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## Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-277



### **Airborne Warning and Control System Block 40/45 Upgrade (AWACS Blk 40/45 Upgrade)**

As of FY 2019 President's Budget

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

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## **Sensitivity Originator**

No originator info Available at this time.

## Common Acronyms and Abbreviations for MDAP Programs

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

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

## Program Information

**Program Name**

Airborne Warning and Control System Block 40/45 Upgrade (AWACS Blk 40/45 Upgrade)

**DoD Component**

Air Force

## Responsible Office

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**Date Assigned:** February 4, 2015

## References

**SAR Baseline (Production Estimate)**

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated May 1, 2013

**Approved APB**

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated October 20, 2015

## Mission and Description

The Airborne Warning and Control System (AWACS) provides a highly mobile, flexible, survivable theater Battle Management (BM), Wide Area Surveillance, and Command and Control (C2) capability. It is capable of detecting, identifying, and tracking airborne and maritime targets at extended ranges as well as identifying air/ground emitters. AWACS can relay "big picture" information to C2 agencies and friendly aircraft. AWACS provides worldwide response to situations requiring immediate on-scene C2/BM using embedded real-time surveillance for employment of US and allied combat air forces. AWACS is critical to gaining and maintaining battle-space air superiority. AWACS coordinates with both tactical and C2 assets in theater to execute the air mission.

The AWACS Block 40/45 Upgrade program is the largest modification in U.S. AWACS history and represents the critical foundation and baseline system required for all future AWACS enterprise modifications including net-centric operations. The AWACS Block 40/45 Upgrade provides a single target/single track capability with an improved human-machine interface for time-critical targeting designed to increase combat effectiveness and reduce fratricide. The AWACS Block 40/45 Upgrade program includes an upgrade to Electronic Support Measures sensor data processing; Multi-Source Integration; a Data Link Infrastructure with prioritized data link bandwidth management for Link 16/Link 11; new battle management tools; capability to parse, allow user access to, and integrate Air Control Order/Air Tasking Order data; enhanced mission and console recording capabilities; and an update to a low-bandwidth internet chat capability (Secure Iridium Chat).



## Executive Summary

The Airborne Warning and Control System (AWACS) Block 40/45 Upgrade Program is currently approved for a fleet size of 24 aircraft and this number is reflected in the current APB and this SAR. The FY 2019 PB includes funding to restore the fleet size to 31 aircraft.

FY 2015 Air Force direction was to divest the fleet size from 31 aircraft to 24 aircraft; however, the FY 2019 PB has restored the majority of the procurement funds for the AWACS Block 40/45 Buy Back to include kits for seven operational aircraft and out-year support. In CY 2017, the Air Force started to procure Life of Type parts and kits in anticipation of this fleet quantity increase.

Specifically, the FY 2017 Request for Additional Appropriations included \$21.8M in FY 2017 3010 funding to address emergency warfighting readiness requirements. In FY 2018, the PB includes an additional \$61.4M in FY 2018 funding. The FY 2019 PB includes an additional \$81.7M for out-year support activities.

The updated Acquisition Strategy and APB are in work to reflect the seven aircraft Buy Back. The current fleet quantity of 24 will continue to be reflected in the SAR until the updated APB is approved. As a result, the Program Office will experience a schedule breach of APB schedule for FOC RAA of February 2021. The notional FOC RAA estimate is now November 2023, pending MDA approval.

The AWACS Block 40/45 Upgrade Program continues to meet all KPPs.

During CY 2017, AWACS Block 40/45 Upgrade Program installations and deliveries remained on schedule. As of December 31, 2017, 17 modified aircraft have been delivered.

The following significant software-related issues have been identified and the Program Office is implementing fixes.

Following the June 2016 Test Readiness Review, the Battle Management PEO accepted Air Force Operational Test and Evaluation Center recommendations for deficiencies with regard to the Passive Detection System (PDS) and Maritime Mode Tracking / Surveillance to resolve prior to Follow-On Test and Evaluation (FOT&E). Three additional Category 1 Deficiency Reports (DR) were later identified against Identification Friend or Foe (IFF), Combat Identification (CID) and Maritime Correlation. These issues resulted in a delay to FOT&E until resolved. FOT&E is expected to be executed during the Fourth Quarter FY 2020.

- The Mission Computing Software (MCS) 12.2 software update addressed IFF fixes and was delivered to the Government in June 2017. An operational assessment successfully completed in December 2017, final report pending. The planned fielding of MCS 12.2 is expected to be completed across the fleet in Second Quarter FY 2018.
- The planned MCS 12.3 software update will address fixes to PDS, CID and Maritime Mode deficiencies with planned software delivery to the Government in Third Quarter FY 2018. Operational Utility Evaluation is planned for First Quarter FY 2019.
- The planned MCS 12.4 software will support Diminishing Manufacturing Sources 4.0 fielding, followed by an additional software release to address the final remaining Maritime Correlation Category 1 DR.

## Threshold Breaches

### APB Breaches

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

### Explanation of Breach

APB Schedule breach of FOC RAA threshold of February 2021 due to a quantity increase of seven aircraft. The notional FOC RAA estimate is now November 2023. A Program Deviation Report is being developed and will be staffed to the MDA.

### Nunn-McCurdy Breaches

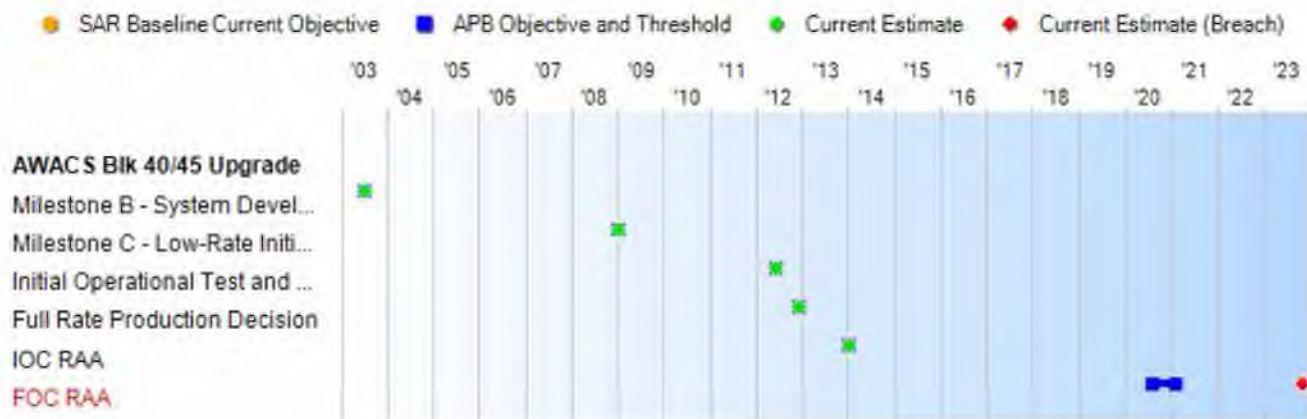
#### Current UCR Baseline

PAUC	None
APUC	None

#### Original UCR Baseline

PAUC	None
APUC	None

## Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate
Milestone B - System Development and Demonstration	Jul 2003	Jul 2003	Jul 2003	Jul 2003
Milestone C - Low-Rate Initial Production	Jan 2009	Jan 2009	Jan 2009	Jan 2009
Initial Operational Test and Evaluation Complete (IOT&E)	Jun 2012	Jun 2012	Jun 2012	Jun 2012
Full Rate Production Decision	Dec 2012	Dec 2012	Dec 2012	Dec 2012
IOC RAA	Apr 2014	Jan 2014	Jan 2014	Jan 2014
FOC RAA	Aug 2020	Aug 2020	Feb 2021	Nov 2023 <sup>1</sup> (Ch-1)

<sup>1</sup> APB Breach

### Change Explanations

(Ch-1) FOC RAA current estimate changed from December 2020 to November 2023 to account for a quantity increase of seven aircraft.

### Notes

IOC RAA was declared by the PM on January 7, 2014. On July 28, 2014, ACC declared IOC. IOC RAA was defined as the delivery of five Block 40/45 modified aircraft, Ground Systems, Initial Spares, Training Materials, Technical Orders Documentation, and Required Logistics Support.

FOC RAA is the date all Block 40/45 E-3 Airborne Warning and Control System aircraft and associated ground systems are delivered to ACC.

Current estimated FOC RAA date is based on FY 2019 PB and 31 aircraft fleet size.

**Acronyms and Abbreviations**

ACC - Air Combat Command

RAA - Required Assets Available



## Performance

Performance Characteristics				
SAR Baseline Production Estimate	Current APB Production Objective/Threshold	Demonstrated Performance	Current Estimate	
<b>Multi-Source Integration</b>				
(Objective = Threshold) All target data shall be correlated, fused, and integrated into a single track	(Objective = Threshold) All target data shall be correlated, fused, and integrated into a single track	All target data shall be correlated, fused, and integrated into a single track	The Beyond LRIP report confirms the system meets required threshold performance.	The Beyond LRIP report confirms the system meets required threshold performance.
<b>Net Ready</b>				
System must fully support execution of all activities identified in joint and system integrated architectures. 1) DISR mandated GIG IT standards and profiles identified in the TV-1. 2) DISR mandated GIG KIPs identified in the KIP declaration table. 3) Net-Centric Operations and Warfare Reference Model Enterprise Services. 4) IA requirements and issuance of an ATO by the DAA. 5) Operationally-effective information exchanges and mission critical performance specified in the applicable joint and system integrated architecture views.	System must fully support execution of all activities identified in joint and system integrated architectures. 1) DISR mandated GIG IT standards and profiles identified in the TV-1. 2) DISR mandated GIG KIPs identified in the KIP declaration table. 3) Net-Centric Operations and Warfare Reference Model Enterprise Services. 4) IA requirements and issuance of an ATO by the DAA. 5) Operationally-effective information exchanges and mission critical performance specified in the applicable joint and system integrated architecture views.	System must fully support execution of joint critical activities identified in joint and system integrated architectures. System must satisfy the technical requirements for future transition to Net-Centric operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1; 2) DISR mandated GIG KIPs identified in the KIP declaration table; 3) Net-Centric Operations and Warfare Reference Model Enterprise Services; 4) IA requirements and issuance of an IATO by the DAA; 5) Operationally-effective information exchanges and mission critical performance specified in the applicable joint and system integrated architecture views.	Per Joint Interoperability Test Command letter dated October 25, 2012, "The AWACS Block 40/45 Upgrade, V10.1.20i meets the joint critical interoperability requirements in the Joint Staff-certified AWACS Block 40/45 Upgrade Program ISP, 17 October 2011". Air Force C2 Platform Information Technology DAA issued an IATO on January 11, 2012. Subsequent IATOs and ATOs have been introduced for each software version afterwards.	Each version/release of Block 40/45 continues to be approved for use by an IATO or ATO.

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

**Requirements Reference**

ORD (Combat Air Forces 010-02-I/II) dated June 16, 2009 (in lieu of CPD)

**Change Explanations**

None

**Acronyms and Abbreviations**

ATO - Approval to Operate  
DAA - Designated Approving Authority  
DISR - Department of Defense Information Technology Standards Registry  
GIG - Global Information Grid  
IA - Information Assurance  
IATO - Interim Approval to Operate  
ISP - Information Support Plan  
IT - Information Technology  
KIP - Key Interface Profile  
TV-1 - Technical View 1

## Track to Budget

### RDT&E

Appn	BA	PE		
Air Force	3600	07	0207417F	
Project		Name		
67411L		Airborne Warning and Control Systems		(Sunk)

### Procurement

Appn	BA	PE		
Air Force	3010	06	0207417F	
Line Item		Name		
000999		Initial Spares		(Shared) (Sunk)
Air Force	3010	05	0207417F	
Line Item		Name		
E00300		E-3		(Sunk)
E34045		Airborne Warning and Control Systems		

### Notes

The Procurement funding for the AWACS Block 40/45 Upgrade program is located in modification number 50001T.



## Cost and Funding

### Cost Summary

Total Acquisition Cost							
Appropriation	BY 2012 \$M			BY 2012 \$M	TY \$M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	1319.0	1272.6	1415.8	1272.7	1192.2	1145.9	1145.9
Procurement	1503.4	1389.8	1527.4	1505.9	1615.4	1496.5	1623.8
Flyaway	--	--	--	1448.2	--	--	1561.4
Recurring	--	--	--	1044.6	--	--	1125.4
Non Recurring	--	--	--	403.6	--	--	436.0
Support	--	--	--	57.7	--	--	62.4
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	57.7	--	--	62.4
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	2822.4	2662.4	N/A	2778.6	2807.6	2642.4	2769.7

#### Current APB Cost Estimate Reference

AWACS Block 40/45 FRP SCP Update dated July 28, 2015

#### Cost Notes

In accordance with Section 842 of the National Defense Authorization Act for FY 2017, which amended title 10 U.S.C. Section 2334, the Director of Cost Assessment and Program Evaluation, and the Secretary of the military department concerned or the head of the Defense Agency concerned, must issue guidance requiring a discussion of risk, the potential impacts of risk on program costs, and approaches to mitigate risk in cost estimates for MDAPs and major subprograms. The information required by the guidance is to be reported in each SAR. This guidance is not yet available; therefore, the information on cost risk is not contained in this SAR.



Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	0	0	0
Procurement	31	24	31
Total	31	24	31

#### Quantity Notes

Throughout the Cost and Funding section, the quantity of 31 reflects kit procurement and not kit installations. To date, the program has procured and delivered 18 kits, 17 of which have been installed on aircraft.

The Airborne Warning and Control System (AWACS) Block 40/45 Upgrade Program is currently approved for a fleet size of 24 aircraft which is reflected in the current APB. The FY 2019 PB includes funding to restore the fleet size to 31 aircraft.

FY 2015 Air Force direction was to divest the fleet size from 31 aircraft to 24 aircraft; however, the FY 2019 PB has restored the majority of the procurement funds for the AWACS Block 40/45 Buy Back to include kits for seven operational aircraft and out-year support. In CY 2017, the Air Force started to procure Life of Type parts and kits in anticipation of this fleet quantity increase.

The updated Acquisition Strategy and APB are in work to reflect the seven aircraft Buy Back.

## Cost and Funding

### Funding Summary

Appropriation Summary									
FY 2019 President's Budget / December 2017 SAR (TY\$ M)									
Appropriation	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
RDT&E	1145.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1145.9
Procurement	1272.2	183.9	57.7	41.7	39.5	28.8	0.0	0.0	1623.8
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 2019 Total	2418.1	183.9	57.7	41.7	39.5	28.8	0.0	0.0	2769.7
PB 2018 Total	2437.9	165.4	58.2	29.3	0.0	0.0	0.0	0.0	2690.8
Delta	-19.8	18.5	-0.5	12.4	39.5	28.8	0.0	0.0	78.9

Quantity Summary										
FY 2019 President's Budget / December 2017 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
Development	0	0	0	0	0	0	0	0	0	0
Production	0	24	7	0	0	0	0	0	0	31
PB 2019 Total	0	24	7	0	0	0	0	0	0	31
PB 2018 Total	0	24	0	0	0	0	0	0	0	24
Delta	0	0	7	0	0	0	0	0	0	7

## Cost and Funding

### Annual Funding By Appropriation

Annual Funding							
3600   RDT&E   Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1999	--	--	--	--	--	--	0.9
2000	--	--	--	--	--	--	14.2
2001	--	--	--	--	--	--	10.1
2002	--	--	--	--	--	--	17.8
2003	--	--	--	--	--	--	116.0
2004	--	--	--	--	--	--	193.0
2005	--	--	--	--	--	--	243.7
2006	--	--	--	--	--	--	106.3
2007	--	--	--	--	--	--	127.9
2008	--	--	--	--	--	--	90.7
2009	--	--	--	--	--	--	69.9
2010	--	--	--	--	--	--	50.1
2011	--	--	--	--	--	--	85.1
2012	--	--	--	--	--	--	5.8
2013	--	--	--	--	--	--	3.1
2014	--	--	--	--	--	--	11.3
Subtotal	--	--	--	--	--	--	1145.9



Annual Funding							
3600   RDT&E   Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	BY 2012 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1999	--	--	--	--	--	--	1.1
2000	--	--	--	--	--	--	17.6
2001	--	--	--	--	--	--	12.4
2002	--	--	--	--	--	--	21.6
2003	--	--	--	--	--	--	138.6
2004	--	--	--	--	--	--	224.9
2005	--	--	--	--	--	--	276.9
2006	--	--	--	--	--	--	117.2
2007	--	--	--	--	--	--	137.4
2008	--	--	--	--	--	--	95.5
2009	--	--	--	--	--	--	72.7
2010	--	--	--	--	--	--	51.4
2011	--	--	--	--	--	--	85.8
2012	--	--	--	--	--	--	5.7
2013	--	--	--	--	--	--	3.0
2014	--	--	--	--	--	--	10.9
Subtotal	--	--	--	--	--	--	1272.7

Annual Funding 3010   Procurement   Aircraft Procurement, Air Force							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2008	--	--	--	2.4	2.4	--	2.4
2009	1	29.0	19.2	9.9	58.1	2.9	61.0
2010	2	39.7	6.6	12.1	58.4	0.8	59.2
2011	3	131.7	4.2	26.6	162.5	8.0	170.5
2012	5	106.8	7.6	3.8	118.2	0.3	118.5
2013	--	62.0	9.9	65.6	137.5	9.6	147.1
2014	2	60.6	6.3	35.2	102.1	3.7	105.8
2015	7	118.5	30.8	31.9	181.2	--	181.2
2016	--	39.5	7.3	116.5	163.3	--	163.3
2017	4	108.1	57.5	79.6	245.2	18.0	263.2
2018	7	97.9	35.6	31.3	164.8	19.1	183.9
2019	--	38.3	5.2	14.2	57.7	--	57.7
2020	--	30.5	4.9	6.3	41.7	--	41.7
2021	--	33.0	6.2	0.3	39.5	--	39.5
2022	--	22.3	6.2	0.3	28.8	--	28.8
Subtotal	31	917.9	207.5	436.0	1561.4	62.4	1623.8

Annual Funding							
3010   Procurement   Aircraft Procurement, Air Force							
Fiscal Year	Quantity	BY 2012 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2008	--	--	--	2.5	2.5	--	2.5
2009	1	29.7	19.6	10.1	59.4	3.0	62.4
2010	2	39.9	6.6	12.1	58.6	0.8	59.4
2011	3	130.2	4.2	26.2	160.6	7.9	168.5
2012	5	104.0	7.4	3.7	115.1	0.3	115.4
2013	--	59.2	9.5	62.5	131.2	9.2	140.4
2014	2	57.1	5.9	33.1	96.1	3.5	99.6
2015	7	110.2	28.6	29.7	168.5	--	168.5
2016	--	36.1	6.7	106.6	149.4	--	149.4
2017	4	97.2	51.7	71.5	220.4	16.2	236.6
2018	7	86.2	31.3	27.6	145.1	16.8	161.9
2019	--	33.1	4.5	12.2	49.8	--	49.8
2020	--	25.8	4.1	5.4	35.3	--	35.3
2021	--	27.4	5.2	0.2	32.8	--	32.8
2022	--	18.1	5.1	0.2	23.4	--	23.4
Subtotal	31	854.2	190.4	403.6	1448.2	57.7	1505.9

In the chart below, "Cost Quantity Information", the End Item Recurring Flyaway costs reflect the year that the Block 40/45 Upgrade kits are purchased, not when they are installed.

Cost Quantity Information		
3010   Procurement   Aircraft Procurement, Air Force		
Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned With Quantity) BY 2012 \$M
2008	--	--
2009	1	29.7
2010	2	39.9
2011	3	130.2
2012	5	163.2
2013	--	--
2014	2	57.1
2015	7	146.3
2016	--	--
2017	4	97.2
2018	7	190.6
2019	--	--
2020	--	--
2021	--	--
2022	--	--
Subtotal	31	854.2



## Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
<b>Approval Date</b>	11/24/2008	11/24/2008
<b>Approved Quantity</b>	6	6
<b>Reference</b>	Milestone C ADM	Milestone C ADM
<b>Start Year</b>	2009	2009
<b>End Year</b>	2014	2015

The Current Total LRIP Quantity is more than 10% of the total production quantity due to operational requirements.

Air Combat Command identified a requirement for five AWACS Block 40/45 Upgrade aircraft for IOC declaration. The program office requested an LRIP quantity of six to utilize the first modified aircraft as a risk reduction asset to streamline the process of combining a major upgrade with Programmed Depot Maintenance. In addition, the first aircraft was required to support production qualification testing.

The Start Year indicated specifies the year that the LRIP contract (Delivery Order 23) was awarded. The program procured one 40/45 shipset in FY 2009, two 40/45 shipsets in FY 2010 and three 40/45 shipsets in FY 2011. The Current End Year indicated above specifies the completion of the contract Period of Performance (PoP).

The PoP was extended to July 2015 to complete the provisioning effort.



**Foreign Military Sales**

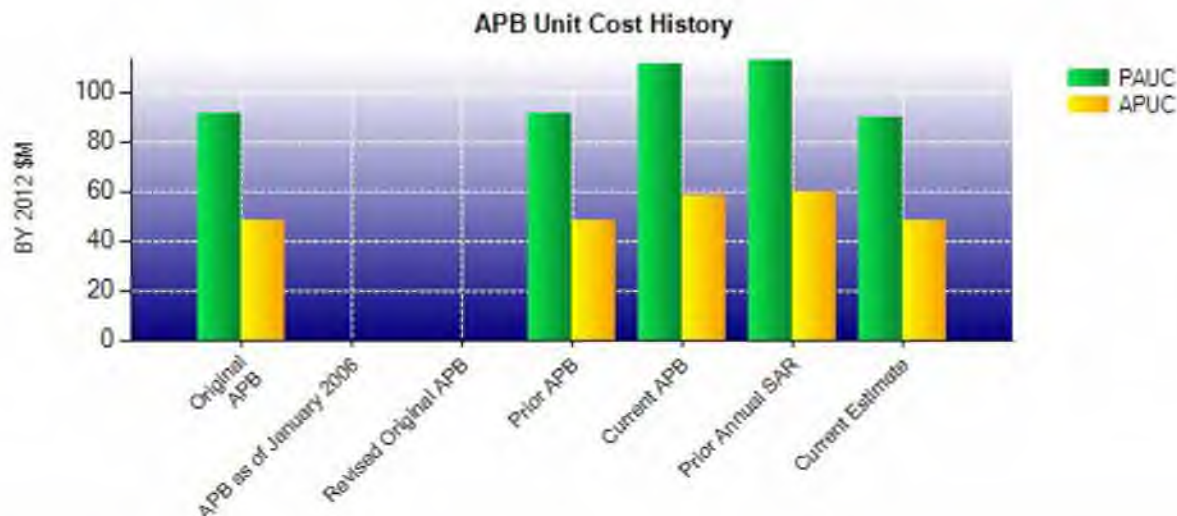
None

**Nuclear Costs**

None

**Unit Cost**

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2012 \$M	BY 2012 \$M	% Change
	Current UCR Baseline (Oct 2015 APB)	Current Estimate (Dec 2017 SAR)	
Program Acquisition Unit Cost			
Cost	2662.4	2778.6	
Quantity	24	31	
Unit Cost	110.933	89.632	-19.20
Average Procurement Unit Cost			
Cost	1389.8	1505.9	
Quantity	24	31	
Unit Cost	57.908	48.577	-16.11
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2012 \$M	BY 2012 \$M	% Change
	Original UCR Baseline (May 2013 APB)	Current Estimate (Dec 2017 SAR)	
Program Acquisition Unit Cost			
Cost	2822.4	2778.6	
Quantity	31	31	
Unit Cost	91.045	89.632	-1.55
Average Procurement Unit Cost			
Cost	1503.4	1505.9	
Quantity	31	31	
Unit Cost	48.497	48.577	+0.16



APB Unit Cost History					
Item	Date	BY 2012 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	May 2013	91.045	48.497	90.568	52.110
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	May 2013	91.045	48.497	90.568	52.110
Current APB	Oct 2015	110.933	57.908	110.100	62.354
Prior Annual SAR	Dec 2016	113.008	59.958	112.117	64.371
Current Estimate	Dec 2017	89.632	48.577	89.345	52.381

### SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY \$M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
90.568	-0.329	-1.423	-0.806	0.000	0.735	0.000	0.600	-1.223	89.345

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
52.110	-0.352	-1.422	-0.268	0.000	1.713	0.000	0.600	0.271	52.381

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	N/A	Jul 2003	Jul 2003
Milestone C	N/A	N/A	Jan 2009	Jan 2009
IOC	N/A	N/A	Apr 2014	Jan 2014
Total Cost (TY \$M)	N/A	N/A	2807.6	2769.7
Total Quantity	N/A	N/A	31	31
PAUC	N/A	N/A	90.568	89.345



**Cost Variance**

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1192.2	1615.4	--	2807.6
Previous Changes				
Economic	+0.2	-6.8	--	-6.6
Quantity	--	-259.0	--	-259.0
Schedule	-16.7	-6.5	--	-23.2
Engineering	--	--	--	--
Estimating	-29.8	+201.6	--	+171.8
Other	--	--	--	--
Support	--	+0.2	--	+0.2
Subtotal	-46.3	-70.5	--	-116.8
Current Changes				
Economic	+0.5	-4.1	--	-3.6
Quantity	--	+214.9	--	+214.9
Schedule	--	-1.8	--	-1.8
Engineering	--	--	--	--
Estimating	-0.5	-148.5	--	-149.0
Other	--	--	--	--
Support	--	+18.4	--	+18.4
Subtotal	--	+78.9	--	+78.9
Total Changes	-46.3	+8.4	--	-37.9
CE - Cost Variance	1145.9	1623.8	--	2769.7
CE - Cost & Funding	1145.9	1623.8	--	2769.7

Summary BY 2012 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1319.0	1503.4	--	2822.4
Previous Changes				
Economic	--	--	--	--
Quantity	--	-227.1	--	-227.1
Schedule	-17.9	-6.4	--	-24.3
Engineering	--	--	--	--
Estimating	-27.9	+169.2	--	+141.3
Other	--	--	--	--
Support	--	-0.1	--	-0.1
Subtotal	-45.8	-64.4	--	-110.2
Current Changes				
Economic	--	--	--	--
Quantity	--	+189.2	--	+189.2
Schedule	--	-1.6	--	-1.6
Engineering	--	--	--	--
Estimating	-0.5	-136.9	--	-137.4
Other	--	--	--	--
Support	--	+16.2	--	+16.2
Subtotal	-0.5	+66.9	--	+66.4
Total Changes	-46.3	+2.5	--	-43.8
CE - Cost Variance	1272.7	1505.9	--	2778.6
CE - Cost & Funding	1272.7	1505.9	--	2778.6

Previous Estimate: December 2016

<b>RDT&amp;E</b>	<b>\$M</b>	
<b>Current Change Explanations</b>	<b>Base Year</b>	<b>Then Year</b>
Revised escalation indices. (Economic)	N/A	+0.5
Adjustment for current and prior escalation. (Estimating)	-0.5	-0.5
<b>RDT&amp;E Subtotal</b>	<b>-0.5</b>	<b>0.0</b>

<b>Procurement</b>	<b>\$M</b>	
<b>Current Change Explanations</b>	<b>Base Year</b>	<b>Then Year</b>
Revised escalation indices. (Economic)	N/A	-4.1
Total Quantity variance resulting from an increase of seven E-3 AWACS Aircraft from 24 to 31. (Subtotal)	+236.7	+268.8
Quantity variance resulting from an increase of seven E-3 AWACS Aircraft from 24 to 31. (Quantity)	(+189.2)	(+214.9)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(-1.6)	(-1.8)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(+49.1)	(+55.7)
Adjustment for current and prior escalation. (Estimating)	+3.0	+3.3
Revised estimate to align to align with the FY 2019 PB. (Estimating)	-189.6	-208.2
Revised estimate due to application of new outyear escalation indices (Estimating)	+0.6	+0.7
Adjustment for current and prior escalation. (Support)	+0.1	+0.1
Increase in Initial Spares in FY 2019 due to an increase in Block 40/45 Upgrade quantities to seven. (Support) (QR)	+16.1	+18.3
<b>Procurement Subtotal</b>	<b>+66.9</b>	<b>+78.9</b>

(QR) Quantity Related



## Contracts

Contract Identification	
<b>Appropriation:</b>	Procurement
<b>Contract Name:</b>	AWACS 40/45 Upgrade Program Full Rate Production
<b>Contractor:</b>	The Boeing Company
<b>Contractor Location:</b>	P.O. Box 3707 Seattle, WA 98124-2207
<b>Contract Number:</b>	F19628-01-D-0016/26
<b>Contract Type:</b>	Fixed Price Incentive(Firm Target) (FPIF)
<b>Award Date:</b>	December 27, 2012
<b>Definitization Date:</b>	December 27, 2012

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
137.3	142.5	N/A	228.5	249.7	N/A	206.7	206.7

Target Price Change Explanation
The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the award of CLINs 3302, 3610 and 3613. The current contract price is based on six EVM CLINS.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/27/2018)	+16.4	-1.9
Previous Cumulative Variances	+16.3	-2.0
Net Change	+0.1	+0.1

Cost and Schedule Variance Explanations
The favorable net change in the cost variance is due to improved Cost Control
The favorable net change in the schedule variance is due to minor schedule improvement.



**Notes**

Earned Value Management Data is received only for specific CLINs listed below representing \$228.5M, 36% of the total Delivery Order 0026 of \$633.0M

CLIN 3300 Engineering Support to Diminishing Manufacturing Sources Upgrade - complete

CLIN 3606 FRP #1 Shipsets for aircraft P7 - P11 - complete

CLIN 3608 Life of Type Buy - complete

CLIN 3613 FRP Shipsets # P12 and P13 - complete

CLIN 3302 Next Generation Identification Friend or Foe Integration -complete

CLIN 3610 FRP Shipsets for aircraft P14 - P18- complete

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

## Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	0	--
Production	17	17	31	54.84%
Total Program Quantity Delivered	17	17	31	54.84%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	2769.7	Years Appropriated	20
Expended to Date	1790.1	Percent Years Appropriated	83.33%
Percent Expended	64.63%	Appropriated to Date	2602.0
Total Funding Years	24	Percent Appropriated	93.95%

The above data is current as of February 12, 2018.

## Operating and Support Cost

### Cost Estimate Details

**Date of Estimate:** January 31, 2018  
**Source of Estimate:** POE  
**Quantity to Sustain:** 31  
**Unit of Measure:** Aircraft  
**Service Life per Unit:** 25.00 Years  
**Fiscal Years in Service:** FY 2011 - FY 2035

### Sustainment Strategy

- Production will leave the AWACS fleet with one Commercial Off The Shelf (COTS) Diminishing Manufacturing Sources (DMS) version (DMS 4.0) going into the O&S phase
- Aircraft DMS End of Life assume 10 years and Ground Station and Trainer DMS End of life every 5 years
- O&S COTS procured with AF O&M funding
- O&S COTS installed by Air Logistics Complex (ALC) during Programmed Depot Maintenance or a dedicated modification installation line
- Software maintained organically with contractor support/partnership
- COTS, active DMS, and DMS refreshes done with contractor partnership
- No modifications or capability upgrades included other than planned DMS tech refresh
- The Product Support Business Case Analysis (PSBCA) was completed in December 2016 and indicated that a competitive Performance Based Logistics (PBL) contract was the best strategy. This has been incorporated in the Life Cycle Sustainment Plan (LCSP).

### Antecedent Information

The Antecedent system is AWACS Block 30/35. AWACS Block 30/35 O&S cost is based on historical Block 30/35 O&S cost projected through FY 2035. These costs are used for comparison to Block 40/45 O&S costs. This comparison assumes Block 30/35 can be maintained through FY 2035 and assumes no major DMS issues (Status Quo). Block 30/35 cost was obtained from the Air Force Total Ownership Cost (AFTOC) database for a period of FY 2012-2014. The data was normalized to BY 2012 and projected out through FY 2035.

Cost Element	Annual O&S Costs BY2012 \$M	
	AWACS Blk 40/45 Upgrade Average Annual Cost Per Aircraft	AWACS Blk 30/35 (Antecedent) Average Annual Cost Per Aircraft
Unit-Level Manpower	10.559	10.559
Unit Operations	5.913	5.913
Maintenance	6.343	6.584
Sustaining Support	0.898	0.515
Continuing System Improvements	1.008	0.492
Indirect Support	1.913	1.895
Other	0.000	0.000
Total	26.634	25.958

AWACS Block 40/45 Upgrade program Yearly Average per Aircraft costs represent total O&S costs for the E-3 Aircraft to include the Block 40/45 Upgrade.



Item	Total O&S Cost \$M			
	AWACS Blk 40/45 Upgrade			AWACS Blk 30/35 (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
<b>Base Year</b>	550.0	605.0	522.1	20117.8
<b>Then Year</b>	731.3	N/A	691.7	N/A

The AWACS Block 40/45 Upgrade program Current Estimate is the delta cost from the AWACS Block 30/35 (Antecedent) Current Estimate, reflecting the total O&S cost of the AWACS Enterprise.

#### Equation to Translate Annual Cost to Total Cost

Average annual cost per AWACS aircraft (31) (entire fleet) is calculated by adding the AWACS 40/45 delta cost (\$522.1.0M) to the delta cost (\$20117.8) =20639.9 divided by the life of the platform (FY 2011-2035, 25 years) and the number of Aircraft (31).  $\$20639.9M / 25 / 31 = \$26.634M$

O&S Cost Variance		
Category	BY 2012 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2016 SAR	551.0	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	-28.9	Modified the quantity/mix of Block 30/35 and Block 40/45 in O&S
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	-28.9	
Current Estimate	522.1	

#### Disposal Estimate Details

**Date of Estimate:**

**Source of Estimate:**

**Disposal/Demilitarization Total Cost (BY 2012 \$M):**

There are no disposal costs associated specifically with the AWACS Block 40/45 Upgrade.