Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-364

E-2D Advanced Hawkeye Aircraft (E-2D AHE)

As of December 31, 2012

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Program Information

Program Name

E-2D Advanced Hawkeye Aircraft (E-2D AHE)

DoD Component

Navy

Responsible Office

Responsible Office

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Date Assigned May 29, 2012

References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated July 31, 2009

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated April 2, 2013

Mission and Description

The E-2D Advanced Hawkeye (AHE) is a carrier based, all weather, multi-mission aircraft. The E-2D AHE mission is to provide premier airborne Battle Management Command and Control and Surveillance as part of the Naval and Joint Integrated Air and Missile Defense architecture including the Naval Integrated Fire Control-Counter Air capability. The centerpiece of the E-2D AHE is the APY-9 radar system. This radar system is designed specifically to provide significantly enhanced surveillance detection and tracking capability against advanced threat aircraft and cruise missile systems in the overland, littoral, and open ocean environments. Maritime surveillance is also maintained in the open ocean scenarios. The E-2D AHE will provide early warning of hostile threats and provide the force with the right data to prosecute any engagement. Key capabilities along with the radar include the Identification Friend or Foe (IFF) system and Electronic Support Measures for surveillance and combat ID, advanced mission processing capability to integrate all on-board sensor data and off-board information into a coherent tactical picture, and communications, data link, and sensor netting systems to share information across the battlespace. These capabilities allow the E-2D AHE to provide a significant contribution to execution of other mission areas such as Strike, Combat Search and Rescue, and Homeland Defense. As a part of the E-2D AHE modernization effort, the Navy also invested in integrating a full glass cockpit and full Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) capability. The glass cockpit will also provide the capability for the pilot or co-pilot to perform tactical mission functions.

Executive Summary

The E-2D Advanced Hawkeye (E-2D AHE) program was granted authority on March 1, 2013 to commence Full Rate Production (FRP) of 55 aircraft during FY 2013 - FY 2021 by the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD (AT&L)). A FRP Acquisition Program Baseline was signed on April 2, 2013. This decision was based on a successful Initial Operational Test and Evaluation conducted from February 14, 2012 to October 1, 2012 with Commander, Operational Test and Evaluation Forces (COTF). COTF assessing the E-2D AHE as operationally effective; operationally suitable for shore based operations (based on a limited shipboard testing). All Low Rate Initial Production (LRIP) Lots1-4 aircraft are on contract. To date, nine of 20 aircraft have been delivered and all LRIP aircraft will be delivered by FY 2015. The total Program of Record is 75 aircraft. On March 1, 2013, the USD (AT&L), as delegated by the Secretary of Defense, certified a Multi-Year Procurement (MYP) of 32 E-2D AHE aircraft during FY 2014 - FY 2018.

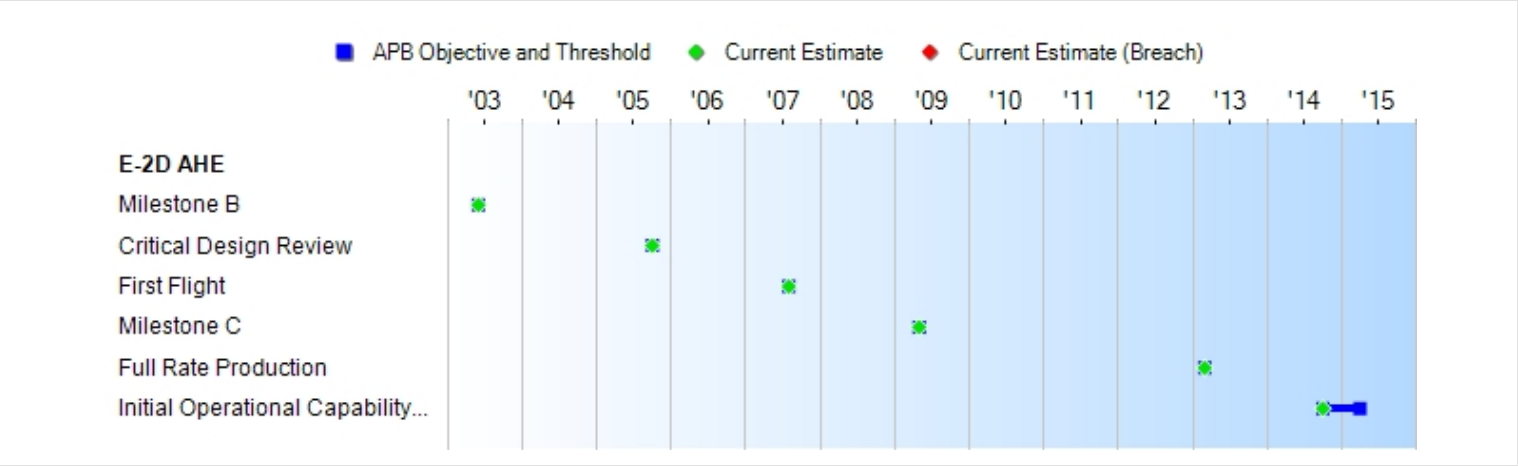
There are no significant software-related issues with this program at this time.

Threshold Breaches

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

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

Schedule



Milestones	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate	
Milestone B	MAY 2003	JUN 2003	JUN 2003	JUN 2003	
Critical Design Review	NOV 2005	OCT 2005	OCT 2005	OCT 2005	
First Flight	AUG 2007	AUG 2007	AUG 2007	AUG 2007	
Milestone C	MAR 2009	MAY 2009	MAY 2009	MAY 2009	
Full Rate Production	DEC 2012	MAR 2013	MAR 2013	MAR 2013	(Ch-1)
Initial Operational Capability (IOC)	OCT 2014	OCT 2014	APR 2015	OCT 2014	

Change Explanations

(Ch-1) The current estimate for the Full Rate Production (FRP) changed from December 2012 to March 2013 due to later than anticipated Initial Operational Test & Evaluation and Beyond Low Rate Initial Production reports.

Performance

Characteristics	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
Radar Ao	=>0.98	=>0.98	=>0.85	0.70	>=0.87 (Ch-1)
Survivability - Safe Egress In Crash	The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.	The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.	The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.	The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.	The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.
Manpower (Full Operational Capability - FY 2020)	Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683	Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683	Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683	Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683	Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683

	Training Os/Es =< 76 / 60	Training Os/Es =< 76 / 60	Training Os/Es =< 76 / 60	Training Os/Es =< 76 / 60	Training Os/Es =< 76 / 60	
Unrefueled Time On Station	=>2.0 hours at a station distance of 200nm	=>2.0 hours at a station distance of 200nm	=>2.0 hours at a station distance of 200nm	2.10 hours at a station distance of 200nm	2.10 hours at a station distance of 200nm	(Ch-1)
Flat Turn Service Ceiling	=>25,000 feet above MSL at mission profile	=>25,000 feet above MSL at mission profile	=>25,000 feet above MSL at mission profile	25,600 feet above MSL at mission profile	25,600 feet above MSL at mission profile	(Ch-1)
Level Flight Airspeed	=>300 knots true airspeed below 18,000 feet MSL	=>300 knots true airspeed below 18,000 feet MSL	=>300 knots true airspeed below 18,000 feet MSL	303.5 knots true airspeed below 18,000 feet MSL	303.5 knots true airspeed below 18,000 feet MSL	(Ch-1)
Network-Centric Military Operations (Network Readiness)	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) The DISR mandated GIG IT standards and profiles identified in the TV-1, (2) DISR	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) The DISR mandated GIG IT standards and profiles identified in the TV-1, (2) DISR	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) The DISR mandated GIG IT standards and profiles identified in the TV-1 (2)	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) The DISR mandated GIG IT standards and profiles identified in the TV-1 (2)	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) The DISR mandated GIG IT standards and profiles identified in the TV-1 (2)	

	mandated GIG KIPs identified in the KIP declaration table, (3) NCOW RM Enterprise Services (4) IA requirements include availability, integrity, authenticat-ion, confidential-ity, non-repudiation, and issuance of an ATO by the DAA (5) Operationally effective information exchanges; and MC-performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views	mandated GIG KIPs identified in the KIP declaration table, (3) NCOW RM Enterprise Services (4) IA requirements include availability, integrity, authenticat-ion, confidential-ity, non-repudiation, and issuance of an ATO by the DAA (5) Operationally effective information exchanges; and MC-performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views	DISR mandated GIG KIPs identified in the KIP declaration table (3) NCOW RM Enterprise Services (4) IA requirements including availability integrity, authenticat-ion, confidential-ity, non-repudiation, and issuance of an IATO by the DAA (5) Operationally effective information exchanges and MC-performance and IA attributes, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views	DISR mandated GIG KIPs identified in the KIP declaration table (3) NCOW RM Enterprise Services (4) IA requirements including availability integrity, authenticatio n, confidentiality , non-repudiation, and issuance of an IATO by the DAA (5) Operationally effective information exchanges and MC-performance and IA attributes, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views	DISR mandated GIG KIPs identified in the KIP declaration table (3) NCOW RM Enterprise Services (4) IA requirements including availability integrity, authenticatio n, confidentiality , non-repudiation, and issuance of an IATO by the DAA (5) Operationally effective information exchanges and MC-performance and IA attributes, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views

Requirements Source: Capability Development Document (CDD) dated March 3, 2009

Acronyms And Abbreviations

AHE - Advanced Hawkeye
Ao - Operational Availability
ATO - Authorization to Operate
DAA - Designated Approval Authority
DISR - DoD Information Technology Standards and Profile Registry
Es - Enlisted
g - gravity
GIG - Global Information Grid
IA - Information Assurance
IATO - Interim Authorization to Operate
IT - Information Technology
KIPs - Key Intelligence Profiles
MC - Mission Critical
MSL - Mean Sea Level
NCOW RM - Net-Centric Operations and Warfare Reference Model
nm - nautical mile
Os - Officers
TV-1 - Technical View 1

Change Explanations

(Ch-1) The current estimate for Radar Ao changed from 0.98 to 0.87, the current estimate for Unrefueled Time On Station changed from 2.28 hours to 2.10 hours, the current estimate for Flat Turn Service Ceiling changed from 25,200 feet to 25,600 feet, and the current estimate for Level Flight Airspeed changed from 323.6 knots to 303.5 knots based on operational test results.

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

Track To Budget

General Memo
APPN 1506 ICN 019500 and APPN 1506 ICN 060510 are shared with the E-2C Reproduction program, which was funded through FY 2007 and no longer requires Acquisition Category reporting as it is over 90% expended. E-2D AHE procurement funding began in FY 2008, as shown in the funding summary.

RDT&E				
APPN 1319	BA 05	PE 0604234N	(Navy)	
	Project 3051	Advanced Hawkeye		

Procurement				
APPN 1506	BA 01	PE 0204152N	(Navy)	
	ICN 019500	E-2D AHE	(Shared)	
APPN 1506	BA 06	PE 0204152N	(Navy)	
	ICN 060510	Initial Spares - E-2D	(Shared)	

MILCON				
APPN 1205	BA 01	PE 0805976N	(Navy)	
		Facilities Restoration and Mod-Training		(Sunk)
APPN 1205	BA 01	PE 0815976N	(Navy)	
		Facilities New Footprint - Trainers		(Sunk)

Cost and Funding

Cost Summary

Total Acquisition Cost and Quantity

	BY2009 $M			BY2009 $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	4140.0	5122.6	5634.9	5123.8	4014.3	5159.9	5161.1
Procurement	13281.9	12932.0	14225.2	13107.9	14968.5	15045.0	15251.0
Flyaway	11427.4	--	--	10990.8	12897.5	--	12790.4
Recurring	11078.6	--	--	10381.5	12492.1	--	12072.1
Non Recurring	348.8	--	--	609.3	405.4	--	718.3
Support	1854.5	--	--	2117.1	2071.0	--	2460.6
Other Support	1493.1	--	--	1813.2	1676.0	--	2124.9
Initial Spares	361.4	--	--	303.9	395.0	--	335.7
MILCON	46.7	41.4	45.5	41.4	48.6	43.7	43.7
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	17468.6	18096.0	N/A	18273.1	19031.4	20248.6	20455.8

Confidence Level for Current APB Cost 50% -
The Independent Cost Estimate (ICE) to support the E-2D AHE Full Rate Production Decision Review, like all previous Cost Assessment and Program Evaluation (CAPE) estimates, is built upon a product-oriented work breakdown structure; is based on historical actual cost information to the mazimum extent possible; and, most importantly, is based on conservative assumptions that are consistent with actual demonstrated contractor and government performance for a series of acquisition programs in which the Department of Defense has been successful.

It is difficult to calculate mathematically the precise confidence levels associated with life-cycle cost estimates prepared for Major Defense Acquisition Programs (MDAPs). Based on the rigor in methods used in building estimates, the strong adherence to the collection and use of historical cost information, and the review of applied assumptions, we project that it is about equally likely that the estimate will prove too low or too high for execution of the program described.

Quantity	SAR Baseline Prod Est	Current APB Production	Current Estimate
RDT&E	5	5	5
Procurement	70	70	70
Total	75	75	75

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2014 President's Budget / December 2012 SAR (TY$ M)

Appropriation	Prior	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	To Complete	Total
RDT&E	4000.8	119.1	152.0	190.7	201.7	220.2	149.2	127.4	5161.1
Procurement	3546.9	1040.1	1280.3	1254.1	1338.4	1411.1	1288.7	4091.4	15251.0
MILCON	43.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.7
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2014 Total	7591.4	1159.2	1432.3	1444.8	1540.1	1631.3	1437.9	4218.8	20455.8
PB 2013 Total	7592.2	1159.2	1301.6	1548.1	1485.5	1667.5	1568.1	4415.0	20737.2
Delta	-0.8	0.0	130.7	-103.3	54.6	-36.2	-130.2	-196.2	-281.4

Project Unit C226 not included. FY 2012 Congressional Add is not within scope of approved Program of Record.

Program funding and production quantities listed in this SAR are consistent with the FY 2014 President's Budget (PB). The FY 2014 PB did not reflect the enacted DoD appropriation for FY 2013, nor sequestration; it reflected the President's requested amounts for FY 2013.

Quantity	Undistributed	Prior	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	To Complete	Total
Development	5	0	0	0	0	0	0	0	0	5
Production	0	15	5	5	5	6	8	8	18	70
PB 2014 Total	5	15	5	5	5	6	8	8	18	75
PB 2013 Total	5	15	5	5	7	6	7	7	18	75
Delta	0	0	0	0	-2	0	1	1	0	0

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
2002	--	--	--	--	--	--	74.2
2003	--	--	--	--	--	--	106.6
2004	--	--	--	--	--	--	325.5
2005	--	--	--	--	--	--	541.7
2006	--	--	--	--	--	--	595.6
2007	--	--	--	--	--	--	480.8
2008	--	--	--	--	--	--	784.8
2009	--	--	--	--	--	--	467.9
2010	--	--	--	--	--	--	346.1
2011	--	--	--	--	--	--	168.2
2012	--	--	--	--	--	--	109.4
2013	--	--	--	--	--	--	119.1
2014	--	--	--	--	--	--	152.0
2015	--	--	--	--	--	--	190.7
2016	--	--	--	--	--	--	201.7
2017	--	--	--	--	--	--	220.2
2018	--	--	--	--	--	--	149.2
2019	--	--	--	--	--	--	61.5
2020	--	--	--	--	--	--	34.6
2021	--	--	--	--	--	--	31.3
Subtotal	**5**	**--**	**--**	**--**	**--**	**--**	**5161.1**

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

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2009 $M	Non End Item Recurring Flyaway BY 2009 $M	Non Recurring Flyaway BY 2009 $M	Total Flyaway BY 2009 $M	Total Support BY 2009 $M	Total Program BY 2009 $M
2002	--	--	--	--	--	--	85.8
2003	--	--	--	--	--	--	121.5
2004	--	--	--	--	--	--	360.9
2005	--	--	--	--	--	--	585.2
2006	--	--	--	--	--	--	624.0
2007	--	--	--	--	--	--	491.7
2008	--	--	--	--	--	--	788.2
2009	--	--	--	--	--	--	463.9
2010	--	--	--	--	--	--	338.1
2011	--	--	--	--	--	--	160.1
2012	--	--	--	--	--	--	102.1
2013	--	--	--	--	--	--	109.0
2014	--	--	--	--	--	--	136.6
2015	--	--	--	--	--	--	168.1
2016	--	--	--	--	--	--	174.5
2017	--	--	--	--	--	--	187.0
2018	--	--	--	--	--	--	124.3
2019	--	--	--	--	--	--	50.3
2020	--	--	--	--	--	--	27.8
2021	--	--	--	--	--	--	24.7
Subtotal	**5**	**--**	**--**	**--**	**--**	**--**	**5123.8**

Annual Funding TY$
1506 | Procurement | Aircraft 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
2008	--	72.2	--	--	72.2	--	72.2
2009	2	404.5	--	--	404.5	67.6	472.1
2010	3	584.6	--	33.7	618.3	161.5	779.8
2011	5	875.4	--	60.1	935.5	212.5	1148.0
2012	5	878.9	--	50.9	929.8	145.0	1074.8
2013	5	835.1	--	35.3	870.4	169.7	1040.1
2014	5	983.7	--	85.0	1068.7	211.6	1280.3
2015	5	989.6	--	50.9	1040.5	213.6	1254.1
2016	6	1045.0	--	51.8	1096.8	241.6	1338.4
2017	8	1088.6	--	52.8	1141.4	269.7	1411.1
2018	8	1008.4	--	53.7	1062.1	226.6	1288.7
2019	8	1414.9	--	54.7	1469.6	128.8	1598.4
2020	8	1351.7	--	56.4	1408.1	123.3	1531.4
2021	2	539.5	--	88.0	627.5	113.8	741.3
2022	--	--	--	45.0	45.0	175.3	220.3
Subtotal	**70**	**12072.1**	**--**	**718.3**	**12790.4**	**2460.6**	**15251.0**

Annual Funding BY$
1506 | Procurement | Aircraft Procurement, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2009 $M	Non End Item Recurring Flyaway BY 2009 $M	Non Recurring Flyaway BY 2009 $M	Total Flyaway BY 2009 $M	Total Support BY 2009 $M	Total Program BY 2009 $M
2008	--	71.8	--	--	71.8	--	71.8
2009	2	396.4	--	--	396.4	66.3	462.7
2010	3	560.1	--	32.3	592.4	154.8	747.2
2011	5	819.1	--	56.2	875.3	198.9	1074.2
2012	5	806.7	--	46.7	853.4	133.1	986.5
2013	5	752.0	--	31.8	783.8	152.8	936.6
2014	5	869.3	--	75.1	944.4	187.0	1131.4
2015	5	858.2	--	44.1	902.3	185.3	1087.6
2016	6	889.4	--	44.1	933.5	205.6	1139.1
2017	8	909.2	--	44.1	953.3	225.2	1178.5
2018	8	826.5	--	44.0	870.5	185.7	1056.2
2019	8	1138.0	--	44.0	1182.0	103.6	1285.6
2020	8	1066.9	--	44.5	1111.4	97.4	1208.8
2021	2	417.9	--	68.2	486.1	88.1	574.2
2022	--	--	--	34.2	34.2	133.3	167.5
Subtotal	**70**	**10381.5**	**--**	**609.3**	**10990.8**	**2117.1**	**13107.9**

Cost Quantity Information
1506 | Procurement | Aircraft Procurement, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned with Quantity) BY 2009 $M
2008	--	--
2009	2	414.7
2010	3	523.0
2011	5	799.4
2012	5	772.1
2013	5	786.0
2014	5	744.6
2015	5	851.1
2016	6	889.8
2017	8	963.5
2018	8	850.9
2019	8	1142.4
2020	8	1157.9
2021	2	486.1
2022	--	--
Subtotal	**70**	**10381.5**

Annual Funding TY$
1205 | MILCON | Military Construction, Navy and Marine Corps

Fiscal Year	Total Program TY $M
2008	11.5
2009	--
2010	16.8
2011	--
2012	15.4
Subtotal	**43.7**

Annual Funding BY$
1205 | MILCON | Military Construction, Navy and Marine Corps

Fiscal Year	Total Program BY 2009 $M
2008	11.4
2009	--
2010	16.0
2011	--
2012	14.0
Subtotal	**41.4**

Low Rate Initial Production

	Initial LRIP Decision	Current Total LRIP
Approval Date	6/13/2003	4/3/2011
Approved Quantity	22	15
Reference	Milestone B ADM	LRIP Lots 3 and 4 ADM
Start Year	2009	2009
End Year	2012	2012

The Current Total LRIP Quantity is more than 10% of the total production quantity due to 15 aircraft being the minimum to maintain the industrial base and ensure successful transition to Full Rate Production.

The 15 planned LRIP aircraft (including one FY 2011 supplemental) represent 20% of the total quantity. The reduction in LRIP quantities is due to the production quantity ramp changes.

Foreign Military Sales

None

Nuclear Cost

None

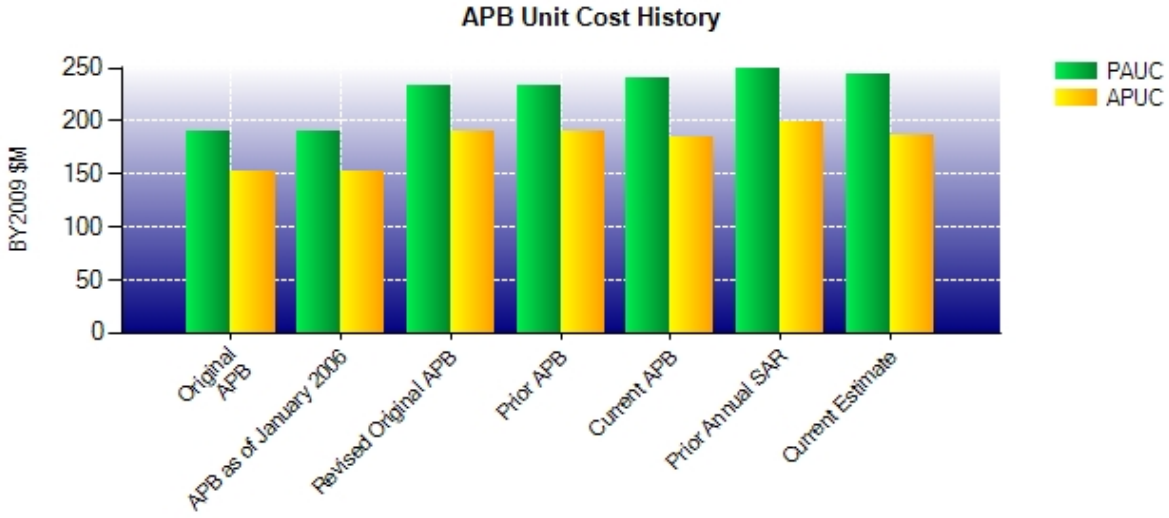
Unit Cost

Unit Cost Report

Unit Cost	BY2009 $M Current UCR Baseline (APR 2013 APB)	BY2009 $M Current Estimate (DEC 2012 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	18096.0	18273.1	
Quantity	75	75	
Unit Cost	241.280	243.641	+0.98
Average Procurement Unit Cost (APUC)			
Cost	12932.0	13107.9	
Quantity	70	70	
Unit Cost	184.743	187.256	+1.36

Unit Cost	BY2009 $M Revised Original UCR Baseline (JUL 2009 APB)	BY2009 $M Current Estimate (DEC 2012 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	17468.6	18273.1	
Quantity	75	75	
Unit Cost	232.915	243.641	+4.61
Average Procurement Unit Cost (APUC)			
Cost	13281.9	13107.9	
Quantity	70	70	
Unit Cost	189.741	187.256	-1.31

Unit Cost History



		BY2009 $M		TY $M	
	Date	PAUC	APUC	PAUC	APUC
Original APB	JUN 2003	189.977	152.732	199.760	166.551
APB as of January 2006	JUN 2003	189.977	152.732	199.760	166.551
Revised Original APB	JUL 2009	232.915	189.741	253.752	213.836
Prior APB	JUL 2009	232.915	189.741	253.752	213.836
Current APB	APR 2013	241.280	184.743	269.981	214.929
Prior Annual SAR	DEC 2011	249.496	199.684	276.496	229.363
Current Estimate	DEC 2012	243.641	187.256	272.744	217.871

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY $M)

Initial PAUC Dev Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
199.760	5.871	0.000	3.025	8.235	28.608	0.000	8.253	53.992	253.752

Current SAR Baseline to Current Estimate (TY $M)

PAUC Prod Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
253.752	4.493	0.000	10.147	10.405	-10.568	0.000	4.515	18.992	272.744

Initial SAR Baseline to Current SAR Baseline (TY $M)

Initial APUC Dev Est	Changes								APUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
166.551	4.414	-0.572	3.241	4.910	27.393	0.000	7.899	47.285	213.836

Current SAR Baseline to Current Estimate (TY $M)

APUC Prod Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
213.836	4.544	0.000	10.871	0.974	-17.191	0.000	4.837	4.035	217.871

SAR Baseline History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	MAY 2003	MAY 2003	JUN 2003
Milestone C	N/A	MAR 2009	MAR 2009	MAY 2009
IOC	N/A	APR 2011	OCT 2014	OCT 2014
Total Cost (TY $M)	N/A	14982.0	19031.4	20455.8
Total Quantity	N/A	75	75	75
Prog. Acq. Unit Cost (PAUC)	N/A	199.760	253.752	272.744

Cost Variance

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	4014.3	14968.5	48.6	19031.4
Previous Changes				
Economic	+6.8	+52.0	+0.4	+59.2
Quantity	--	--	--	--
Schedule	--	+754.2	--	+754.2
Engineering	+370.3	+10.8	--	+381.1
Estimating	+246.7	-112.6	-5.3	+128.8
Other	--	--	--	--
Support	--	+382.5	--	+382.5
Subtotal	+623.8	+1086.9	-4.9	+1705.8
Current Changes				
Economic	+11.5	+266.1	+0.2	+277.8
Quantity	--	--	--	--
Schedule	--	+6.8	--	+6.8
Engineering	+341.9	+57.4	--	+399.3
Estimating	+169.6	-1090.8	-0.2	-921.4
Other	--	--	--	--
Support	--	-43.9	--	-43.9
Subtotal	+523.0	-804.4	--	-281.4
Total Changes	+1146.8	+282.5	-4.9	+1424.4
CE - Cost Variance	5161.1	15251.0	43.7	20455.8
CE - Cost & Funding	5161.1	15251.0	43.7	20455.8

Summary Base Year 2009 $M				
	RDT&E	**Proc**	**MILCON**	**Total**
SAR Baseline (Prod Est)	4140.0	13281.9	46.7	17468.6
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	+519.8	--	+519.8
Engineering	+334.7	+9.4	--	+344.1
Estimating	+218.0	-123.8	-5.1	+89.1
Other	--	--	--	--
Support	--	+290.6	--	+290.6
Subtotal	+552.7	+696.0	-5.1	+1243.6
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	+290.3	+47.1	--	+337.4
Estimating	+140.8	-889.1	-0.2	-748.5
Other	--	--	--	--
Support	--	-28.0	--	-28.0
Subtotal	+431.1	-870.0	-0.2	-439.1
Total Changes	+983.8	-174.0	-5.3	+804.5
CE - Cost Variance	5123.8	13107.9	41.4	18273.1
CE - Cost & Funding	5123.8	13107.9	41.4	18273.1

Previous Estimate: December 2011

RDT&E	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+11.5
Adjustment for current and prior escalation. (Estimating)	-3.4	-3.7
Increase to funding to support the following new capability: Tactical Targeting Network Technology. (Engineering)	+116.8	+134.5
Increase to funding to support the following new capability: Sensor Netting. (Engineering)	+94.0	+114.1
Increase to funding to support the following new capabilities: Naval Integrated Fire Control - Counter Air Test, Accelerated Mid-Term Interoperability Improvement Program, and Upper Transponder Antenna. (Engineering)	+79.5	+93.3
Revised estimate for Fatigue, Repair of Repairables, and Follow-On Test and Evaluation. (Estimating)	+191.8	+229.3
Decrease due to Below Threshold Reprogramming of funding for other Navy Reprioritization. (Estimating)	-38.1	-45.3
Decrease due to Below Threshold Reprogramming of funding for Small Business Innovative Research. (Estimating)	-2.3	-2.5
Decrease due to labor rate adjustment. (Estimating)	-0.2	-0.2
Revised estimate to reflect application of new indices. (Estimating)	-7.0	-8.0
RDT&E Subtotal	+431.1	+523.0

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+266.1
Stretch-out of procurement buy profile from FY 2015 - FY 2021. (Schedule)	0.0	+6.8
Increase to funding to support the following new capabilities: Secure Internet Protocol Router (SIPR) Chat, Tactical Targeting Network Technology, and Anti-Tamper. (Engineering)	+47.1	+57.4
Adjustment for current and prior escalation. (Estimating)	-33.8	-36.4
Decrease due to projected savings from a FY 2014 - FY 2018 Multi-Year Procurement. (Estimating)	-422.2	-522.8
Revised estimate to reflect actuals. (Estimating)	-366.1	-464.0
Decrease due to Cost Assessment and Program Evaluation (CAPE) estimate for Full Rate Production Decision Review. (Estimating)	-205.2	-236.6
Revised estimate to reflect application of new escalation indices. (Estimating)	-183.3	-223.1
Increase due to Northrop Grumman Aerospace Sector incorporation of Pension Liability. (Estimating)	+267.6	+323.9
Increase due to Northrop Grumman Aerospace Sector Reorganization and Rate Restructure. (Estimating)	+53.9	+68.2
Adjustment for current and prior escalation. (Support)	-6.1	-6.9
Increase in Other Support (e.g., Support Equipment, Training, etc.) due to revised estimate in support of Full Rate Production (FRP) Decision Review. (Support)	+70.5	+76.1

Decrease in Initial Spares due to revised estimate in support of FRP Decision Review and alignment to budget controls. (Support)	-92.4	-113.1
Procurement Subtotal	-870.0	-804.4

MILCON	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+0.2
Adjustment for current and prior escalation. (Estimating)	-0.2	-0.2
MILCON Subtotal	-0.2	0.0

Contracts

Appropriation: Procurement

Contract Name	**LRIP Lot 2**
Contractor	Northrop Grumman Corporation
Contractor Location	South Oyster Bay Road Bethpage, NY 11714-3582
Contract Number, Type	N00019-08-C-0027/2, FPIF
Award Date	June 15, 2009
Definitization Date	June 15, 2009

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
54.6	N/A	N/A	559.3	559.3	3	559.3	559.3

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (9/25/2012)	+12.2	-0.7
Previous Cumulative Variances	+11.6	+3.4
Net Change	+0.6	-4.1

Cost And Schedule Variance Explanations

The favorable net change in the cost variance is due to the overall budget savings in the work package on the first two aircraft.

The unfavorable net change in the schedule variance is due to the balance of the transmitter power group delivery from Northrop Grumman Electronic Systems and the integration at Lockheed Martin Corporation for the Low Rate Initial Production (LRIP) Lot 2 plus-up aircraft.

General Contract Variance Explanation

The LRIP Lot 2 contract maintained an SPI and CPI of over 1.00 since contract award. The contract is now 96% complete and as such, has been considered low risk by the Program Office and formal EVM reporting by the contractor ended in September 2012.

Contract Comments

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

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to this contract being initially awarded June 15, 2009 as an advanced acquisition of LRIP Lot 2 as a Not To Exceed Contract in the amount of $54.6M. The contract transitioned to a Fixed Price Incentive Firm contract for the procurement of three aircraft with a current contract value of $559.3M.

Appropriation: Procurement

Contract Name	**LRIP LOT 3**
Contractor	Northrop Grumman Corporation
Contractor Location	South Oyster Bay Road Bethpage, NY 11714-3582
Contract Number, Type	N00019-10-C-0044/4, FFP
Award Date	March 15, 2010
Definitization Date	July 22, 2011

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
94.6	N/A	N/A	836.9	N/A	5	836.9	836.9

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 this contract being initially awarded on March 15, 2010 as an advanced acquisition contract for the Low Rate Initial Production (LRIP) Lot 3 as a Not to Exceed contract in the amount of $94.6M. The contract was definitized on July 22, 2011 and transitioned to a Firm Fixed Price contract for the procurement of five aircraft with the current contract value of $836.9M.

Appropriation: Procurement

Contract Name	**LRIP Lot 4**
Contractor	Northrop Grumman Corporation
Contractor Location	South Oyster Bay Road Bethpage, NY 11714-3582
Contract Number, Type	N00019-10-C-0044/5, FFP
Award Date	April 13, 2011
Definitization Date	January 24, 2012

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
94.6	N/A	N/A	786.3	N/A	5	786.3	786.3

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 this contract being initially awarded on April 13, 2011 as an advanced acquisition contract for the Low Rate Initial Production (LRIP) Lot 4 as a Not To Exceed contract in the amount of $94.6M. The contract was definitized on January 24, 2012 and transitioned to a Firm Fixed Price contract for the procurement of five aircraft with the current contract value of $786.3M.

Appropriation: Procurement

Contract Name	**FRP Lot 1 Advanced Acquisition**
Contractor	Northrop Grumman Corporation
Contractor Location	South Oyster Bay Road Bethpage, NY 11714-3582
Contract Number, Type	N00019-12-C-0063/5, FFP
Award Date	February 01, 2012
Definitization Date	

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
157.9	N/A	N/A	157.9	N/A	N/A	157.9	157.9

Cost And Schedule Variance Explanations

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

Contract Comments

This contract has not yet been definitized. On February 1, 2012, the advanced acquisition contract for the Full Rate Production (FRP) Lot 1 was awarded as a Not To Exceed (NTE) contract. for $57.9M. Although this contract is identified as FFP, it is an NTE modification.

Appropriation: Procurement

Contract Name	**E-2D HITS-A**
Contractor	Rockwell Collins, Inc.
Contractor Location	400 Collins Road NE Cedar Rapids, IA 52498
Contract Number, Type	N61339-03-D-5007/2, CPIF/FPIF/FFP
Award Date	August 15, 2008
Definitization Date	August 15, 2008

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
68.3	68.3	4	168.9	168.9	7	168.9	168.9

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/1/2013)	+2.2	-0.8
Previous Cumulative Variances	--	--
Net Change	+2.2	-0.8

Cost And Schedule Variance Explanations

The favorable cumulative cost variance is due to the subcontractor (Aero Simulation Incorporated) de-scope and the labor and general and administrative rates.

The unfavorable cumulative schedule variance is due to the seven month delay of the Carley Courseware.

Contract Comments

This is the first time this contract is being reported.

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to contract options being exercised which increased the the quantity from four simulators to seven.

Appropriation: Procurement

Contract Name	**E-2D HITS-M**
Contractor	Rockwell Collins, Inc.
Contractor Location	400 Collins Road NE Cedar Rapids, IA 52498
Contract Number, Type	N61339-03-D-5007, CPIF/FFP
Award Date	April 29, 2010
Definitization Date	April 29, 2010

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
31.3	N/A	1	76.6	N/A	2	76.6	76.6

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/1/2013)	-0.7	-0.1
Previous Cumulative Variances	--	--
Net Change	-0.7	-0.1

Cost And Schedule Variance Explanations

The unfavorable cumulative cost variance is due to more costs being incurred than anticipated for manufacturing support and rework, subcontracted support for system testing, and Information Assurance efforts.

The unfavorable cumulative schedule variance is due to the extension of manufacturing rework activities and site support for the simulators. These efforts are now complete and the systems were delivered in February 2013.

Contract Comments

This is the first time this contract is being reported.

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to contract options being exercised which increased the quantity from one simulator to two.

Deliveries and Expenditures

Deliveries To Date	Plan To Date	Actual To Date	Total Quantity	Percent Delivered
Development	5	5	5	100.00%
Production	4	4	70	5.71%
Total Program Quantities Delivered	9	9	75	12.00%

Expenditures and Appropriations (TY $M)			
Total Acquisition Cost	20455.8	Years Appropriated	12
Expenditures To Date	6102.2	Percent Years Appropriated	57.14%
Percent Expended	29.83%	Appropriated to Date	8750.6
Total Funding Years	21	Percent Appropriated	42.78%

The above data is current as of 4/4/2013.

Actual quantity reflects delivery of System Development and Demonstration (SD&D) aircraft, SD&D #1 and SD&D #2; Pilot Production Aircraft #1, #2, and #3; Low Rate Initial Production (LRIP) Lot 1 #1 and #2, and LRIP Lot 2 #1 and #2.

Operating and Support Cost

E-2D AHE

Assumptions and Ground Rules

Cost Estimate Reference:
Date/Source of Estimate: April 2013/Naval Air Systems Command (NAVAIR) 4.2.2
Assumptions for Fleet Aircraft:
Flight Hours per Aircraft per Month: 40
Number of Aircraft per Carrier Airborne Early Warning (AEW) Squadron: 5
Total Number of Aircraft: 73
Total Number of Operating Years per Aircraft: 20
Total Number of Primary Authorized Aircraft (PAA): 66
- Ten 5 aircraft Carrier AEW squadrons
- One 12 aircraft Fleet Replacement Squadron (FRS)
- 2 aircraft at Air Test and Evaluation Squadron One (VX-1)*
- 2 aircraft at Naval Strike Air Warfare Center (NSAWC)*

Aircraft Flight Hours Life Limit: 9,600
Pipeline Rate: 10%
Attrition Rate: 0.3%
Total Operating Flight Hours: 616,562
Total Operating Aircraft Years: 1,309

*PAA beyond Primary Mission Aircraft Authorized (PMAA) and FRS aircraft are typically not included in NAVAIR 4.2 Operating and Support (O&S) estimates; however, PAA for VX-1 and NSAWC have been included in the E-2D AHE O&S cost estimate.

Sustainment Strategy:
The E-2D AHE initial sustainment concept for E-2D AHE unique parts is Interim Contractor Support (ICS) through Material Support Date (MSD) with common systems supported organically. For the period of MSD (1Q FY 2016) through Navy Support Date (NSD) (4Q FY 2019), Naval Supply Systems Command (NAVSUP) Weapons System Support (WSS) will support E-2D AHE unique systems through conventional and/or performance-based repair contracts with Original Equipment Manufacturers (OEMs). With few exceptions, E-2D AHE unique systems have been designated as core capabilities and the program is pursuing the establishment of organic capabilities to comply with the U.S. Code Title 10 requirements. As these capabilities are established, business case analyses will be conducted to determine the best value sustainment strategies, whether it is organic or public-private partnership.
- Quantity: 73 Fleet aircraft
- Service Life: 32 years from FY 2011 - FY 2042

Antecedent Information:
The antecedent program is the E-2C. Annual costs for the antecedent program are based upon a three-year average of Naval Visibility and Management of Operating and Support Costs (VAMOSC) data from FY 2010 - FY 2012. The average number of aircraft in the three-year VAMOSC dataset is 58.33. Since Naval VAMOSC does not capture Indirect Support costs, the E-2C Indirect Support cost is calculated by multiplying the E-2C Unit-Level Manpower by the ratio of E-2D AHE Indirect Support to E-2D AHE Unit-Level Manpower.

For comparison purposes, the Total O&S Cost is the product of the Antecedent's Average Annual Cost per Unit and the Operating Aircraft Years of the new Major Defense Acquisition Program.

Unitized O&S Costs BY2009 $M		
Cost Element	**E-2D AHE Average Annual Cost Per Aircraft**	**E-2C Reproduction (Antecedent) Average Annual Cost Per Aircraft**
Unit-Level Manpower	2.8	2.7
Unit Operations	0.5	0.4
Maintenance	6.5	3.6
Sustaining Support	0.6	0.2
Continuing System Improvements	1.4	1.1
Indirect Support	1.0	0.9
Other	0.0	0.0
Total	12.8	8.9

Unitized Cost Comments:

For comparison purposes, the Total O&S Cost for the antecedent program is the product of the Antecedent's Average Annual Cost per Unit and the Operating Aircraft Years of the new Major Defense Acquisition Program. The Total O&S Cost for the E-2D AHE is a bottoms-up estimate of all cost elements for the service life (FY 2011 – FY 2042).

The delta in Maintenance between E-2C and E-2D AHE is in the Organizational Depot-Level Repairables (DLRs). DLR cost is highly correlated to flight hour utilization. E-2C had an actual rate of 31 hours per aircraft per month and E-2D AHE is based upon 40 hours per aircraft per month – a nearly 30% increase. Additionally, E-2D AHE has higher DLR costs associated with the new, sophisticated avionics (particularly the radar and Towed Auxiliary Receive Array systems).

The delta in Sustaining Support between E-2C and E-2D AHE is due to System Specific Training Costs. The E-2D AHE estimate is $0.4M per aircraft and E-2C actual are $0.0M. E-2D AHE System Specific Training costs include cost (pay and benefits) of student personnel at the Fleet Replacement Squadron (FRS) based on identified courses, course length, and annual student throughput for each training course; whereas, E-2C actual costs are reported as part of the Unit-Level Manpower.

	Total O&S Cost $M			
	Current Production APB Objective/Threshold		Current Estimate	
	E-2D AHE		E-2D AHE	E-2C Reproduction (Antecedent)
Base Year	17334.7	19068.2	16688.2	11684.4
Then Year	23824.4	N/A	23741.7	N/A

Total O&S Costs Comments:
For comparison purposes, the Total O&S Cost is the product of the Antecedent's Average Annual Cost per Unit and the Operating Aircraft Years of the new Major Defense Acquisition Program.

O&S Cost Variance Explanation:

Total O&S Cost BY2009$M		
2011 SAR	**Current Estimate**	**Variance (Current – Prior)**
16929.8	16688.2	-1.4%

Cost Estimating Methodologies 0.3%
The following were changes in cost estimating methodology:
1. Updated Intermediate-Level Maintenance Personnel methodology (-1.8%)
2. Updated System Specific Training methodology (1.9%)
3. Updated Hardware Modification methodology (0.2% net decrease)
4. Changed the methodology for applying component repair/replacement cost growth factors (-4.2%)
5. Changed Permanent Change of Station (PCS) methodology (1.4%)
6. Updated Inventory and Flight Hour Calculation methodology (1.2%)
7. Changed aircraft depot methodology (0.9%)
8. Other minor changes (1.1%)

Cost Data Updates 5.7%
The following were cost data updates:
1. Corrected/updated acquisition cost inputs (4.0%)
2. Updated component reliability and unit cost data (3.6%)
3. Other minor changes (-1.9%)

Technical Inputs -6.6%
The following were changes based on technical inputs:
1. Updated component reliability and operating hour to flight hour conversion factor (-3.1%)
2. Updated unit-level manpower (-1.9%)
3. Other minor changes (-1.6%)

Rates 0.5%
The following were changes based on rate updates:
1. There were minor changes for labor and inflation rates (0.5%)

Programmatics/Planning Factors -1.3%
The following were programmatic changes:

1. Updated Sustaining Engineering workyear requirements (-1.3%)

Disposal Costs

The estimated total costs for disposal or demilitarization is $18.25M (BY2009$).