



Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-368



AGM-88E Advanced Anti-Radiation Guided Missile (AGM-88E AARGM)

As of FY 2017 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Common Acronyms and Abbreviations for MDAP Programs

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

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

Program Information

Program Name

AGM-88E Advanced Anti-Radiation Guided Missile (AGM-88E AARGM)

DoD Component

Navy

Joint Participants

Italian Ministry of Defense

Responsible Office

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References

SAR Baseline (Production Estimate)

Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated January 21, 2009

Approved APB

Assistant Secretary of the Navy (Research, Development & Acquisition) (ASN(RDA)) Approved Acquisition Program Baseline (APB) dated November 7, 2012

Mission and Description

The AGM-88E Advanced Anti-Radiation Guided Missile (AGM-88E AARGM) program fields a major system upgrade to the AGM-88 High Speed Anti-Radiation Missile (HARM) inventory. The AGM-88E AARGM provides a significant enhancement to Naval operational capability in the Offensive Counter Air/Suppression of Enemy Air Defenses (SEAD) mission area by technological upgrade to the HARM guidance system to counter enemy use of simple and cheap countermeasures and tactics such as mobility and radar shutdown. The AGM-88E AARGM is employed in the Offensive Counter Air/SEAD role in direct support of all mission areas within the objective force (e.g., Strike Warfare, Amphibious Warfare, Anti-Surface Ship Warfare, and Command and Control Warfare and Information Warfare) providing a rapid, organic response to air defense threats ranging from Smaller Scale Contingencies to Major Theater War. It will be employed by Naval aircraft operating from both sea and land bases.

The AGM-88E AARGM missile provides a new multi-mode guidance section and modified control section mated with existing HARM propulsion and warhead sections. The new guidance section has a passive Anti-Radiation Homing receiver and associated antennae, a Global Positioning System/Inertial Navigation System, and Millimeter Wave radar for terminal guidance capability. The AGM-88E AARGM also has the capability to transmit terminal (end game) data via a Weapon Impact Assessment transmitter to national satellites just before AGM-88E AARGM impacts its target. Additionally, a provision to receive off-board targeting information, via the Integrated Broadcast System, is in development for the weapon system.

The AGM-88E AARGM is the acquisition upgrade and complement to HARM, the Navy's only Defense Suppression missile. Acquisition of AGM-88E AARGM is critical to addressing the limitations and shortcomings of HARM, which include counter shutdown capability, limited lethality against advanced threat air defense units, limited captive carry life, no impact reporting capability, and no off-board targeting reception capability.

The AGM-88E AARGM is fielded on the F/A-18C-F and the EA-18G. Objective aircraft include EA-6B, F-16C/J and F-35 external carriage (post platform IOC).

Executive Summary

AARGM weapon system production is scheduled to continue through 2023. A total of 2,435 AGM-88E AARGM (including Captive Air Training Missiles (CATMs) and spare Guidance and Control Sections) are planned for production. The contract for the fourth FRP lot was awarded September 3, 2015 within program cost goals. The Cooperative Production, Sustainment and follow-on Development Memorandum of Agreement between the United States and Italy remains in effect. Letter of Offer and Acceptance between the United States and Australia signed May 31, 2013 established an FMS Case to procure AARGM Captive Air Training Missiles and support. Block 1 Upgrade (software update) entered Integrated Test (Follow-on Test and Evaluation) in August 2014, with fleet delivery estimated in 2nd Quarter FY 2017.

When measured against the original Milestone B 2003 baseline, AARGM's current Average Procurement Unit Cost exceeds the JROC Tripwire threshold (25% above original baseline). This was due to program restructuring and budget profile adjustments. AARGM successfully completed a JROC Tripwire review in May 2014, and no further action was required.

The FY 2017 PB increases the total quantity objective from 1,879 to 2,435 AGM-88E AARGM and extends production to 2023. The proposed APB change will reflect the updated quantity profile and budget requirements.

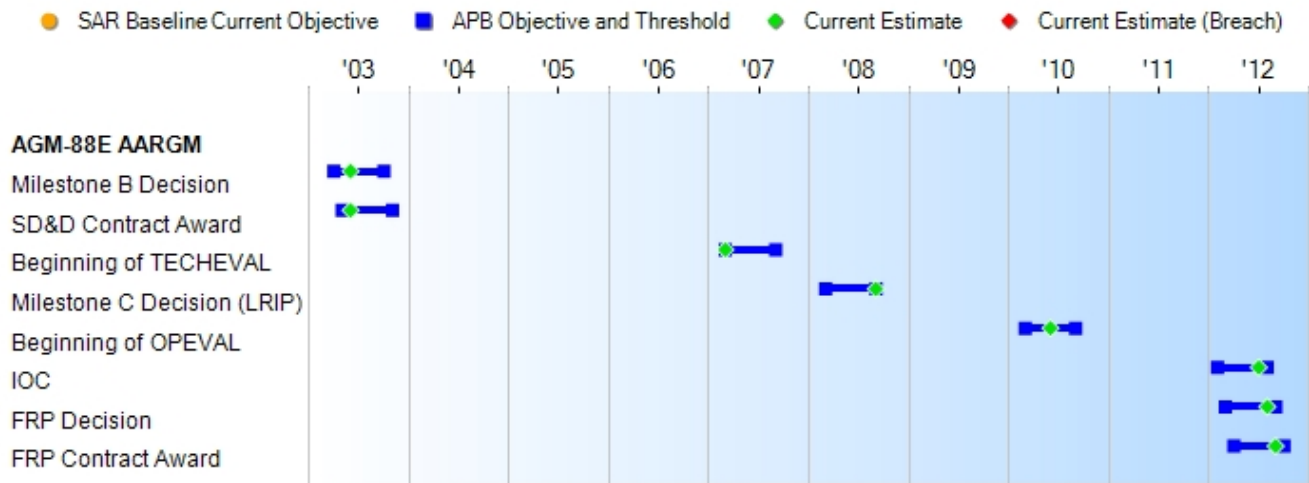
The FY 2017 PB includes development and procurement funding for the AARGM Extended Range (AARGM-ER) program. Anticipated to be a distinct acquisition effort, all funding related to AARGM-ER is excluded from this SAR.

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

Threshold Breaches

APB Breaches		Explanation of Breach
Schedule	<input type="checkbox"/>	The Procurement Cost breach is due to FY 2017 PB, which increased the total quantity objective from 1,879 to 2,435 AARGM and extended production from FY 2020 to FY 2023.
Performance	<input type="checkbox"/>	
Cost	RDT&E <input type="checkbox"/>	The O&S Cost breach is due to the increased quantity profile and corresponding service life assumption.
	Procurement <input checked="" type="checkbox"/>	
	MILCON <input type="checkbox"/>	
	Acq O&M <input type="checkbox"/>	The proposed APB change will reflect the updated procurement quantity profile, budget requirements, and O&S costs.
O&S Cost	<input checked="" type="checkbox"/>	
Unit Cost	PAUC <input type="checkbox"/>	
	APUC <input type="checkbox"/>	
Nunn-McCurdy Breaches		A Program Deviation Report and re-baselining of the APB are in process.
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 B Decision	Apr 2003	Apr 2003	Oct 2003	Jun 2003
SD&D Contract Award	May 2003	May 2003	Nov 2003	Jun 2003
Beginning of TECHEVAL	Mar 2007	Mar 2007	Sep 2007	Mar 2007
Milestone C Decision (LRIP)	Mar 2008	Mar 2008	Sep 2008	Sep 2008
Beginning of OPEVAL	Mar 2009	Mar 2010	Sep 2010	Jun 2010
IOC	Nov 2010	Feb 2012	Aug 2012	Jul 2012
FRP Decision	Jul 2010	Mar 2012	Sep 2012	Aug 2012
FRP Contract Award	Dec 2010	Apr 2012	Oct 2012	Sep 2012

Change Explanations

None

Acronyms and Abbreviations

OPEVAL - Operational Evaluation
 SD&D - System Development & Demonstration
 TECHEVAL - Technical Evaluation

Performance

Performance Characteristics				
SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
Material Availability				
>=0.95	>=0.95	>=0.9	.98	.98
Net Ready				
The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include (1) DISR-mandated GIG IT standards and profiles identified in the TV-1; (2) DISR-mandated GIG KIPs identified in the KIP declaration table; (3) NCOW RM Enterprise Services; (4) IA requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA; and 5) Operationally effective IEs, and mission critical performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated	The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include (1) DISR-mandated GIG IT standards and profiles identified in the TV-1; (2) DISR-mandated GIG KIPs identified in the KIP declaration table; (3) NCOW RM Enterprise Services; (4) IA requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA; and 5) Operationally effective IEs, and mission critical performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include 1) DISR - mandated GIG IT standards and profiles identified in the TV-1; 2) DISR-mandated GIG KIPs identified in the KIP declaration table; 3) NCOW RM Enterprise Services; 4) IA requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an IATO by the DAA; and 5) Operationally effective IEs; and mission critical performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include 1) DISR - mandated GIG IT standards and profiles identified in the TV-1; 2) DISR-mandated GIG KIPs identified in the KIP declaration table; 3) NCOW RM Enterprise Services; 4) IA requirements including availability, integrity, authentication, confidentiality and non-repudiation, and issuance of an IATO by the DAA; and 5) Operationally effective IEs; and mission critical performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include 1) DISR - mandated GIG IT standards and profiles identified in the TV-1; 2) DISR-mandated GIG KIPs identified in the KIP declaration table; 3) NCOW RM Enterprise Services; 4) IA requirements including availability, integrity, authentication, confidentiality and non-repudiation, and issuance of an IATO by the DAA; and 5) Operationally effective IEs; and mission critical performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint

architecture views.	architecture views.	and system integrated architecture views.		and system integrated architecture views.
Probability of Correct Identification (PCID) of a Target Emitter				
>=0.99 PCID for all emitters in the AARGM CPD Appendix D	>=0.99 PCID for all emitters in the AARGM CPD Appendix D	>=0.95 PCID of available threshold emitters in the AARGM CPD Appendix D	0.95 PCID of available threshold emitters in the AARGM CPD Appendix D	0.95 PCID for all emitters in the AARGM CPD Appendix D

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

Requirements Reference

Capability Production Document (CPD) dated April 1, 2010

Change Explanations

None

Acronyms and Abbreviations

- ATO - Authority to Operate
- DAA - Designated Approval Authority
- DISR - DoD IT Standards Registry
- GIG - Global Information Grid
- IA - Information Assurance
- IATO - Interim Authority to Operate
- IE - Information Exchange
- IT - Information Technology
- KIP - Key Interface Profile
- NCOW RM - Net Centric Operations and Warfare Reference Model
- TV - Technical View

Track to Budget

RDT&E

Appn	BA	PE	
Navy	1319	07	0205601N
	Project		Name
	2185		AARGM (Shared)
	2661		AARGM Cong Add (Sunk)
	9C58A		AARGM Cong Add (Sunk)

Procurement

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

Notes

Initial spares were procured in FY 2015.

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2003 \$M			BY 2003 \$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	578.9	620.3	682.3	673.0	600.3	648.6	716.7
Procurement	949.6	1040.8	1123.7	1434.4 ¹	1261.1	1377.6	1947.0
Flyaway	--	--	--	1322.9	--	--	1797.5
Recurring	--	--	--	1222.5	--	--	1663.3
Non Recurring	--	--	--	100.4	--	--	134.2
Support	--	--	--	111.5	--	--	149.5
Other Support	--	--	--	101.9	--	--	137.8
Initial Spares	--	--	--	9.6	--	--	11.7
MILCON	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
Total	1528.5	1661.1	N/A	2107.4	1861.4	2026.2	2663.7

¹ APB Breach

Confidence Level

Confidence Level of cost estimate for current APB: 50%

The Acquisition Program Baseline (APB) cost estimate provides sufficient resources to execute the program under normal conditions, encountering average levels of technical, schedule, and programmatic risk and external interference. Based on the rigor in methods used in building estimates, strong adherence to the collection and use of historical cost information, and review of applied assumptions, the program office projects that it is about as likely the estimate will prove too low or too high for the program as described.

Cost Notes

Costs reflect updated Service Cost Position, approved on June 19, 2012 for FRP.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	40	40	40
Procurement	1879	1879	2435
Total	1919	1919	2475

Quantity Notes

FY 2017 PB increases the total quantity objective from 1,879 to 2,435 AGM-88E AARGM and extends production to 2023. The proposed APB change will reflect the updated quantity profile and budget requirements.

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2017 President's Budget / December 2015 SAR (TY\$ M)									
Appropriation	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
RDT&E	701.7	12.9	2.1	0.0	0.0	0.0	0.0	0.0	716.7
Procurement	543.4	120.8	178.2	222.6	222.2	156.5	159.6	343.7	1947.0
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 2017 Total	1245.1	133.7	180.3	222.6	222.2	156.5	159.6	343.7	2663.7
PB 2016 Total	1240.1	135.2	195.5	224.8	224.5	158.8	0.0	0.0	2178.9
Delta	5.0	-1.5	-15.2	-2.2	-2.3	-2.3	159.6	343.7	484.8

Quantity Summary										
FY 2017 President's Budget / December 2015 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
Development	40	0	0	0	0	0	0	0	0	40
Production	0	537	155	253	336	322	183	181	468	2435
PB 2017 Total	40	537	155	253	336	322	183	181	468	2475
PB 2016 Total	40	507	138	296	356	358	224	0	0	1919
Delta	0	30	17	-43	-20	-36	-41	181	468	556

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
1993	--	--	--	--	--	--	9.6
1994	--	--	--	--	--	--	12.4
1995	--	--	--	--	--	--	4.3
1996	--	--	--	--	--	--	33.0
1997	--	--	--	--	--	--	32.6
1998	--	--	--	--	--	--	32.8
1999	--	--	--	--	--	--	20.2
2000	--	--	--	--	--	--	25.0
2001	--	--	--	--	--	--	20.6
2002	--	--	--	--	--	--	18.2
2003	--	--	--	--	--	--	46.5
2004	--	--	--	--	--	--	30.2
2005	--	--	--	--	--	--	84.0
2006	--	--	--	--	--	--	76.2
2007	--	--	--	--	--	--	89.4
2008	--	--	--	--	--	--	48.8
2009	--	--	--	--	--	--	26.5
2010	--	--	--	--	--	--	15.5
2011	--	--	--	--	--	--	31.7
2012	--	--	--	--	--	--	7.8
2013	--	--	--	--	--	--	8.2
2014	--	--	--	--	--	--	12.2
2015	--	--	--	--	--	--	16.0
2016	--	--	--	--	--	--	12.9
2017	--	--	--	--	--	--	2.1
Subtotal	40	--	--	--	--	--	716.7

Annual Funding 1319 RDT&E Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2003 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1993	--	--	--	--	--	--	10.9
1994	--	--	--	--	--	--	13.8
1995	--	--	--	--	--	--	4.7
1996	--	--	--	--	--	--	35.5
1997	--	--	--	--	--	--	34.6
1998	--	--	--	--	--	--	34.6
1999	--	--	--	--	--	--	21.0
2000	--	--	--	--	--	--	25.7
2001	--	--	--	--	--	--	20.9
2002	--	--	--	--	--	--	18.2
2003	--	--	--	--	--	--	45.9
2004	--	--	--	--	--	--	29.0
2005	--	--	--	--	--	--	78.6
2006	--	--	--	--	--	--	69.2
2007	--	--	--	--	--	--	79.2
2008	--	--	--	--	--	--	42.5
2009	--	--	--	--	--	--	22.8
2010	--	--	--	--	--	--	13.1
2011	--	--	--	--	--	--	26.2
2012	--	--	--	--	--	--	6.3
2013	--	--	--	--	--	--	6.6
2014	--	--	--	--	--	--	9.7
2015	--	--	--	--	--	--	12.5
2016	--	--	--	--	--	--	9.9
2017	--	--	--	--	--	--	1.6
Subtotal	40	--	--	--	--	--	673.0

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	
2008	25	32.7	--	6.0	38.7	2.3	41.0	
2009	4	16.8	--	1.1	17.9	7.7	25.6	
2010	36	39.5	--	1.0	40.5	10.2	50.7	
2011	47	42.0	--	4.0	46.0	6.6	52.6	
2012	82	66.1	--	9.4	75.5	8.4	83.9	
2013	96	67.4	--	14.3	81.7	4.1	85.8	
2014	116	82.1	--	8.4	90.5	3.6	94.1	
2015	131	94.2	--	8.6	102.8	6.9	109.7	
2016	155	104.9	--	12.0	116.9	3.9	120.8	
2017	253	159.5	--	9.6	169.1	9.1	178.2	
2018	336	196.1	--	9.8	205.9	16.7	222.6	
2019	322	191.7	--	10.0	201.7	20.5	222.2	
2020	183	125.5	--	10.2	135.7	20.8	156.5	
2021	181	128.4	--	10.4	138.8	20.8	159.6	
2022	277	179.2	--	10.7	189.9	4.3	194.2	
2023	191	137.2	--	8.7	145.9	3.6	149.5	
Subtotal	2435	1663.3	--	134.2	1797.5	149.5	1947.0	

Annual Funding 1507 Procurement Weapons Procurement, Navy								
Fiscal Year	Quantity	BY 2003 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2008	25	28.2	--	5.1	33.3	2.0	35.3	
2009	4	14.3	--	0.9	15.2	6.5	21.7	
2010	36	33.0	--	0.8	33.8	8.5	42.3	
2011	47	34.4	--	3.3	37.7	5.4	43.1	
2012	82	53.4	--	7.5	60.9	6.8	67.7	
2013	96	53.6	--	11.4	65.0	3.3	68.3	
2014	116	64.4	--	6.7	71.1	2.8	73.9	
2015	131	72.8	--	6.6	79.4	5.4	84.8	
2016	155	79.7	--	9.1	88.8	3.0	91.8	
2017	253	119.0	--	7.1	126.1	6.8	132.9	
2018	336	143.5	--	7.2	150.7	12.1	162.8	
2019	322	137.5	--	7.2	144.7	14.7	159.4	
2020	183	88.2	--	7.2	95.4	14.6	110.0	
2021	181	88.5	--	7.2	95.7	14.3	110.0	
2022	277	121.1	--	7.3	128.4	2.9	131.3	
2023	191	90.9	--	5.8	96.7	2.4	99.1	
Subtotal	2435	1222.5	--	100.4	1322.9	111.5	1434.4	

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	9/30/2008	1/18/2011
Approved Quantity	187	112
Reference	Milestone C ADM	Gate 6 Sufficiency Review
Start Year	2008	2008
End Year	2010	2011

Milestone C ADM of September 30, 2008 originally granted LRIP authority utilizing FY 2008 - FY 2010 funding, with a not-to-exceed quantity of 187 units. Deliveries for Phase I of LRIP, utilizing FY 2008 and FY 2009 funding, completed in October 2011. Deliveries for LRIP II, a Firm-Fixed-Price (FFP) contract utilizing FY 2010 funding, completed November 2012. Due to delays in Initial Operational Test & Evaluation, and to avoid a production line break, the incorporation of a third LRIP into the AGM-88E AARGM Acquisition Strategy, utilizing FY 2011 funding, was approved on January 18, 2011 by the Assistant Secretary of the Navy (Research, Development, and Acquisition) at the Gate 6 Sufficiency Review. The total LRIP quantity remained under the not-to-exceed quantity of 187 units, which does not exceed the 10% guideline. The LRIP III FFP contract was awarded on October 31, 2011 at the Government's cost goal. Deliveries for LRIP III began in December 2012 and completed in December 2013.

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost \$M	Description
Australia	7/23/2015	14	11.7	Letter of Offer and Acceptance between the United States and Australia was amended on July 23, 2015 for the procurement of additional AGM-88E AARGM All Up Rounds and spares under FMS Case AT-P-AZN. The missiles are expected to deliver in FY 2017.
Australia	5/31/2013	11	37.1	Letter of Offer and Acceptance between the United States and Australia was signed on May 31, 2013 establishing FMS Case AT-P-AZN for the procurement of AGM-88E AARGM Captive Air Training Missiles, spares and support. The missiles and spares were delivered in FY 2015 with support continuing through FY 2018.
Italy	11/15/2005	181	132.6	Cooperative Development Memorandum of Agreement (MOA) between Italy and the United States was signed on November 15, 2005. Cooperative Production, Sustainment and Follow-on Development MOA between Italy and the United States was signed on November 18, 2009. The quantity of 181 represents the total estimated number of missiles that Italy is expected to receive through Full Rate Production.

Notes

Nuclear Costs

None

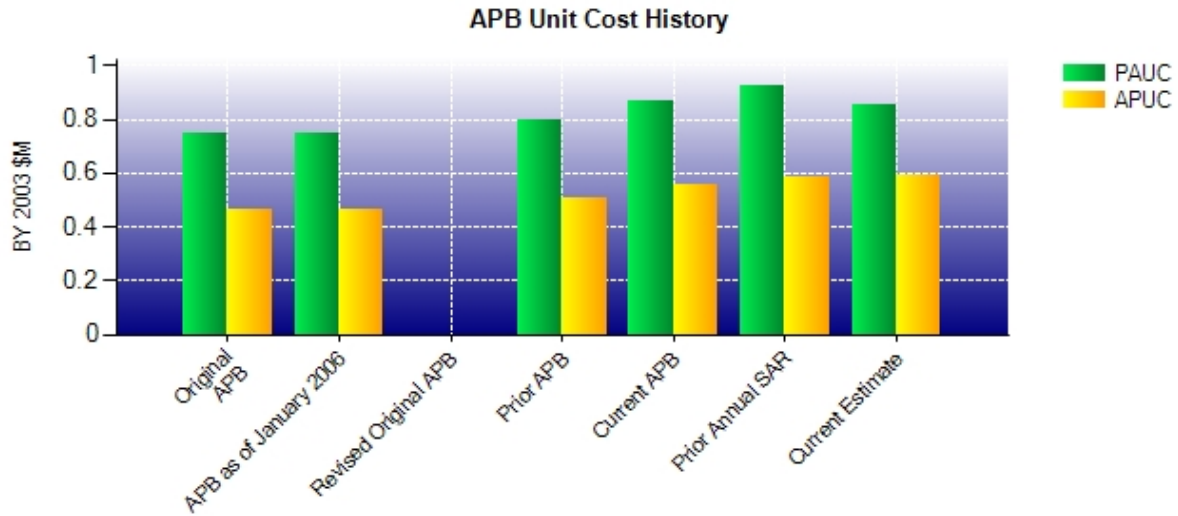
Unit Cost

Unit Cost Report

Item	BY 2003 \$M	BY 2003 \$M	% Change
	Current UCR Baseline (Nov 2012 APB)	Current Estimate (Dec 2015 SAR)	
Program Acquisition Unit Cost			
Cost	1661.1	2107.4	
Quantity	1919	2475	
Unit Cost	0.866	0.851	-1.73
Average Procurement Unit Cost			
Cost	1040.8	1434.4	
Quantity	1879	2435	
Unit Cost	0.554	0.589	+6.32

Item	BY 2003 \$M	BY 2003 \$M	% Change
	Original UCR Baseline (Jul 2003 APB)	Current Estimate (Dec 2015 SAR)	
Program Acquisition Unit Cost			
Cost	1339.8	2107.4	
Quantity	1790	2475	
Unit Cost	0.748	0.851	+13.77
Average Procurement Unit Cost			
Cost	806.5	1434.4	
Quantity	1750	2435	
Unit Cost	0.461	0.589	+27.77

Unit Cost History



Item	Date	BY 2003 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Jul 2003	0.748	0.461	0.844	0.556
APB as of January 2006	Jul 2003	0.748	0.461	0.844	0.556
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	Nov 2011	0.797	0.505	0.970	0.671
Current APB	Nov 2012	0.866	0.554	1.056	0.733
Prior Annual SAR	Dec 2014	0.925	0.587	1.135	0.779
Current Estimate	Dec 2015	0.851	0.589	1.076	0.800

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial PAUC Development Estimate	Changes								PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.844	0.039	-0.026	0.028	0.010	0.053	0.000	0.022	0.126	0.970

Current SAR Baseline to Current Estimate (TY \$M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.970	-0.014	-0.054	0.049	0.032	0.081	0.000	0.012	0.106	1.076

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.556	0.033	-0.006	0.026	0.000	0.039	0.000	0.023	0.115	0.671

Current SAR Baseline to Current Estimate (TY \$M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.671	-0.015	0.015	0.049	0.000	0.068	0.000	0.012	0.129	0.800

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	Apr 2003	Apr 2003	Jun 2003
Milestone C	N/A	Mar 2008	Mar 2008	Sep 2008
IOC	N/A	May 2010	Nov 2010	Jul 2012
Total Cost (TY \$M)	N/A	1510.9	1861.4	2663.7
Total Quantity	N/A	1790	1919	2475
PAUC	N/A	0.844	0.970	1.076

Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	600.3	1261.1	--	1861.4
Previous Changes				
Economic	+0.1	-26.9	--	-26.8
Quantity	--	--	--	--
Schedule	--	+114.2	--	+114.2
Engineering	+79.5	--	--	+79.5
Estimating	+34.8	+166.3	--	+201.1
Other	--	--	--	--
Support	--	-50.5	--	-50.5
Subtotal	+114.4	+203.1	--	+317.5
Current Changes				
Economic	--	-8.9	--	-8.9
Quantity	--	+407.5	--	+407.5
Schedule	+2.1	+5.1	--	+7.2
Engineering	--	--	--	--
Estimating	-0.1	-0.8	--	-0.9
Other	--	--	--	--
Support	--	+79.9	--	+79.9
Subtotal	+2.0	+482.8	--	+484.8
Total Changes	+116.4	+685.9	--	+802.3
CE - Cost Variance	716.7	1947.0	--	2663.7
CE - Cost & Funding	716.7	1947.0	--	2663.7

Summary BY 2003 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	578.9	949.6	--	1528.5
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	+66.8	--	+66.8
Engineering	+64.2	--	--	+64.2
Estimating	+28.4	+122.7	--	+151.1
Other	--	--	--	--
Support	--	-36.4	--	-36.4
Subtotal	+92.6	+153.1	--	+245.7
Current Changes				
Economic	--	--	--	--
Quantity	--	+274.7	--	+274.7
Schedule	+1.6	+3.1	--	+4.7
Engineering	--	--	--	--
Estimating	-0.1	-2.9	--	-3.0
Other	--	--	--	--
Support	--	+56.8	--	+56.8
Subtotal	+1.5	+331.7	--	+333.2
Total Changes	+94.1	+484.8	--	+578.9
CE - Cost Variance	673.0	1434.4	--	2107.4
CE - Cost & Funding	673.0	1434.4	--	2107.4

Previous Estimate: December 2014

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised estimate in FY 2017 due to rephrasing of Block 1 software for additional activities with fielding. (Schedule)	+1.6	+2.1
Revised estimate in FY 2015 to reflect resource budget adjustment. (Estimating)	-0.1	-0.1
RDT&E Subtotal	+1.5	+2.0

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-8.9
Additional quantity variance resulting from an increase of 556 AGM-88E AARGM missiles from 1,879 to 2,435. (Subtotal)	+206.3	+306.3
Additional quantity variance resulting from an increase of 556 AGM-88E AARGM missiles from 1,879 to 2,435. (Quantity)	(+198.6)	(+294.9)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(+3.1)	(+4.6)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(+4.6)	(+6.8)
Additional increase in Recurring Fly Away for FY 2021- FY 2023. (Quantity)	+41.3	+61.0
Additional schedule variance due to procurement buy profile being extended three years (FY 2021 - FY 2023). (Quantity)	+34.8	+51.6
Stretch-out of procurement buy profile due to being extended three years (FY 2013 - FY 2021). (Schedule)	0.0	+0.5
Revised estimate to reflect budget reductions across the FYDP. (Estimating)	-17.3	-20.9
Revised estimate to reflect FY 2013 actuals. (Estimating)	+1.5	+1.9
Adjustment for current and prior escalation. (Estimating)	+1.8	+2.5
Revised estimate to reflect the application of new out year escalation indices. (Estimating)	+6.5	+8.9
Increase in other support due to telemetry kit requirement for FY 2017- FY 2021. (Support)	+54.1	+76.6
Increase to reflect revised estimate of initial spares. (Support) (QR)	+2.5	+3.2
Adjustment for current and prior escalation. (Support)	+0.2	+0.1
Procurement Subtotal	+331.7	+482.8

(QR) Quantity Related

Contracts

Contract Identification

Appropriation: Procurement
Contract Name: AARGM FRP 4/5
Contractor: Orbital Alliant TechSystems (OATK)
Contractor Location: 9401 Corbin Avenue
 Los Angeles, CA 91324
Contract Number: N00019-15-C-0123
Contract Type: Firm Fixed Price (FFP)
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	
118.7	N/A	154	118.7	N/A	154	252.2	252.2	

Cost and Schedule Variance Explanations

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

Notes

This is the first time this contract is being reported.

The contract current value of \$118.7M includes \$11.3M of Italian requirements for fourteen All Up Rounds and \$11.7M of Royal Australian Air Force (RAAF) requirements for fourteen All Up Rounds and three spares.

The difference between the Initial Contract Price and the Estimated Price At Completion includes an estimated \$133.5M for the FRP 5 Option Award planned for May 2016.

Contract Identification

Appropriation: Procurement
Contract Name: AARGM FRP 2/3
Contractor: Orbital Alliant TechSystems (OATK)
Contractor Location: 9401 Corbin Avenue
 Los Angeles, CA 91324
Contract Number: N00019-13-C-0162
Contract Type: Firm Fixed Price (FFP)
Award Date: September 25, 2013
Definitization Date: September 25, 2013

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
102.4	N/A	123	201.2	N/A	248	201.2	201.2

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the subsequent exercise of the FRP 3 Option (USN/ITAF). The United States Navy (USN) quantities were awarded on April, 23 2014, for \$83.9M. The Italian Air Force (ITAF) quantities were awarded on August 7, 2014, for \$12.7M. An additional \$2.2M in funds were provided to execute Engineering Change Proposals and Life Of Type procurements for obsolete parts.

Cost and Schedule Variance Explanations

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

Contract Identification

Appropriation: Procurement
Contract Name: AARGM FRP 1
Contractor: Orbital Alliant TechSystems (OATK)
Contractor Location: 9401 Corbin Avenue
 Los Angeles, CA 91324
Contract Number: N00019-12-C-0113
Contract Type: Firm Fixed Price (FFP)
Award Date: September 10, 2012
Definitization Date: September 10, 2012

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
70.6	N/A	72	79.9	N/A	81	79.9	79.9

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the subsequent exercise of option contract line item number for Italian units due to late receipt of funds. An additional \$3.2M in Italian funding was added for this effort. An additional \$2.6M in funds were also provided to incorporate Statement of Work for Stage 2 of the Front End Assembly Transition Plan. An additional \$3.5M in funds were provided to execute Cost Improvement Initiatives, Engineering Change Proposals and Life Of Type procurements for obsolete parts.

Cost and Schedule Variance Explanations

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

Notes

The contract current value of \$79.9M includes \$8.79M of Italian requirements for seven All Up Rounds, two Captive Air Training Missiles, and contractor production support.

The quantity reflects United States and Italian quantities.

The initial contract quantity (76) was incorrectly reported in the December 2014 SAR; 72 is the correct initial contract quantity.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	40	40	40	100.00%
Production	2435	251	2435	10.31%
Total Program Quantity Delivered	2475	291	2475	11.76%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	2663.7	Years Appropriated	24
Expended to Date	1077.8	Percent Years Appropriated	77.42%
Percent Expended	40.46%	Appropriated to Date	1378.8
Total Funding Years	31	Percent Appropriated	51.76%

The above data is current as of February 09, 2016.

The 40 assets procured under the development phase are not fleet representative assets, and are not reflected in the AARGM sustainment strategy.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	January 08, 2016
Source of Estimate:	POE
Quantity to Sustain:	2435
Unit of Measure:	Total Quantity
Service Life per Unit:	15.00 Years
Fiscal Years in Service:	FY 2012 - FY 2039

The estimate concentrates on the costs for AGM-88E AARGM unique components. AGM-88E AARGM has a 60 month Serviceable In-Service Time Maintenance and Reliability Monitoring Program. The total quantity of missiles to be procured is 2435. Weapon service life is 15 years per AGM-88E AARGM All Up Round. The O&S life is 29 years. The planned last production lot buy is FY 2023. The last unit delivery would be FY 2024 with a corresponding service life assumption through FY 2039. The 2435 quantity to sustain does not include 40 developmental assets that are not maintained.

Sustainment Strategy

The AGM-88E AARGM sustainment approach is leveraged off of the existing High Speed Anti-Radiation Missile (HARM) maintenance structure. The system is supported via a modified three level maintenance concept utilizing Organizational (O), Intermediate (I), Depot levels and a Designated Overhaul Point (DOP) for the AGM-88E AARGM unique components (guidance and control sections). The Original Equipment Manufacturer is the DOP for guidance and control section repair based on the completed Joint Depot Source of Repair Decision process. There are no changes to the manpower requirements or manning levels at activities that will operate and provide support to AGM-88E AARGM as O-level and I-level; capabilities are consistent with the HARM operations.

Antecedent Information

Antecedent is the HARM. Data is based on a HARM period of performance of FY 1990 - FY 2009 (20 years), vice FY 2011 - FY 2039 (29 years) for AARGM. 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-88E AARGM parameters.

Cost Element	Annual O&S Costs BY2003 \$M	
	AGM-88E AARGM Average Annual Cost Per Total Quantity	AGM-88 HARM (Antecedent) Average Annual Cost Per Total Quantity
Unit-Level Manpower	0.000	0.000
Unit Operations	0.000	0.000
Maintenance	0.590	1.800
Sustaining Support	3.300	1.700
Continuing System Improvements	1.710	1.600
Indirect Support	0.000	0.000
Other	0.000	0.000
Total	5.600	5.100

Item	Total O&S Cost \$M			
	AGM-88E AARGM		AGM-88 HARM (Antecedent)	
	Current Production APB Objective/Threshold	Current Estimate		
Base Year	142.6	156.9	162.6¹	101.3
Then Year	215.8	N/A	254.8	N/A

¹ APB O&S Cost Breach

Note 1 APB Breach Explanation: The FY 2017 PB increases the total quantity objective from 1,879 to 2,435 AGM-88E AARGM and extends production to 2023. The proposed APB change will reflect the updated quantity profile and O&S Cost.

Equation to Translate Annual Cost to Total Cost

Total Cost / Total Years of Service = Annual Cost

\$162.6M / 29 years = \$5.6M per year

O&S Cost Variance		
Category	BY 2003 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2014 SAR	142.6	
Programmatic/Planning Factors	20.0	Increase quantity and increase production schedule. O&S period of performance extended by three years.
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	20.0	
Current Estimate	162.6	

Disposal Estimate Details

Date of Estimate: January 08, 2016
Source of Estimate: POE
Disposal/Demilitarization Total Cost (BY 2003 \$M): Total costs for disposal of all Total Quantity are 8.6

Increase quantity profile of 556 missiles will support Fleet training; missiles are anticipated to be expended through additional Fleet firings. No further disposal costs are planned.