Stand In Attack Weapon	

Procurement

Appn	BA	PE	
Navy	1507	02	0204162N
	Line Item	Name	
	2327	HARM Mods (Shared)	
Navy	1507	06	0204162N
	Line Item	Name	
	6120	Spares and Repair Parts (Shared)	

Notes

Project 2327 is shared with the Advanced Anti-Radiation Guided Missile (AARGM) program.

Project 6120 is shared with AARGM throughout the life-cycle of the program.

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2019 \$M			BY 2019 \$M	TY \$M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	748.6	748.6	823.5	746.4	790.0	790.0	789.0
Procurement	2693.5	2693.5	2962.9	2599.3	3281.3	3281.3	3193.5
Flyaway	--	--	--	2409.0	--	--	2958.5
Recurring	--	--	--	2306.3	--	--	2834.3
Non Recurring	--	--	--	102.7	--	--	124.2
Support	--	--	--	190.3	--	--	235.0
Other Support	--	--	--	110.1	--	--	135.5
Initial Spares	--	--	--	80.2	--	--	99.5
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	3442.1	3442.1	N/A	3345.7	4071.3	4071.3	3982.5

Current APB Cost Estimate Reference

AARGM-ER was formally initiated with FY 2016 PB. The APB Cost is based on the Department of the Navy Component Cost position dated January 09, 2019

Cost Notes

The APB is based on the Department of the Navy Component Cost Position which supported Knowledge Point 2 (MS-B equivalent). Program risk identified in the cost estimate includes a schedule risk associated with the new rocket motor. To mitigate this risk, integration and flight test efforts are sequenced to minimize dependency on the rocket motor development timeline. Additionally, early verification testing will be conducted to assess rocket motor development progress and risk mitigation.

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	17	17	17
Procurement	2080	2080	2080
Total	2097	2097	2097

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2021 President's Budget / December 2019 SAR (TY\$ M)									
Appropriation	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
RDT&E	190.5	147.5	170.9	159.5	78.0	32.4	10.2	0.0	789.0
Procurement	0.0	0.0	61.5	76.7	140.3	183.8	216.0	2515.2	3193.5
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 2021 Total	190.5	147.5	232.4	236.2	218.3	216.2	226.2	2515.2	3982.5
PB 2020 Total	186.7	119.7	79.6	65.5	73.6	262.3	3283.9	0.0	4071.3
Delta	3.8	27.8	152.8	170.7	144.7	-46.1	-3057.7	2515.2	-88.8

Funding Notes

PB 2020 did not fully reflect the program cost estimate due to the timing of program approval. PB 2021 realigned funding to the appropriate years.

Quantity Summary										
FY 2021 President's Budget / December 2019 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Development	17	0	0	0	0	0	0	0	0	17
Production	0	0	0	24	32	70	109	140	1705	2080
PB 2021 Total	17	0	0	24	32	70	109	140	1705	2097
PB 2020 Total	17	0	0	16	16	16	291	1741	0	2097
Delta	0	0	0	8	16	54	-182	-1601	1705	0

Cost and Funding

Annual Funding By Appropriation

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
2016	--	--	--	--	--	--	9.2
2017	--	--	--	--	--	--	29.0
2018	--	--	--	--	--	--	49.2
2019	--	--	--	--	--	--	95.9
2020	--	--	--	--	--	--	113.6
2021	--	--	--	--	--	--	128.6
2022	--	--	--	--	--	--	125.7
2023	--	--	--	--	--	--	67.9
2024	--	--	--	--	--	--	32.4
2025	--	--	--	--	--	--	10.2
Subtotal	17	--	--	--	--	--	661.7

Annual Funding							
1319 RDT&E Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2019 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2016	--	--	--	--	--	--	9.6
2017	--	--	--	--	--	--	29.6
2018	--	--	--	--	--	--	49.0
2019	--	--	--	--	--	--	93.7
2020	--	--	--	--	--	--	108.8
2021	--	--	--	--	--	--	120.7
2022	--	--	--	--	--	--	115.7
2023	--	--	--	--	--	--	61.3
2024	--	--	--	--	--	--	28.7
2025	--	--	--	--	--	--	8.8
Subtotal	17	--	--	--	--	--	625.9

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
2019	--	--	--	--	--	--	7.2
2020	--	--	--	--	--	--	33.9
2021	--	--	--	--	--	--	42.3
2022	--	--	--	--	--	--	33.8
2023	--	--	--	--	--	--	10.1
Subtotal	--	--	--	--	--	--	127.3

Annual Funding 3600 RDT&E Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	BY 2019 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2019	--	--	--	--	--	--	7.1
2020	--	--	--	--	--	--	32.7
2021	--	--	--	--	--	--	40.1
2022	--	--	--	--	--	--	31.4
2023	--	--	--	--	--	--	9.2
Subtotal	--	--	--	--	--	--	120.5

United States Air Force Funding reflects Program Element 0207328F.

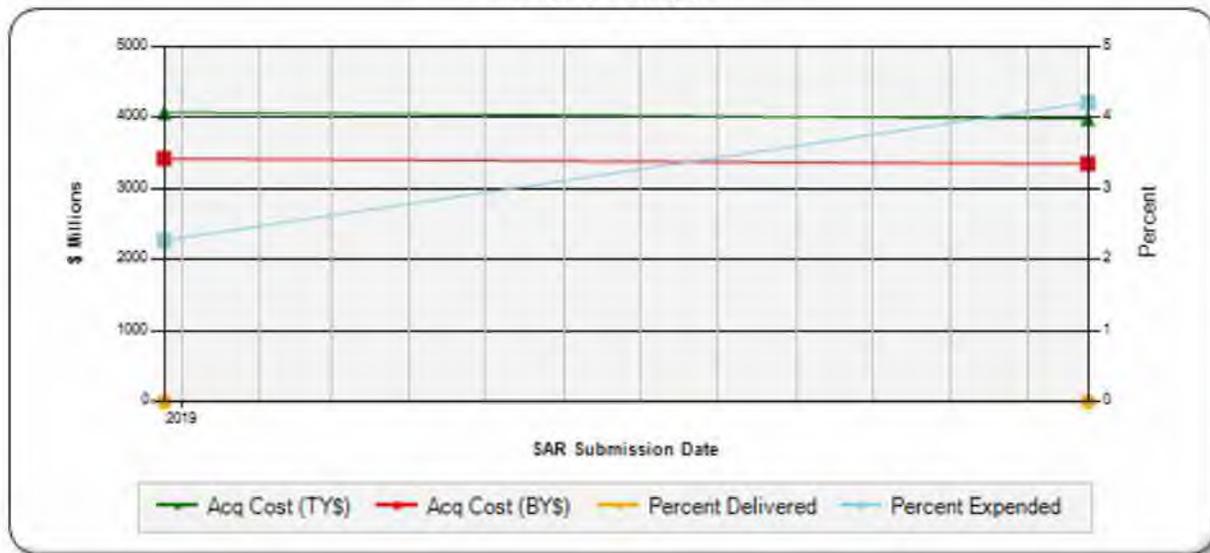
Annual Funding 1507 Procurement Weapons Procurement, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2021	24	48.7	8.8	0.6	58.1	3.4	61.5
2022	32	55.3	7.8	8.5	71.6	5.1	76.7
2023	70	115.3	6.1	12.6	134.0	6.3	140.3
2024	109	160.3	5.5	11.6	177.4	6.4	183.8
2025	140	189.1	6.1	12.7	207.9	8.1	216.0
2026	266	338.1	8.2	12.3	358.6	35.0	393.6
2027	266	335.4	8.5	13.3	357.2	36.3	393.5
2028	296	371.5	8.4	12.9	392.8	37.7	430.5
2029	296	381.1	11.0	13.1	405.2	38.3	443.5
2030	296	375.4	11.1	13.2	399.7	38.9	438.6
2031	285	371.3	11.3	13.4	396.0	19.5	415.5
Subtotal	2080	2741.5	92.8	124.2	2958.5	235.0	3193.5

Annual Funding 1507 Procurement Weapons Procurement, Navy							
Fiscal Year	Quantity	BY 2019 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2021	24	45.0	8.2	0.6	53.8	3.1	56.9
2022	32	50.1	7.1	7.7	64.9	4.6	69.5
2023	70	102.5	5.4	11.2	119.1	5.6	124.7
2024	109	139.7	4.8	10.0	154.5	5.6	160.1
2025	140	161.5	5.2	10.9	177.6	6.9	184.5
2026	266	283.1	6.9	10.3	300.3	29.3	329.6
2027	266	275.4	7.0	10.9	293.3	29.8	323.1
2028	296	299.0	6.8	10.4	316.2	30.3	346.5
2029	296	300.7	8.7	10.3	319.7	30.3	350.0
2030	296	290.4	8.6	10.2	309.2	30.1	339.3
2031	285	281.6	8.6	10.2	300.4	14.7	315.1
Subtotal	2080	2229.0	77.3	102.7	2409.0	190.3	2599.3

Charts

AARGM-ER first began SAR reporting in December 2018

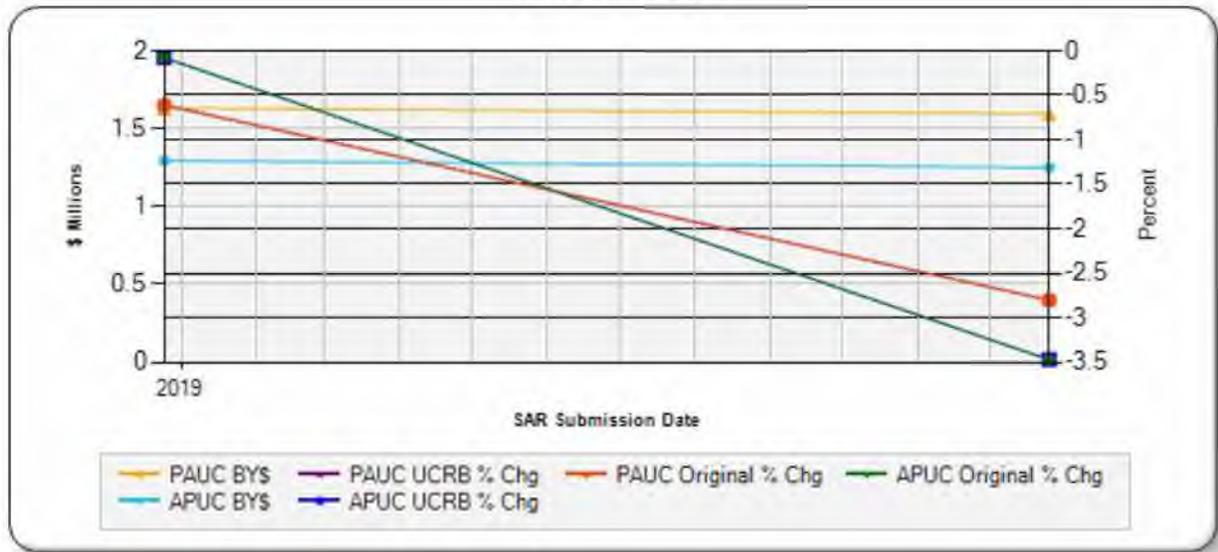
Program Acquisition Cost - AARGM-ER
Base Year 2019 \$M



Quantity - AARGM-ER



Unit Cost - AARGM-ER
Base Year 2019 \$M



Risks

Significant Schedule and Technical Risks

Significant Schedule and Technical Risks	
Current Estimate (December 2019)	
1.	Component Energetics Qualification

Risks

Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Baseline Estimate (February 2019)	
1.	The Current Baseline Estimate is the same as the Original Baseline Estimate.
Original Baseline Estimate (February 2019)	
1.	After review of the programmatic and technical baseline at KP-2, the MDA directed AARGM-ER to utilize the Component Cost Position as the funding requirement. The OSD CAPE performed an ICE which independently validated the procurement estimate, however they identified risk to the development associated with schedule. The production estimate is sensitive to the annual quantities assumed. The Baseline Estimate includes United States Air Force quantities through FY 2023.
Revised Original Estimate (N/A)	
None	
Current Procurement Cost (December 2019)	
1.	The current Procurement Cost risks are the same as the Original Baseline Estimate.

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	3/4/2019	3/4/2019
Approved Quantity	208	208
Reference	AARGM-ER KP-2 ADM	AARGM-ER KP-2 ADM
Start Year	2021	2021
End Year	2023	2023

Notes

Knowledge Point 2 (KP-2) ADM approved LRIP quantities of up to 208 All Up Rounds (AURs).

Foreign Military Sales

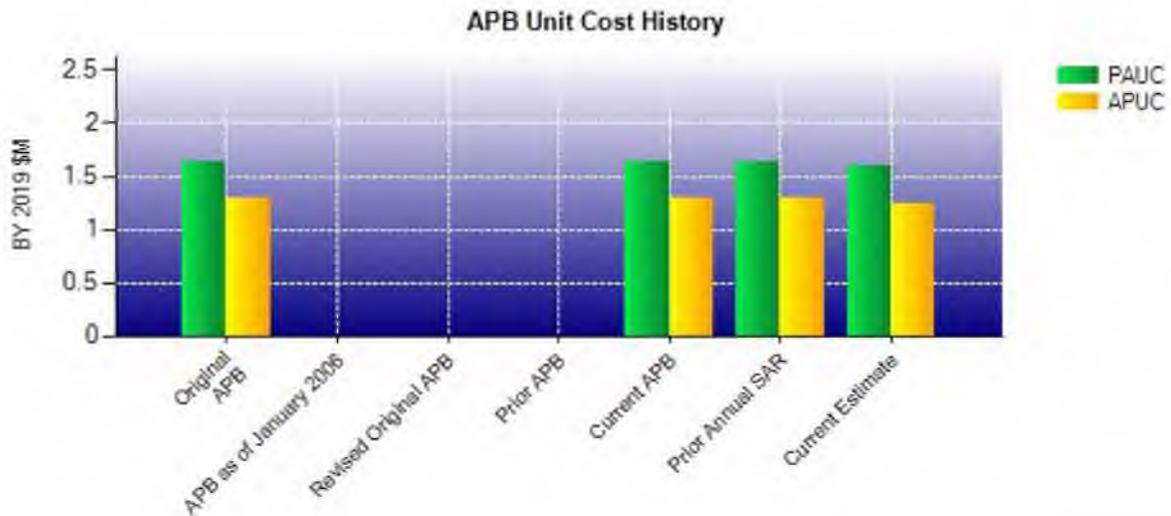
None

Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2019 \$M	BY 2019 \$M	% Change
	Current UCR Baseline (Feb 2019 APB)	Current Estimate (Dec 2019 SAR)	
Program Acquisition Unit Cost			
Cost	3442.1	3345.7	
Quantity	2097	2097	
Unit Cost	1.641	1.595	-2.80
Average Procurement Unit Cost			
Cost	2693.5	2599.3	
Quantity	2080	2080	
Unit Cost	1.295	1.250	-3.47
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2019 \$M	BY 2019 \$M	% Change
	Original UCR Baseline (Feb 2019 APB)	Current Estimate (Dec 2019 SAR)	
Program Acquisition Unit Cost			
Cost	3442.1	3345.7	
Quantity	2097	2097	
Unit Cost	1.641	1.595	-2.80
Average Procurement Unit Cost			
Cost	2693.5	2599.3	
Quantity	2080	2080	
Unit Cost	1.295	1.250	-3.47



APB Unit Cost History					
Item	Date	BY 2019 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Feb 2019	1.641	1.295	1.941	1.578
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	N/A	N/A	N/A	N/A	N/A
Current APB	Feb 2019	1.641	1.295	1.941	1.578
Prior Annual SAR	Dec 2018	1.631	1.294	1.941	1.578
Current Estimate	Dec 2019	1.595	1.250	1.899	1.535

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY \$M)									
PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.941	-0.056	0.000	0.047	0.008	-0.069	0.000	0.028	-0.042	1.899

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.578	-0.058	0.000	0.047	0.008	-0.068	0.000	0.028	-0.043	1.535

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	Jan 2019	N/A	Jan 2019
Milestone C	N/A	N/A	N/A	N/A
IOC	N/A	Sep 2023	N/A	Sep 2023
Total Cost (TY \$M)	N/A	4071.3	N/A	3982.5
Total Quantity	N/A	2097	N/A	2097
PAUC	N/A	1.941	N/A	1.899

Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	790.0	3281.3	--	4071.3
Previous Changes				
Economic	-1.0	+21.1	--	+20.1
Quantity	--	--	--	--
Schedule	--	-36.1	--	-36.1
Engineering	+0.5	+16.5	--	+17.0
Estimating	+0.5	--	--	+0.5
Other	--	--	--	--
Support	--	-1.5	--	-1.5
Subtotal	--	--	--	--
Current Changes				
Economic	+2.9	-140.9	--	-138.0
Quantity	--	--	--	--
Schedule	--	+134.6	--	+134.6
Engineering	--	--	--	--
Estimating	-3.9	-142.1	--	-146.0
Other	--	--	--	--
Support	--	+60.6	--	+60.6
Subtotal	-1.0	-87.8	--	-88.8
Total Changes	-1.0	-87.8	--	-88.8
Current Estimate	789.0	3193.5	--	3982.5

Summary BY 2019 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	748.6	2693.5	--	3442.1
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	-19.5	-5.3	--	-24.8
Estimating	+0.5	--	--	+0.5
Other	--	--	--	--
Support	--	+2.6	--	+2.6
Subtotal	-19.0	-2.7	--	-21.7
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+16.8	-132.6	--	-115.8
Other	--	--	--	--
Support	--	+41.1	--	+41.1
Subtotal	+16.8	-91.5	--	-74.7
Total Changes	-2.2	-94.2	--	-96.4
Current Estimate	746.4	2599.3	--	3345.7

Previous Estimate: December 2018

RDT&E	\$M	
	Base Year	Then Year
Current Change Explanations		
Revised escalation indices. (Economic)	N/A	+2.9
Adjustment for current and prior escalation. (Estimating)	-1.1	-1.1
Revised estimate due to Reprogramming actions and FY 2020 Congressional Mark. (Estimating)	-5.9	-6.2
Revised estimate due to program SBIR reduction in FY 2019. (Estimating)	-3.2	-3.3
PB 2020 did not fully reflect the program cost estimate due to the timing of program approval. PB 2021 realigned funding to the appropriate years, including United States Air Force (USAF) from Program Element 0207328F. (Estimating)	-93.5	-120.6
USAF from Program Element 0207328F. (Estimating)	+120.5	+127.3
RDT&E Subtotal	+16.8	-1.0

Procurement	\$M	
	Base Year	Then Year
Current Change Explanations		
Revised escalation indices. (Economic)	N/A	-140.9
PB 2020 SAR included To Complete estimate within FY 2025. PB 2021 SAR realigns funding and quantities to the appropriate years. (Schedule)	0.0	+134.6
PB 2020 did not fully reflect the program cost estimate due to the timing of program approval. PB 2021 realigned funding to the appropriate years. (Estimating)	+488.5	+584.9
PB 2020 SAR included To Complete estimate within FY 2025. PB 2021 SAR realigns funding to the appropriate years. Total estimate delta corresponds with estimated savings as a result of including USAF quantities. (Estimating)	-621.1	-727.0
PB 2020 did not fully reflect the program cost estimate due to the timing of program approval. PB 2021 realigned funding to the appropriate years. (Support)	+44.9	+59.5
Decrease in Initial Spares corresponds with estimated savings as a result of including USAF quantities. (Support)	-3.8	+1.1
Procurement Subtotal	-91.5	-87.8

Contracts

General Notes

Alliant Techsystems Operations, LLC is a wholly owned subsidiary of Northrop Grumman.

Contract Identification

Appropriation: RDT&E
Contract Name: AARGM-ER Engineering and Manufacturing Development (EMD)
Contractor: Alliant Techsystems Operations, LLC
Contractor Location: 9401 Corbin Avenue
 Northridge, CA 91324
Contract Number: N00019-19-C-0050
Contract Type: Cost Plus Incentive Fee (CPIF)
Award Date: March 07, 2019
Definitization Date: March 07, 2019

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
317.1	N/A	17	317.1	N/A	17	317.1	317.1

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/19/2019)	-4.0	-3.5
Previous Cumulative Variances	--	--
Net Change	-4.0	-3.5

Cost and Schedule Variance Explanations

The unfavorable cumulative cost variance is due to shared resources among cost elements at the start up of the contract.

The unfavorable cumulative schedule variance is due to shared resources and subcontract award schedules at the start up of the contract.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	17	0.00%
Production	0	0	2080	0.00%
Total Program Quantity Delivered	0	0	2097	0.00%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	3982.5	Years Appropriated	5
Expended to Date	167.7	Percent Years Appropriated	31.25%
Percent Expended	4.21%	Appropriated to Date	338.0
Total Funding Years	16	Percent Appropriated	8.49%

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

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	January 09, 2019
Source of Estimate:	SCP
Quantity to Sustain:	2080
Unit of Measure:	Total Quantity
Service Life per Unit:	15.00 Years
Fiscal Years in Service:	FY 2023 - FY 2047

The estimate concentrates on the costs for the AGM-88G AARGM-ER All Up Round missiles. The 2080 quantity to sustain does not include 17 developmental assets that are not maintained.

Sustainment Strategy

The contractor will provide product support through IOC and first deployment. The Life Cycle Sustainment Plan will address short and long term support activities and requirements. The weapon will be operated and maintained by sailors and be supported by three level maintenance based on the results of the Level of Repair Analysis which will be performed once the final design is solidified.

Antecedent Information

The Antecedent System is the AARGM. Data is based on a AARGM period of performance of FY 2011 - FY 2039 (29 years), vice FY 2023 - FY 2047 (25 years) for AARGM-ER. Historical O&S costs were collected from the Naval Visibility & Management of Operating and Support Costs database. Antecedent costs are not normalized to the AGM-88G AARGM ER parameters.

Cost Element	Annual O&S Costs BY2019 \$M	
	AARGM-ER Average Annual Cost Per Total Quantity	Advanced Anti-Radiation Guided Missile (AARGM) (Antecedent) Total Quantity
Unit-Level Manpower	0.000	0.000
Unit Operations	0.013	0.000
Maintenance	2.383	0.780
Sustaining Support	4.244	4.370
Continuing System Improvements	2.082	2.270
Indirect Support	0.000	0.000
Other	0.000	0.000
Total	8.722	7.420

Item	Total O&S Cost \$M			
	AARGM-ER			Advanced Anti-Radiation Guided Missile (AARGM) (Antecedent)
	Current Development APB Objective/Threshold		Current Estimate	
Base Year	218.1	239.9	218.1	239.9
Then Year	309.5	N/A	309.5	N/A

Equation to Translate Annual Cost to Total Cost

Total Cost/Total Years of Service = Annual Cost

\$218.068M/25 Years = \$8.722M

O&S Cost Variance		
Category	BY 2019 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2018 SAR	218.1	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	0.0	
Current Estimate	218.1	

Disposal Estimate Details

Date of Estimate: January 09, 2019
Source of Estimate: SCP
Disposal/Demilitarization Total Cost (BY 2019 \$M): 2.4