Selected Acquisition Report (SAR)

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

AMRAAM

As of December 31, 2011

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Program Information

Designation And Nomenclature (Popular Name)

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

DoD Component

Air Force

Joint Participants

Navy

Responsible Office

Responsible Office

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Date Assigned August 1, 2011

References

SAR Baseline (Production Estimate)

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

Approved APB

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated May 19, 2008

Mission and Description

The Advanced Medium Range Air-to-Air Missile (AMRAAM) program provides for the acquisition of the most advanced all-weather, all-environment medium range air-to-air missile system in response to United States Air Force (USAF), United States Navy (USN), North Atlantic Treaty Organization (NATO), and other allied operational requirements through 2024. The system is an active radar guided intercept missile with inherent Electronic Protection (EP) capabilities for air-to-air applications against massed penetration aircraft and is designed to replace the AIM-7 Sparrow. The AIM-120D, planned to be fielded in FY 2014, will have improved accuracy via Global Positioning System (GPS) aided navigation, improved network compatibility, and enhanced aircrew survivability via a two-way datalink capability.

Executive Summary

AIM-120D DT/OT: The focus of the AIM-120D Developmental Test/Operational Test (DT/OT) effort during Calendar Year (CY) 2011 was the resolution of technical issues that delayed the start of dedicated Operational Test (OT). Based on a January 2011 meeting between the Air Force and Navy Program Executive Officers (PEOs), the final (of three) DT/OT shot was postponed until root cause and corrective actions were identified for the two (of four originally) issues that had not yet been satisfactorily resolved via missile software improvements. The program made significant progress in resolving those issues, and on August 4, 2011 successfully executed the third planned DT/OT shot. However, during flight testing in operational environment-like scenarios additional missile/aircraft issues were identified and entry into dedicated OT was further delayed. The program office subsequently developed a revised path forward for the start of AIM-120D OT, based on recommendations of the AIM-120D Operational Advisory Group (OAG). The path forward includes additional missile software improvements/flight test verification to address the OAG-identified issues. In November/December, the program office briefed and achieved concurrence for the path forward from senior leadership in the Air Force and Navy acquisition and operational test communities, plus Office Secretary Defense (OSD), Acquisition Technology & Logistics (AT&L) and Director, Operational Test & Evaluation (DOT&E) personnel. The revised plan will lead to the start of dedicated OT in Third Quarter FY 2012.

AIM-120D System Improvement Program (SIP): Additional candidate software/hardware improvements were identified during CY 2011; however, due to significant resources being applied to the resolution of the AIM-120D DT/OT issues, the Preliminary Design Review (PDR) for the initial SIP increment was delayed and is now planned for February 2012. This initial SIP increment will field in FY 2014. In December 2011, Raytheon Missile Systems (RMS) submitted a proposal to study AIM-120D Electronic Protection (EP) improvements against advanced threats. Candidate improvements from this study, if selected for implementation, will be part of the second SIP increment, with fielding projected for FY 2016 .

AIM-120C Electronic Protection Improvement Program (EPIP): The EPIP (Basic) development program is on schedule, making significant progress in software development and captive carriage flight testing in CY 2011. Additional captive missions in early CY 2012 will lead to the first shot, currently planned for April 2012. Fielding for the EPIP (Basic) capability remains forecasted for late FY 2013. Regarding the EPIP (Advanced) program, approval to proceed was provided in July 2011, with the Armament Director's signature on the Justification and Approval (J&A) document. The initial EPIP (Advanced) contract award is planned for June 2012.

AIM-120C Software Upgrade Program (SWUP): The Joint Program Office/RMS team successfully completed the AIM-120C SWUP Set 2 Preliminary Design Review (PDR) on December 12, 2011. Additional key participants included representatives from Air Combat Command (ACC) and Directorate, Air Warfare Chief of Naval Operations (N88). As a result of the review, one improvement candidate is being integrated into the current Electronic Protection Improvement Program (EPIP) (Basic) program and two are going to be implemented in conjunction with the EPIP (Advanced) program. One additional improvement candidate, the Alternative Guidance Algorithm (AGA), will continue to be studied and an implementation decision will be made in the June 2012 timeframe, based on an assessment of expected value to the warfighter and funding availability. Additional SWUP activities during CY 2011 led to missile simulation fidelity improvements and new simulation target models, critical for assessment of missile performance and the proposed software candidates.

Processor Replacement Program (PRP): In support of the Foreign Military Sales (FMS) PRP program, a second captive flight with an F-16 was successfully executed on November 21, 2011. The initial FMS software engineering build is undergoing a Functional Qualification Test in preparation for an aircraft bench, captive flight and first live fire event in February. Final integration, system performance and transition to production of the AIM-120C7 and AIM-120D PRP configurations are scheduled for completion in December 2012.

Pyroceram Radome Restart Program: The program is on track for a seamless transition to Lot 25 AMRAAM Production (FY 2013). The Proof of Design (POD) glass pour was successfully completed in December 2011 and the resulting glass blanks have been shipped to Corning Inc., Canton, NY to perform the finishing processes with an estimated completion date of March 2012. In parallel to the production effort of the Radomes, RMS has been working to verify the Radio Frequency (RF) aspects of the program (specification, compensation table, and proving in the test range for future Radome testing) in preparation for performing the RF testing on the POD Radomes.

AIM-120D Production: The initial limited production (Lot 20) contract was awarded in FY 2006 for missiles to support operational testing and to support training for the Air Force and Navy. Limited production Lots 21-25 were awarded in fiscal years 2007-2011 respectively, for the Air Force and Navy operational inventory. Missile/platform issues identified during “operational environment-like” testing led to a replan of the remaining effort and timeline to AIM-120D Operational Test Readiness Review (OTRR), based on recommendations of the Operational Advisory Group (OAG). Resolution of these issues will push the AIM-120D OTRR to the Third Quarter FY 2012. Two (of three planned) increments of missile software improvements are being lab/flight-tested. In February 2012, the final increment will be completed and tested. The intent is to demonstrate that system performance is satisfactory for successful completion of Operational Test (OT). In light of the delay in OTRR, the Full Production Go-ahead Decision and the Acquisition Program Baseline (APB) threshold to meet Air Force Required Assets Available (RAA) are being revised. In the interim, until the Full Production Go-Ahead Decision is executed, approval of the annual AIM-120D production contract is retained by the Program Executive Office (PEO) based on an assessment of weapon system performance, progress in OT, manufacturing readiness, and funding availability. Lot 26 award is planned for March 2012.

As of December 31, 2011, a total of 350 missiles have been delivered versus a contract requirement of 527. RMS continues to produce Guidance Sections (GSs) and presently has 118 awaiting rocket motors, which puts them 36 ahead of their recovery plan and 59 behind contract. Full GS recovery to contract is expected by March 2012. Alliant Tech Systems (ATK) has stopped production of AMRAAM rocket motors due to propellant anomalies/bore-cracks and recent blast tube failures. Two Failure Review Board’s are currently ongoing to identify the source of both issues. ATK is bringing in industry and government experts to assist them in resolving the propellant cracking problem before production can restart. An additional team is also working to resolve the blast tube issue. RMS is accelerating the qualification of a second source for AMRAAM rocket motors, Nammo, which is scheduled to complete qualification and start deliveries in Fourth Quarter FY 2012. Motors will continue to be the limiting factor for All Up Round (AUR) missile deliveries until the propellant issue is resolved. Expectations are that rocket motor deliveries, from either source, will restart Fourth Quarter FY 2012. As rocket motors become available, RMS should be able to deliver roughly 125 missiles per month to clear out the present tactical missile backlog. On February 2, 2012, the government suspended all Lot 24 Performance Based Payments (PBPs) until such time as RMS provides a realistic and achievable recovery plan and resumes delivery of AIM-120D & C7 AUR missiles. The government continues to withhold 10% of the contract value of Lot 21-23 until all hardware, including baseline rocket motors, are delivered.

AIM-120 Sustainment: Joint missile availability as of January 1, 2012 is 88.7% against an APB threshold of 82%. All faulty Shortened Control Actuator System (SCAS) have been repaired. However, missile Operational Availability is expected to decline slightly until serviceable rocket motors are delivered.

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

Threshold Breaches

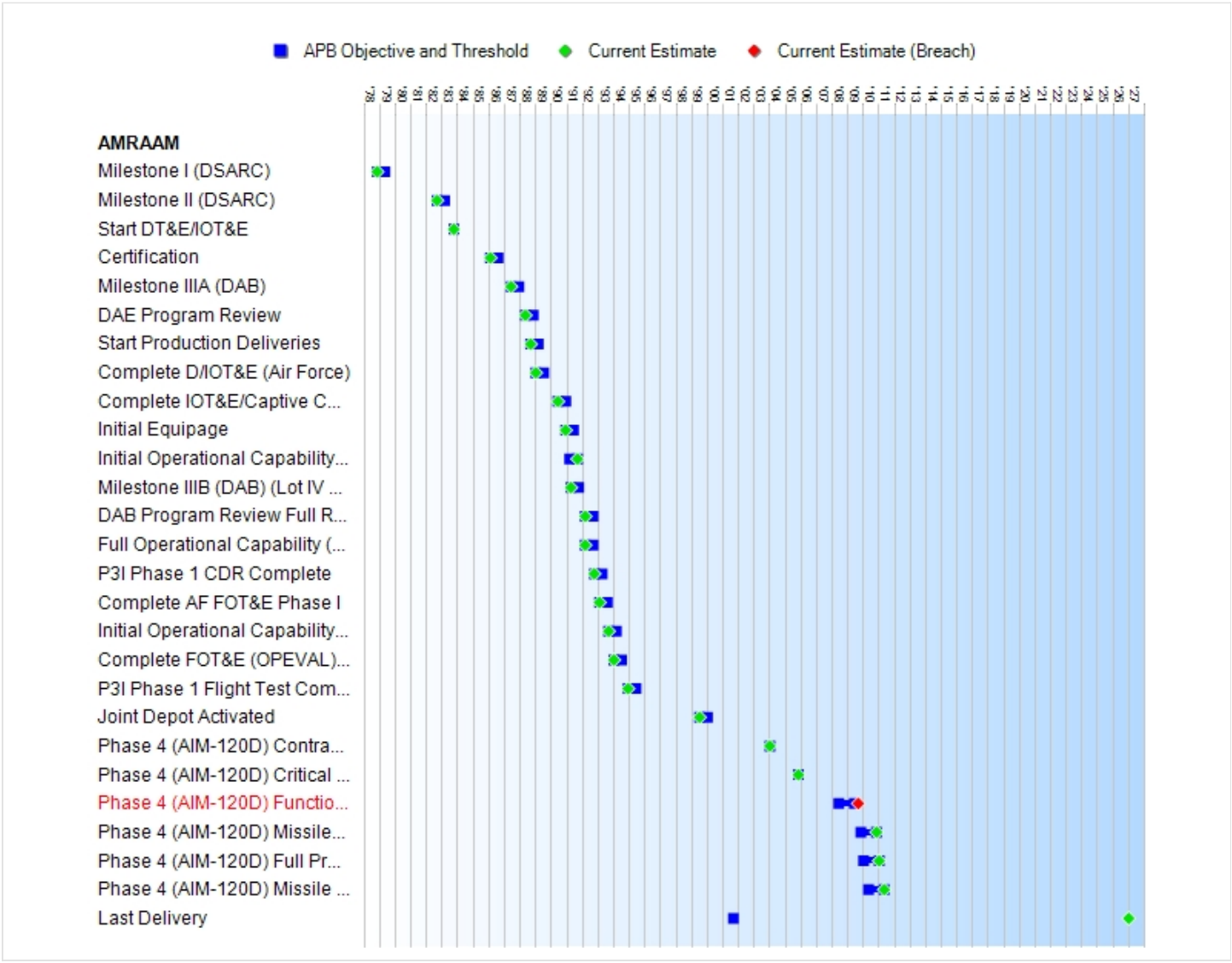
APB Breaches		
Schedule		☑
Performance		☐
Cost	RDT&E	☐
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Explanation of Breach

Schedule breach previously reported in the December 2009 and 2010 SARs.

Schedule


APB Objective and Threshold
Current Estimate
Current Estimate (Breach)
AMRAAM
Milestone I (DSARC)
Milestone II (DSARC)
Start DT&E/IOT&E
Certification
Milestone IIIA (DAB)
DAE Program Review
Start Production Deliveries
Complete D/IOT&E (Air Force)
Complete IOT&E/Captive C...
Initial Equipage
Initial Operational Capability...
Milestone IIIB (DAB) (Lot IV ...
DAB Program Review Full R...
Full Operational Capability (...
P3I Phase 1 CDR Complete
Complete AF FOT&E Phase I
Initial Operational Capability...
Complete FOT&E (OPEVAL)...
P3I Phase 1 Flight Test Com...
Joint Depot Activated
Phase 4 (AIM-120D) Contra...
Phase 4 (AIM-120D) Critical ...
Phase 4 (AIM-120D) Functio...
Phase 4 (AIM-120D) Missile...
Phase 4 (AIM-120D) Full Pr...
Phase 4 (AIM-120D) Missile ...
Last Delivery

Milestones	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate
Milestone I (DSARC)	NOV 1978	NOV 1978	MAY 1979	NOV 1978
Milestone II (DSARC)	SEP 1982	SEP 1982	MAR 1983	SEP 1982
Start DT&E/IOT&E	OCT 1983	N/A	N/A	OCT 1983
Certification	FEB 1986	FEB 1986	AUG 1986	FEB 1986
Milestone IIIA (DAB)	JUN 1987	JUN 1987	DEC 1987	JUN 1987
DAE Program Review	MAY 1988	MAY 1988	NOV 1988	MAY 1988
Start Production Deliveries	SEP 1988	SEP 1988	MAR 1989	SEP 1988
Complete D/IOT&E (Air Force)	JAN 1989	JAN 1989	JUL 1989	JAN 1989
Complete IOT&E/Captive Carry Reliability Program w/Lot 1 Assets (Air Force)	JUN 1990	JUN 1990	DEC 1990	JUN 1990
Initial Equipage	DEC 1990	DEC 1990	JUN 1991	DEC 1990
Initial Operational Capability (IOC) Air Force	MAR 1991	MAR 1991	SEP 1991	SEP 1991
Milestone IIIB (DAB) (Lot IV Full Go-Ahead Rate Production)	APR 1991	APR 1991	OCT 1991	APR 1991
DAB Program Review Full Rate Production Approval	MAR 1992	MAR 1992	SEP 1992	MAR 1992
Full Operational Capability (FOC) 1st F-16 Unit Fully Operational w/AMRAAMs	MAR 1992	MAR 1992	SEP 1992	MAR 1992
P3I Phase 1 CDR Complete	OCT 1992	OCT 1992	APR 1993	OCT 1992
Complete AF FOT&E Phase I	MAR 1992	FEB 1993	AUG 1993	FEB 1993
Initial Operational Capability (IOC) (Navy)	SEP 1992	SEP 1993	MAR 1994	SEP 1993
Complete FOT&E (OPEVAL) (Navy)	MAR 1992	JAN 1994	JUL 1994	JAN 1994
P3I Phase 1 Flight Test Completed	DEC 1994	DEC 1994	JUN 1995	DEC 1994
Joint Depot Activated	SEP 1994	JUL 1999	JAN 2000	JUL 1999
Phase 4 (AIM-120D) Contract Award	N/A	JAN 2004	JAN 2004	JAN 2004
Phase 4 (AIM-120D) Critical Design Review (CDR)	N/A	NOV 2005	NOV 2005	NOV 2005
Phase 4 (AIM-120D) Functional Configuration Audit (FCA)	N/A	JUN 2008	JUN 2009	**SEP 2009** [1]
Phase 4 (AIM-120D) Missiles Deliveries to Meet F/A-18 RAA	N/A	NOV 2009	NOV 2010	NOV 2010
Phase 4 (AIM-120D) Full Production Go-ahead	N/A	JAN 2010	JAN 2011	JAN 2011
Phase 4 (AIM-120D) Missile Deliveries to Meet F-15C/D RAA	N/A	MAY 2010	MAY 2011	MAY 2011
Last Delivery	SEP 2001	N/A	N/A	JAN 2027

[1] *APB Breach*

Acronyms And Abbreviations

CDR - Critical Design Review
D/IOT&E - Development / Initial Operational Test & Evaluation
DAB - Defense Acquisition Board

DAE - Defense Acquisition Executive
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
RAA - Required Assets Available

Change Explanations

None

Memo

Performance

Characteristics	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
Weight (lbs)	327	327	350	344	345
Reliability					
Ready Storage (hrs) (mature msl - 90K operational flight hours)	60000	60000	45000	N/A	45000
Availability (%)	86	86	82	88.7	90
Captive-Carry (MTBM-Type I) (hrs)	600	600	450	1294	1200
On Alert Storage MTBM	30000	30000	22500	TBD	30000
Aircraft Configure/ Load - 3 Man Load Crew					
Install 4 Rail Launchers (mins)	20	20	25	21	21
Load 4 Missiles from trailer (mins)	15	15	20	18	18
Load 4 Missiles from container (mins)	20	20	30	22	22
Missile checks (mins)	1	1	5	1	1
All Weather Capability	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds
Aircraft Compatibility	F-15, F-16, F-14, F/A-18	F-15, F-16, F-14, F/A-18	F-15, F-16, F-14, F/A-18	F-15, F-16, F-14, F/A-18	F-15, F-16, F-14, F/A-18
All-Up Round	Control Surfaces field installed	Control Surfaces field installed	Control Surfaces field installed	Control Surfaces field installed	Control Surfaces field installed
Net Ready	N/A	Satisfies NCOW-RM and GIG Information assurance reqmts	Satisfies 100% of enterprise level or critical information reqmts	Satisfies 100% of enterprise level or critical information reqmts	Satisfies 100% of enterprise level or critical information reqmts
Shipboard Survivability	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

Requirements Source: Joint Service Operational Requirement (JSOR): United States Air Force (USAF) 009-76: Advanced Medium Range Air-to-Air Missile (U), classified SECRET, dated May 22, 1991.

Operational Requirement Document (ORD) Combat Air Force (CAF) (USAF) 009-76-I/II/III-A, for AMRAAM Pre-Planned Product Improvement (P3 I) Program (U), classified SECRET, dated March 10, 1997, revised January 21, 2004.

Capability Production Document (CPD) for AMRAAM Phase 4 (AIM-120D) (U), classified SECRET/NOFORN, dated June 16, 2005.

Acronyms And Abbreviations

GIG - Global Information Grid
hrs - Hours
K - thousand
lbs - Pounds
mins - Minutes
msl - missile
MTBM - Mean Time Between Maintenance
N/A - Not Applicable
NCOW-RM - Net Centric Operations and Warefare Reference Model
reqmts - Requirements
RM - Requirements Manager
TBD - To be determined

Change Explanations

None

Memo

Weight: The Current Estimate weight parameter of 345 lbs applies to AIM-120A/B/C-3/C-4 configuration missiles. The maximum weight for AIM-120C-5/C-6/C-7 versions is 356 lbs. The maximum weight for the AIM-120D is 358 lbs. All configurations satisfy their weight requirements and are consistent with approved aircraft/missile Interface Control Documents (ICDs).

Availability: Overall missile availability averaged 89.5% for 2011. Rocket motor replacements for Navy missiles (309) began in the second quarter of Calendar Year 2010. To date, 244 rocket motors have been replaced. However, 46 rocket motors were recalled from this population for suspect blast tubes and 65 additional rocket motors have not been delivered due to lot acceptance test failures. Faulty Shortened Control Actuator System (SCAS) from 354 Air Force and Navy AIM-120C-5/C-6 missiles were repaired (under warranty). The demonstrated AMRAAM inventory availability is 88.7%. Availability is expected to decline slightly until serviceable rocket motors are delivered.

Captive-Carry (MTBM-Type 1) (hrs): The observed missile MTBM - Type 1 remains very good at over 1,200 hours; no new trends have been identified. The demonstrated MTBM-1 is 1,294; the Joint Service Operational Requirement (JSOR) for the missile is 450 hours.

Net Ready and Shipboard Survivability: Both AIM-120D (Phase 4) performance parameters were signed off at the Functional Configuration Audit completed on September 29, 2009 as demonstrated.

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

Track To Budget

RDT&E				
APPN 1319	BA 07	PE 0207163N	(Navy)	
	Project 0981			
APPN 1319	BA 07	PE 0603370N	(Navy)	
		Beyond Visual Range, Air-to-Air Missile (BVRAAM), FY 1978-1981.		(Sunk)
APPN 1319	BA 07	PE 0604314N	(Navy)	
	Project W0981	(AMRAAM), FY 1982-1992		(Sunk)
APPN 3600	BA 07	PE 0207163F	(Air Force)	
	Project 673777			
APPN 3600	BA 07	PE 0603370F	(Air Force)	
	Project 2437	(AMRAAM), FY 1978-1982		(Sunk)
APPN 3600	BA 07	PE 0604314F	(Air Force)	
	Project 3096	(AMRAAM), FY 1982-1992		(Sunk)
Procurement				
APPN 1507	BA 02	PE 0206138M	(Navy)	
	ICN 220600			
APPN 1507	BA 02	PE 0204162N	(Navy)	
	ICN 220600			
APPN 1507	BA 06	PE 0204162N	(Navy)	
	ICN 6120		(Shared)	
APPN 3020	BA 04	PE 0207163F	(Air Force)	

	ICN 000999		(Shared)	
	ICN 00099A			(Sunk)
	ICN 00099K			(Sunk)
APPN 3020	BA 01	PE 0207163F	(Air Force)	
	ICN 00099L		(Shared)	(Sunk)
APPN 3020	BA 02	PE 0207163F	(Air Force)	
	ICN MAMRAO			

Cost and Funding

Cost Summary

Total Acquisition Cost and Quantity

	BY1992 $M			BY1992 $M	TY $M		
Appropriation	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Prod Est	Current APB Production Objective	Current Estimate
RDT&E	1725.7	2481.6	2729.8	2715.3	1350.6	2355.4	2708.2
Procurement	10552.5	13231.6	14554.8	13660.6	11761.8	17061.9	17500.0
Flyaway	10038.3	--	--	12769.8	11190.8	--	16303.6
Recurring	10038.3	--	--	10890.6	11190.8	--	14404.7
Non Recurring	0.0	--	--	1879.2	0.0	--	1898.9
Support	514.2	--	--	890.8	571.0	--	1196.4
Other Support	378.2	--	--	793.2	420.0	--	1089.5
Initial Spares	136.0	--	--	97.6	151.0	--	106.9
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	12278.2	15713.2	N/A	16375.9	13112.4	19417.3	20208.2

Quantity	SAR Baseline Prod Est	Current APB Production	Current Estimate
RDT&E	0	0	0
Procurement	15450	17024	16239
Total	15450	17024	16239

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2013 President's Budget / December 2011 SAR (TY$ M)

Appropriation	Prior	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	To Complete	Total
RDT&E	2107.8	80.7	89.9	91.6	83.7	44.2	38.9	171.4	2708.2
Procurement	9680.0	308.0	333.3	510.7	531.8	570.4	571.3	4994.5	17500.0
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 2013 Total	11787.8	388.7	423.2	602.3	615.5	614.6	610.2	5165.9	20208.2
PB 2012 Total	11807.5	579.4	791.4	773.9	770.4	670.3	670.2	4417.5	20480.6
Delta	-19.7	-190.7	-368.2	-171.6	-154.9	-55.7	-60.0	748.4	-272.4

Quantity	Undistributed	Prior	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	To Complete	Total
Development	0	0	0	0	0	0	0	0	0	0
Production	0	10637	205	180	300	324	350	349	3894	16239
PB 2013 Total	0	10637	205	180	300	324	350	349	3894	16239
PB 2012 Total	0	10618	379	573	557	608	511	514	2956	16716
Delta	0	19	-174	-393	-257	-284	-161	-165	938	-477

Cost and Funding

Annual Funding By Appropriation

Annual Funding TY$
1319 | RDT&E | Research, Development, Test, and Evaluation, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
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	--	--	--	--	--	--	6.1
2008	--	--	--	--	--	--	2.5
2009	--	--	--	--	--	--	6.7
2010	--	--	--	--	--	--	3.6
2011	--	--	--	--	--	--	2.6
2012	--	--	--	--	--	--	2.9
2013	--	--	--	--	--	--	2.9

2014	--	--	--	--	--	--	2.8
2015	--	--	--	--	--	--	2.8
2016	--	--	--	--	--	--	2.9
2017	--	--	--	--	--	--	3.0
2018	--	--	--	--	--	--	3.2
2019	--	--	--	--	--	--	3.3
2020	--	--	--	--	--	--	3.4
2021	--	--	--	--	--	--	3.5
2022	--	--	--	--	--	--	3.6
2023	--	--	--	--	--	--	3.7
2024	--	--	--	--	--	--	3.8
Subtotal	**--**	**--**	**--**	**--**	**--**	**--**	**308.0**

Annual Funding BY$
1319 | RDT&E | Research, Development, Test, and Evaluation, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway BY 1992 $M	Non End Item Recurring Flyaway BY 1992 $M	Non Recurring Flyaway BY 1992 $M	Total Flyaway BY 1992 $M	Total Support BY 1992 $M	Total Program BY 1992 $M
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	--	--	--	--	--	--	4.6
2008	--	--	--	--	--	--	1.8
2009	--	--	--	--	--	--	4.9
2010	--	--	--	--	--	--	2.6
2011	--	--	--	--	--	--	1.8
2012	--	--	--	--	--	--	2.0
2013	--	--	--	--	--	--	2.0
2014	--	--	--	--	--	--	1.9
2015	--	--	--	--	--	--	1.8
2016	--	--	--	--	--	--	1.9
2017	--	--	--	--	--	--	1.9
2018	--	--	--	--	--	--	2.0

2019	--	--	--	--	--	--	2.0
2020	--	--	--	--	--	--	2.0
2021	--	--	--	--	--	--	2.1
2022	--	--	--	--	--	--	2.1
2023	--	--	--	--	--	--	2.1
2024	--	--	--	--	--	--	2.1
Subtotal	**--**	**--**	**--**	**--**	**--**	**--**	**333.6**

Annual Funding TY$
3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
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	--	--	--	--	--	--	33.4
2008	--	--	--	--	--	--	36.4
2009	--	--	--	--	--	--	39.5
2010	--	--	--	--	--	--	49.8
2011	--	--	--	--	--	--	60.8
2012	--	--	--	--	--	--	77.8
2013	--	--	--	--	--	--	87.0
2014	--	--	--	--	--	--	88.8
2015	--	--	--	--	--	--	80.9
2016	--	--	--	--	--	--	41.3
2017	--	--	--	--	--	--	35.9

2018	--	--	--	--	--	--	20.0
2019	--	--	--	--	--	--	20.3
2020	--	--	--	--	--	--	20.6
2021	--	--	--	--	--	--	21.0
2022	--	--	--	--	--	--	21.4
2023	--	--	--	--	--	--	21.8
2024	--	--	--	--	--	--	21.8
Subtotal	**--**	**--**	**--**	**--**	**--**	**--**	**2400.2**

Annual Funding BY$
3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway BY 1992 $M	Non End Item Recurring Flyaway BY 1992 $M	Non Recurring Flyaway BY 1992 $M	Total Flyaway BY 1992 $M	Total Support BY 1992 $M	Total Program BY 1992 $M
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	--	--	--	--	--	--	25.1
2008	--	--	--	--	--	--	26.8
2009	--	--	--	--	--	--	28.7
2010	--	--	--	--	--	--	35.7
2011	--	--	--	--	--	--	42.7
2012	--	--	--	--	--	--	53.7
2013	--	--	--	--	--	--	59.0
2014	--	--	--	--	--	--	59.3
2015	--	--	--	--	--	--	53.0
2016	--	--	--	--	--	--	26.6
2017	--	--	--	--	--	--	22.7

2018	--	--	--	--	--	--	12.4
2019	--	--	--	--	--	--	12.4
2020	--	--	--	--	--	--	12.4
2021	--	--	--	--	--	--	12.4
2022	--	--	--	--	--	--	12.4
2023	--	--	--	--	--	--	12.4
2024	--	--	--	--	--	--	12.2
Subtotal	**--**	**--**	**--**	**--**	**--**	**--**	**2381.7**

Annual Funding TY$
1507 | Procurement | Weapons Procurement, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
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	140.2	--	--	140.2	5.0	145.2
2012	67	100.2	--	--	100.2	5.5	105.7
2013	67	98.4	--	--	98.4	5.2	103.6
2014	105	163.2	--	1.5	164.7	5.9	170.6
2015	113	170.0	--	--	170.0	4.9	174.9
2016	120	180.6	--	--	180.6	8.0	188.6
2017	120	183.3	--	--	183.3	7.2	190.5
2018	144	176.5	--	2.0	178.5	4.9	183.4
2019	173	224.7	--	--	224.7	5.0	229.7
2020	208	270.2	--	--	270.2	5.0	275.2
2021	250	317.0	--	8.0	325.0	5.1	330.1
2022	300	369.4	--	--	369.4	5.2	374.6
2023	335	386.2	--	4.5	390.7	5.3	396.0
2024	341	398.9	--	--	398.9	5.4	404.3
Subtotal	**4461**	**4393.7**	**--**	**392.6**	**4786.3**	**237.2**	**5023.5**

Annual Funding BY$
1507 | Procurement | Weapons Procurement, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway BY 1992 $M	Non End Item Recurring Flyaway BY 1992 $M	Non Recurring Flyaway BY 1992 $M	Total Flyaway BY 1992 $M	Total Support BY 1992 $M	Total Program BY 1992 $M
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	--	5.5	60.7	1.9	62.6
2009	57	57.6	--	1.7	59.3	1.9	61.2
2010	71	95.5	--	--	95.5	2.4	97.9
2011	101	97.2	--	--	97.2	3.5	100.7
2012	67	68.3	--	--	68.3	3.8	72.1
2013	67	65.9	--	--	65.9	3.5	69.4
2014	105	107.5	--	1.0	108.5	3.9	112.4
2015	113	110.0	--	--	110.0	3.2	113.2
2016	120	114.8	--	--	114.8	5.1	119.9
2017	120	114.4	--	--	114.4	4.5	118.9
2018	144	108.2	--	1.2	109.4	3.1	112.5
2019	173	135.4	--	--	135.4	3.0	138.4
2020	208	159.9	--	--	159.9	2.9	162.8
2021	250	184.3	--	4.7	189.0	2.9	191.9
2022	300	210.9	--	--	210.9	3.0	213.9
2023	335	216.6	--	2.5	219.1	3.0	222.1
2024	341	219.8	--	--	219.8	3.0	222.8
Subtotal	**4461**	**2961.3**	**--**	**343.0**	**3304.3**	**193.0**	**3497.3**

Annual Funding TY$
3020 | Procurement | Missile Procurement, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
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	43.6	204.9
2010	170	245.9	--	--	245.9	29.1	275.0
2011	246	321.4	--	--	321.4	25.1	346.5
2012	138	170.6	--	--	170.6	31.7	202.3
2013	113	193.1	--	--	193.1	36.6	229.7
2014	195	298.4	--	--	298.4	41.7	340.1
2015	211	318.8	--	--	318.8	38.1	356.9
2016	230	342.3	--	--	342.3	39.5	381.8
2017	229	342.7	--	--	342.7	38.1	380.8
2018	290	341.0	--	--	341.0	39.2	380.2
2019	295	346.8	--	--	346.8	39.9	386.7
2020	299	352.3	--	--	352.3	41.0	393.3
2021	304	357.8	--	--	357.8	42.1	399.9
2022	313	363.5	--	--	363.5	43.2	406.7
2023	321	369.3	--	--	369.3	44.4	413.7
2024	321	375.1	--	--	375.1	45.6	420.7

Subtotal	**11778**	**10011.0**	**--**	**1506.3**	**11517.3**	**959.2**	**12476.5**

Annual Funding BY$
3020 | Procurement | Missile Procurement, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway BY 1992 $M	Non End Item Recurring Flyaway BY 1992 $M	Non Recurring Flyaway BY 1992 $M	Total Flyaway BY 1992 $M	Total Support BY 1992 $M	Total Program BY 1992 $M
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	122.1	--	--	122.1	19.9	142.0
2009	133	116.1	--	--	116.1	31.4	147.5
2010	170	173.9	--	--	173.9	20.6	194.5
2011	246	223.3	--	--	223.3	17.4	240.7
2012	138	116.5	--	--	116.5	21.6	138.1
2013	113	129.6	--	--	129.6	24.6	154.2
2014	195	196.9	--	--	196.9	27.5	224.4
2015	211	206.6	--	--	206.6	24.7	231.3
2016	230	217.9	--	--	217.9	25.2	243.1
2017	229	214.3	--	--	214.3	23.9	238.2
2018	290	209.5	--	--	209.5	24.1	233.6
2019	295	209.3	--	--	209.3	24.1	233.4
2020	299	208.9	--	--	208.9	24.3	233.2
2021	304	208.4	--	--	208.4	24.5	232.9
2022	313	207.9	--	--	207.9	24.8	232.7
2023	321	207.5	--	--	207.5	25.0	232.5
2024	321	207.1	--	--	207.1	25.1	232.2

Subtotal	**11778**	**7929.3**	**--**	**1536.2**	**9465.5**	**697.8**	**10163.3**

Low Rate Initial Production

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

AMRAAM received a favorable Low Rate Initial Production (LRIP) decision during the Milestone IIIA review by the Defense Acquisition Board (DAB) in June 1987. The original plan was to procure 810 LRIP missiles and covered 2 lots. On May 23, 1991, the DAB for Milestone IIIB approved a procurement quantity of 4,159 missiles. The current total LRIP quantity is more than 10% of the total production quantity because of the LRIP extension to include 6 lots, FY1987 through FY 1992. The follow-on DAB Program Review, held on April 23,1992, approved Full-Rate Production for Lot VII (FY 1993) procurement.

Foreign Military Sales

Classified Foreign Military Sales information is provided in the classified annex to this submission.

Nuclear Cost

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

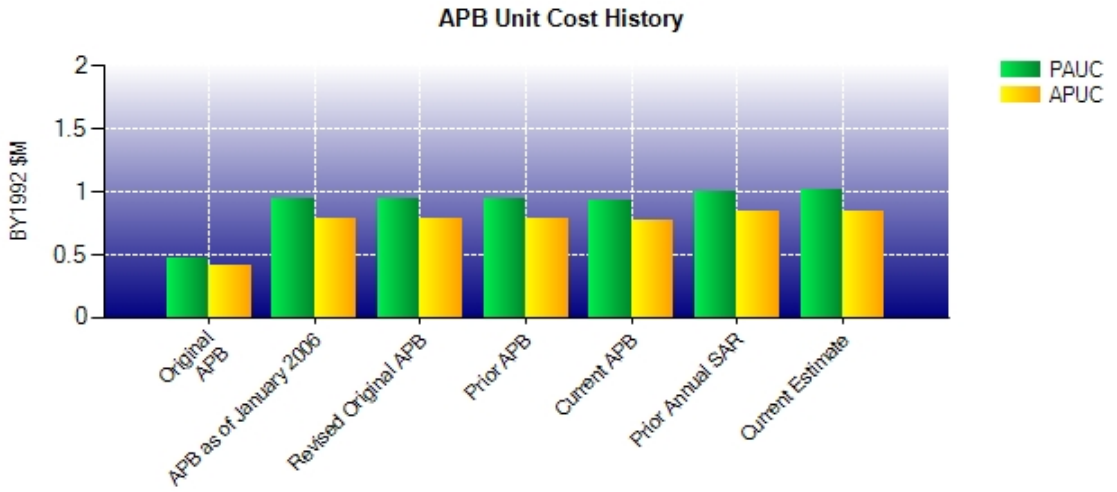
Unit Cost

Unit Cost Report

Unit Cost	BY1992 $M Current UCR Baseline (MAY 2008 APB)	BY1992 $M Current Estimate (DEC 2011 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	15713.2	16375.9	
Quantity	17024	16239	
Unit Cost	0.923	1.008	+9.21
Average Procurement Unit Cost (APUC)			
Cost	13231.6	13660.6	
Quantity	17024	16239	
Unit Cost	0.777	0.841	+8.24

Unit Cost	BY1992 $M Revised Original UCR Baseline (SEP 1996 APB)	BY1992 $M Current Estimate (DEC 2011 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	12302.9	16375.9	
Quantity	13038	16239	
Unit Cost	0.944	1.008	+6.78
Average Procurement Unit Cost (APUC)			
Cost	10205.7	13660.6	
Quantity	13038	16239	
Unit Cost	0.783	0.841	+7.41

Unit Cost History



		BY1992 $M		TY $M	
	Date	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	SEP 1996	0.944	0.783	1.022	0.883
Current APB	MAY 2008	0.923	0.777	1.141	1.002
Prior Annual SAR	DEC 2010	1.000	0.838	1.225	1.064
Current Estimate	DEC 2011	1.008	0.841	1.244	1.078

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)

Initial PAUC Prod Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.849	-0.018	0.003	0.186	0.070	0.114	0.000	0.040	0.395	1.244

Current SAR Baseline to Current Estimate (TY $M)

Initial APUC Prod Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.761	-0.015	0.007	0.185	0.031	0.069	0.000	0.040	0.317	1.078

SAR Baseline History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
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	20208.2
Total Quantity	N/A	24335	15450	16239
Prog. Acq. Unit Cost (PAUC)	N/A	0.476	0.849	1.244

Cost Variance

Cost Variance Summary

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	1350.6	11761.8	--	13112.4
Previous Changes				
Economic	-50.9	-394.7	--	-445.6
Quantity	--	+1318.6	--	+1318.6
Schedule	-7.3	+2782.7	--	+2775.4
Engineering	+643.8	+519.7	--	+1163.5
Estimating	+755.9	+1187.0	--	+1942.9
Other	--	--	--	--
Support	--	+613.4	--	+613.4
Subtotal	+1341.5	+6026.7	--	+7368.2
Current Changes				
Economic	+11.3	+147.1	--	+158.4
Quantity	--	-599.1	--	-599.1
Schedule	+33.5	+218.5	--	+252.0
Engineering	--	-19.5	--	-19.5
Estimating	-28.7	-71.0	--	-99.7
Other	--	--	--	--
Support	--	+35.5	--	+35.5
Subtotal	+16.1	-288.5	--	-272.4
Total Changes	+1357.6	+5738.2	--	+7095.8
CE - Cost Variance	2708.2	17500.0	--	20208.2
CE - Cost & Funding	2708.2	17500.0	--	20208.2

Summary Base Year 1992 $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	1725.7	10552.5	--	12278.2
Previous Changes				
Economic	--	--	--	--
Quantity	--	+830.5	--	+830.5
Schedule	-8.1	+1348.5	--	+1340.4
Engineering	+510.9	+381.6	--	+892.5
Estimating	+484.6	+545.0	--	+1029.6
Other	--	--	--	--
Support	--	+352.8	--	+352.8
Subtotal	+987.4	+3458.4	--	+4445.8
Current Changes				
Economic	--	--	--	--
Quantity	--	-344.2	--	-344.2
Schedule	+21.6	+16.8	--	+38.4
Engineering	--	-10.8	--	-10.8
Estimating	-19.4	-35.9	--	-55.3
Other	--	--	--	--
Support	--	+23.8	--	+23.8
Subtotal	+2.2	-350.3	--	-348.1
Total Changes	+989.6	+3108.1	--	+4097.7
CE - Cost Variance	2715.3	13660.6	--	16375.9
CE - Cost & Funding	2715.3	13660.6	--	16375.9

Previous Estimate: December 2010

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+11.3
Reduction to Small Business Innovation Research in FY 2011 (Air Force). (Estimating)	-1.3	-1.8
Congressional General Reduction (Air Force). (Estimating)	-0.2	-0.3
Rephased F-22 Increment 3.2 schedule (Air Force). (Schedule)	+21.6	+33.5
Revised estimate to better reflect warfighter needs (Air Force). (Estimating)	-12.7	-22.1
Adjustment for current and prior escalation. (Estimating)	-4.0	-3.1
Adjustment to Working Capital Fund rate for product development, Test and Evaluation (Navy). (Estimating)	-1.2	-1.4
RDT&E Subtotal	+2.2	+16.1

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+147.1
Total Quantity variance resulting from a decrease of 477 missiles from 12255 to 11778 (Air Force). (Subtotal)	-268.0	-482.1
Quantity variance resulting from a decrease of 477 missiles from 12255 to 11778 (Air Force). (Quantity)	(-175.2)	(-315.2)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(-57.6)	(-103.6)
Allocation to Engineering resulting from Quantity change. (Engineering) (QR)	(-10.8)	(-19.5)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(-24.4)	(-43.8)
Additional Quantity variance resulting from a decrease of 477 missiles from FY 2011 to FY 2024 (Air Force). (Quantity)	-169.0	-283.9
Increase due to schedule variance resulting from realignment of missile buy profile from FY 2012 through FY 2024 (Navy). (Schedule)	0.0	+94.7
Increase due to schedule variance resulting from realignment of missile buy profile from FY 2012 through FY 2024 (Air Force). (Schedule)	0.0	+106.6
Additional Schedule variance resulting from realignment of missile buy profile from FY 2012 through FY 2024 (Navy). (Schedule)	+74.4	+120.8
Increase in factory Tooling and Test Equipment due to reduced Foreign Military Sales (FMS) quantities and reallocation of shared costs (Navy). (Estimating)	+6.2	+9.6
Decrease in Diminishing Manufacturing Sources (DMS) cost due to update in estimate methodology (Navy). (Estimating)	-3.1	-7.0
Decrease in Production test and technical support requirements (Navy). (Estimating)	-18.1	-29.9
Increase in factory Tooling and Test Equipment due to reduced FMS quantities and reallocation of shared costs. (Air Force). (Estimating)	+10.1	+15.4
Decrease in Diminishing Manufacturing Sources (DMS) costs due to update in estimate methodology (Air Force). (Estimating)	-0.9	-4.3
Decrease in Program Management Adminstration costs (Air Force). (Estimating)	-1.8	-2.0
Adjustment for current and prior escalation. (Estimating)	-5.2	-11.0
Adjustment for current and prior escalation. (Support)	-0.8	-0.6
Additional adjustment to current and prior inflation (Navy). (Estimating)	+0.7	+1.1
Additional adjustment to current and prior inflation (Air Force). (Estimating)	+0.6	+0.9
Decrease in Other Support due to reduction in Integrated Logistics Support and Training Equipment requirements (Navy). (Support)	-1.5	-4.1

Increase in Initial Spares due to increase in requirements (Navy). (Support)	+1.5	+2.5
Increase in Telemetry equipment/modification requirements (Air Force). (Support)	+23.1	+35.6
Increase in Initial Spares due to increase in requirements (Air Force). (Support)	+1.5	+2.1
Procurement Subtotal	-350.3	-288.5

(QR) Quantity Related

Contracts

Appropriation: Procurement

Contract Name	**Raytheon Lot 21**
Contractor	Raytheon Company
Contractor Location	Tucson, AZ 85734-1377
Contract Number, Type	FA8675-07-C-0055, FFP
Award Date	April 13, 2007
Definitization Date	April 13, 2007

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
194.1	N/A	104	378.4	N/A	244	378.4	378.4

Cost And Schedule Variance Explanations

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments

The difference between the initial contract price target and the current contract price target is due to the addition of the Integrated Test Vehicle and Guidance Section in June 2007; procurement of Captive Air Training Missiles and Navy Rocket Motors in September 2007; the addition of 140 AIM-120C-7 Foreign Military Sales (FMS) requirements and Processor Replacement Program (PRP) Phase I in July 2008; the addition of Guided Weapons Test Set in November 2008; FMS Offset Administration in December 2008, and PRP Phase II in February 2009..

Appropriation: Procurement

Contract Name	**Raytheon Lot 22**
Contractor	Raytheon Company
Contractor Location	Tucson, AZ 85706
Contract Number, Type	FA8675-08-C-0049, FFP
Award Date	May 28, 2008
Definitization Date	May 28, 2008

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
416.4	N/A	413	444.3	N/A	413	444.3	444.3

Cost And Schedule Variance Explanations

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments

The difference between the initial contract price target and the current contract price target is due to the purchase of additional Telemetry units in July 2008, the addition of Rocket Motors for Foreign Military Sales and United States customers in January 2009, and the addition of Lean Cost Reduction Initiatives to qualify lower cost components for future missiles in April 2009.

Appropriation: Procurement

Contract Name	**Raytheon Lot 23**
Contractor	Raytheon Company
Contractor Location	Tucson, AZ 85706
Contract Number, Type	FA8675-09-C-0052, FFP
Award Date	April 28, 2009
Definitization Date	April 28, 2009

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
521.2	N/A	685	711.9	N/A	689	711.9	711.9

Cost And Schedule Variance Explanations

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments

The difference between the initial contract price target and the current contract price target is due to the difference between the initial contract price target and the current contract price target is due to the addition of Navy F-18 missiles, Government Furnished Equipment requirements, and Telemetry units in July 2009; the addition of Foreign Military Sales (FMS) Rocket Motors in September 2009; the procurement of the AIM-120D AMRAAM Captive Equipment Pod and the FMS Offset Administration in December 2009. In calendar year 2010 we added Processor Replacement Program (PRP) FMS overarching software; 4 months of System Engineering Program Management (SEPM) to cover the delay in awarding Lot 24; PRP Phase 3; and a Radome Phase 2 AMRAAM Pyroceram Restart. In Calendar Year 2011, we added an effort to modify FMS software tapes to be compliant with PRP configured FMS AIM-120C-7 missiles.

Appropriation: Procurement

Contract Name	**Raytheon Lot 24**
Contractor	Raytheon Company
Contractor Location	Tucson, AZ 85706
Contract Number, Type	FA8675-10-C-0014, FFP
Award Date	August 05, 2010
Definitization Date	August 05, 2010

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
492.4	N/A	505	548.8	N/A	523	548.8	548.8

Cost And Schedule Variance Explanations

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments

The difference between the initial contract price target and the current contract price target is due to the addition of AIM-120D missiles for United States, a guidance section test asset, and additional telemetry devices. Also, testing, studies and plans for all Advance Telemetry (ARTM) are in the initial phase.

Appropriation: Procurement

Contract Name	**Raytheon Lot 25**
Contractor	Raytheon Missile Systems
Contractor Location	1151 East Hermans Road Tucson, AZ 85706
Contract Number, Type	FA8675-11-C-0030, FFP
Award Date	August 31, 2011
Definitization Date	August 31, 2011

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
569.0	N/A	469	643.6	N/A	550	643.6	643.6

Cost And Schedule Variance Explanations

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments

The difference between the initial contract price target and the current contract price target is due to additional telemetry devices and the addition of AIM-120C-7 missiles for Foreign Military Sales (FMS).

This is the first time this contract is being reported.

Deliveries and Expenditures

Deliveries To Date	Plan To Date	Actual To Date	Total Quantity	Percent Delivered
Development	0	0	0	--
Production	10949	9861	16239	60.72%
Total Program Quantities Delivered	10949	9861	16239	60.72%

Expenditures and Appropriations (TY $M)			
Total Acquisition Cost	20208.2	Years Appropriated	36
Expenditures To Date	11151.3	Percent Years Appropriated	75.00%
Percent Expended	55.18%	Appropriated to Date	12176.5
Total Funding Years	48	Percent Appropriated	60.26%

Operating and Support Cost

Assumptions And Ground Rules

The AMRAAM replaced the AIM-7 and was integrated and maintained using existing support resources with no additional manpower requirements. The All-Up-Round (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 (MBTS – Air Force only), Common Field-Level Memory Reprogramming Equipment (CFMRE), or Common Munitions BIT Reprogramming Equipment Plus (CMBRE). Failed missiles will be returned to the contractor depot for repair.

The Operation and Support (O&S) costs are the direct costs for the tactical missile and the Captive Carry Missile (CCM) associated with operating, supporting, and maintaining the AMRAAM missile over a 30-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, 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. The Total Acquisition Cost includes Development for the Air Force and United States Navy (FY 1977-2024), Air Force Production (FY 1984-2024), and Navy Production (FY 1989-2024). The O&S Cost of $1,309.2M (TY$M), $894.0M (BY92$M) (see breakout below) is for 40 years (through 2030 for the AMRAAM service life). The Total Acquisition Cost includes Development and Production for Air Force and Navy.

The O&S Cost of $1,309.2M (TY$M), $894.0M (BY92$M) see breakout below) is for 40 years (through 2030 for the AMRAAM service life).

The O&S Cost includes:
1) Contractor Logistics Support (CLS) labor and material. CLS covers the repair cost after the warranty period has expired.
2) Maintenance: includes inspections, periodic tests, and 30-day function check.
3) Second Destination Transportation (SDT).
4) Material management / item entry.
5) Container maintenance.
6) Sustaining engineering support.
7) Travel (TDY) test costs at Weapons System Evaluation Program (WSEP).
8) Miscellaneous personnel support costs.

O&S Cost does not include warranty costs; however, the number of years for warranty is used to adjust detected failures by lot. The warranty costs are included in the production costs.

The O&S cost estimate was updated December 2011 by Air Dominance Production/Sustainment Branch. The Production Air Force quantities were updated to be consistent with the FY 2013 President's Budget (PB). AIM-7 is AMRAAM's antecedent system; however, O&S costs for this system are not available.

Costs BY1992 $M		
Cost Element	**AMRAAM Average Annual Cost For All Missiles**	**AIM-7 Average Annual Cost For All Missiles**
Unit-Level Manpower	0.3	0.0
Unit Operations	0.9	0.0
Maintenance	6.9	0.0
Sustaining Support	13.6	0.0
Continuing System Improvements	0.6	0.0
Indirect Support	0.1	0.0
Other	0.0	0.0
Total Unitized Cost (Base Year 1992 $)	22.4	--

Total O&S Costs $M	AMRAAM	AIM-7
Base Year	894.0	0.0
Then Year	1309.2	0.0

The program calculates O&S cost on a yearly basis for the respective categories requested in the SAR. These categories are then annualized by dividing their totals by the total number of years of sustainment, 40. The total O&S Base Year (BY) costs is calculated by multiplying the average annual cost by the total number of sustainment years. A rounding error exists, due to varying decimal points used in each of these calculations.

Disposal costs are not included in the O&S estimate.