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Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-202



AH-64E Apache Remanufacture (AH-64E Remanufacture)

As of FY 2019 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Table of Contents

Sensitivity Originator	3
Common Acronyms and Abbreviations for MDAP Programs	4
Program Information	6
Responsible Office	6
References	7
Mission and Description	8
Executive Summary	9
Threshold Breaches	12
Schedule	13
Performance	15
Track to Budget	17
Cost and Funding	18
Low Rate Initial Production	27
Foreign Military Sales	28
Nuclear Costs	28
Unit Cost	29
Cost Variance	32
Contracts	35
Deliveries and Expenditures	41
Operating and Support Cost	42

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

AH-64E Apache Remanufacture (AH-64E Remanufacture)

DoD Component

Army

Responsible Office

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References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated December 16, 2010

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated November 26, 2012

Mission and Description

The AH-64E Apache Remanufacture (AH-64E Reman), hereinafter referred to as AH-64E, is the heavy attack and reconnaissance helicopter of the U.S Army. It is a twin engine, four-blade, tandem seat, attack helicopter with 30-millimeter ammunition, 2.75-inch rockets, laser and radio frequency Hellfire missiles. The AH-64E is the Army's network-centric, multi-role weapon supporting the Multi-Domain Battlefield. It provides the capability to simultaneously conduct (or quickly transition between) close combat, mobile strike, armed reconnaissance, manned-unmanned teaming, security and vertical maneuver missions across the full spectrum of warfare from Stability and Support Operations to Major Combat Operations, when required, in day, night, obscured battlefield and adverse weather conditions. The AH-64E enables the Joint Air/Ground Maneuver Team to dominate the battle space by providing air-to-ground synergy through real-time Intelligence, Surveillance and Reconnaissance (ISR) information and responsive precision fires. The AH-64E is linked to Joint and Combined Arms Air/Ground Maneuver Teams via Enhanced Digital Communications, Unmanned Aircraft Systems Data Links and Joint networking waveforms.

The AH-64E is an Apache Attack Helicopter modified as required to effectively and efficiently integrate the Longbow Apache well into the 21st century, by providing improvements to make it relevant in Future Modular Force (FMF) operations. It provides a significantly enhanced warfighting capability over the AH-64A and AH-64D. It is capable of being employed day or night in adverse weather and obscurants, and can effectively engage and destroy advanced threat weapon systems on the air-land battlefield. Tactically, the AH-64E provides significant war fighting advantages over the original AH-64D and multiplies the combat effectiveness of the entire fleet. It will be fully capable of employing the Longbow Fire Control Radar mission kit, the Modernized Target Acquisition Designation System/Modernized Pilot Night Vision System, the Longbow Hellfire missiles, and future improved munitions in addition to the normal complement of AH-64D munitions. Additionally, the AH-64E includes upgraded engines, debuts evolutionary transmission technology and incorporates significant improvements to its main rotor system, which increases power and provides substantial performance gains.

The AH-64E is fully network-centric capable with current digitized forces and FMF-equipped forces. This enables interoperability with current and future Tactical Operations Center and Army Battle Command System forces. In addition, this reduces the logistics footprint, enhances deployability, reduces O&S costs, improves AH-64D flight performance and provides a means to effectively utilize already funded technology insertions. The AH-64E has a fully compatible and rapidly re-configurable open system architecture mission processor design, enabling rapid integration of future communication systems and minimizing obsolescence.

The AH-64E operates within the future force system-of-systems environment in which maximum combat power is delivered to units only in coherent packages of systems with synergistic interdependence. The FMF concept drives the demand for network-centric interdependence and Joint integration across the force to new levels. The AH-64E meets these challenges by providing and integrating Command and Control, ISR and communications connectivity for attack/reconnaissance aviation within Brigade Combat Teams, Divisions and Corps.

Executive Summary

Program Highlights Since Last Report

The AH-64E Remanufacture requirements are stable and funding is adequate to meet cost and schedule baselines established in the current approved APB. Due to Boeing quality escapements and design issues (transmission, strap pack and M230 weapon system), we cannot certify that performance is acceptable. While corrective actions are in place, the Army is holding the contractor accountable and did not accept aircraft deliveries in February 2018 due to a quality escapement related to the Improved Data Modem.

While the Apache program meets all statutory acquisition requirements, there is an increased operational risk resulting from issues with the main transmission, main rotor strap pack and the M230 gun. These issues are a result of quality escapements and/or design issues from the prime contractor, the Boeing Company, Mesa, Arizona. The Apache Project Office is holding the vendor accountable to resolve these issues and eliminate the increased operational risk.

January 2017: Apache PM completed fielding six AH-64E aircraft to Fort Rucker, Alabama.

March 15, 2017: Awarded AH-64E Apache Multi-Year Contract for Lot 7 through Lot 11 for a total of 244 Remanufactured aircraft, providing options to procure up to 30 New Build aircraft per year, limited by available production capacity at time of option exercise.

May 2017: Completed fielding to the 6th Unit Equipped (1-227th Armed Reconnaissance Battalion (ARB)), Fort Hood, Texas.

May 2, 2017: The Army Acquisition Objective is increased by 77 aircraft from 690 to 767. Authorized Procurement Objective remains at 634 Remanufacture aircraft and 56 New Build aircraft.

June and July 2017: Apache PM fielded nine AH-64E aircraft to Fort Rucker, Alabama.

December 12, 2017: Completed fielding of 24 AH-64E Apache aircraft to 4-4 ARB, Fort Carson, Colorado.

January 17, 2018: Begin fielding to 1-6 CAV, Fort Riley, Kansas.

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

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	Significant Development Description
June 2006	Completed the Apache Block III (AB3) Milestone B DAE review
July 2006	The DAE ADM approved Milestone B, authored the AB3 program to enter System Design & Development (SDD) and designated AB3 as ACAT ID.
July 2006	Apache PM awarded an SDD contract to the Boeing Company to begin the development effort for AB3.
March 2007	A follow-on ADM authorized an LRIP quantity of 59 aircraft and granted the Army authority to procure long-lead items beginning in FY 2009. The APB schedule milestones were established for both Preliminary Design Review and the Critical Design Review.
December 2009	Resource Management Decision (RMD) 802 and RMD 700 directed the PM to increase the total procurement quantity by 56 AB3 aircraft as New Build airframes and included those aircraft in the FY 2011 PB at a total of \$2.6B. This change was implemented to support an increase in the training base capacity and to establish a new heavy Combat Aviation Brigade in the active component. This change was significant due to the fact that the baseline program was fundamentally a Remanufacture production program by design. The additional aircraft procurements would be New Build aircraft at a unit cost significantly higher than the remanufacture unit cost. The increased unit cost, compounded with minor fact-of-life changes throughout the program, caused a Nunn-McCurdy breach to the APUC as reflected in the December 2009 SAR. The DAE supported a rapid Nunn-McCurdy certification in response.
June 2010	Completed Nunn-McCurdy reporting resulting in an ADM certifying the program's progress to Milestone C and formally separating AB3 into two MDAPs for cost and reporting purposes: the Apache Block IIIA (AB3A) and Apache Block IIIB (AB3B) programs.
September 2010	Completed a successful Milestone C DAB authorizing LRIP and advance procurement actions for FRP.
October 2010	Awarded an LRIP contract procuring a total of 51 AH-64E Remanufacture aircraft.
October 2011	The first Apache AH-64E Remanufacture production delivery occurred on October 24, 2011 with a formal roll-out ceremony held on November 2, 2011.
April 2012	Completed the Initial Operational Test and Evaluation for the AH-64E Remanufacture production aircraft.
June 2012	The Apache PM requested and received approval for the Mission Design Series change for AB3 and was formally designated AH-64E Remanufacture. The AB3A and AB3B programs were subsequently renamed the AH-64E Apache Remanufacture and the AH-64E Apache New Build programs, respectively.
August 2012	A DAB approved FRP for the AH-64E Apache Remanufacture program and authorized up to 12 LRIP aircraft for the AH-64E Apache New Build program in FY 2013. The DAE ADM approved the designation of the Apache AH-64E Remanufacture and Apache AH-64E New Build programs as ACAT IC after approval of the AH-64E Remanufacture APB.
June 2014	The Government and Boeing definitized and awarded the FRP contract for Lot 3 and Lot 4. This contract supports the remanufacture of 72 AH-64E Apache Helicopters. This production activity supported completion of fielding the 2nd and 3rd Units Equipped, as well as augmentation of the training fleet.
August 2014	AH-64E Remanufacture Capability Version 4 Follow-on Operational Test & Evaluation successfully concluded on time on at Eglin Air Force Base, Florida. The Version 4 capability is scheduled to be delivered in 2016.

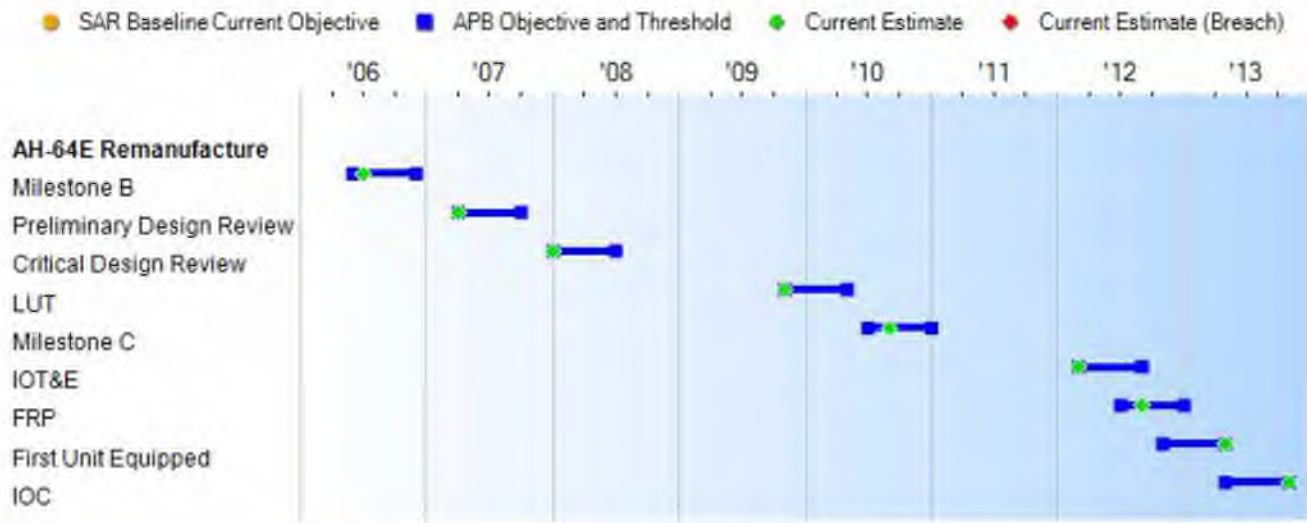
November 2014	The First Unit Equipped, 1-229 Attack Reconnaissance Battalion (ARB), successfully completed the first operational combat deployment of the AH-64E Remanufacture.
December 2014	The Army Acquisition Executive (AAE) approved the Justification and Authorization to enter a Multi-Year (MY) procurement to support production from FY 2017 to FY 2021.
December 2014	The Apache PM delivered 83 AH-64E Remanufacture Attack Helicopters of the 690 Army Acquisition Objective.
August 2015	The Secretary of the Army approved the AH-64E MY procurement, which is on schedule to meet a 2nd Quarter FY 2017 award. Completed Manned/Unmanned Teaming Expanded Capabilities Competition and awarded the contract. Fire Control Radar Maritime Mode Testing occurred from August through September 2015 at Joint Base Little Creek, Virginia.
September 2015	Apache PM completed fielding to the 2-17 Cavalry (3-101 Attack Reconnaissance Battalion (ARB)), the Army's 4th Unit Equipped with the AH-64E Apaches. Apache PM assisted and managed transfer of 20 AH-64D aircraft from Germany and Forces Command to a new AH-64 unit, the 1-25 ARB in Fort Wainwright, Alaska. Apache PM identified and provided a materiel solution to support Apache AH-64D and AH-64E helicopters for first time stationing in an arctic environment.
September 2015	The Joint Staff and USD(AT&L) concurred on the MY procurement request for approval. In October 2015, Apache PM received FY 2015 funding in an Omnibus Reprogramming Action to support procurement of 13 additional AH-64E Remanufacture aircraft. OSD CAPE visited Boeing Mesa to support MY Independent Government Estimate analysis.
February 2016	The first Production Lot 5 AH-64E rolled off the Apache line at the Boeing facility in Mesa, Arizona. This aircraft marked the first production AH-64E with Version 4 capability.
March 2016	The AAE approved Boeing's MY commitment of 10% savings. Awarded Advance Procurement contract for AH-64E Production Lot 7.
April 2016	Definitized FRP Contract for Lot 5 and Lot 6 for 117 Apache AH-64E Remanufactured aircraft.
April 2016	Definitized the AH-64E System Development and Demonstration Version 6 contract.
November 2016	Apache PM completed fielding to the 5th Unit Equipped (7-17 CAV) at Fort Hood, Texas.

Threshold Breaches

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

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

Schedule



Schedule Events					
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	
Milestone B	Jun 2006	Jun 2006	Dec 2006	Jul 2006	
Preliminary Design Review	Apr 2007	Apr 2007	Oct 2007	Apr 2007	
Critical Design Review	Jan 2008	Jan 2008	Jul 2008	Jan 2008	
LUT	Nov 2009	Nov 2009	May 2010	Nov 2009	
Milestone C	Jul 2010	Jul 2010	Jan 2011	Sep 2010	
IOT&E	Mar 2012	Mar 2012	Sep 2012	Mar 2012	
FRP	Jul 2012	Jul 2012	Jan 2013	Sep 2012	
First Unit Equipped	Nov 2012	Nov 2012	May 2013	May 2013	
IOC	May 2013	May 2013	Nov 2013	Nov 2013	

Change Explanations

None

Notes

AH-64E Remanufacture (formerly known as Apache Block IIIA) schedule encompasses a 12-year EMD phase which began with a risk reduction effort from May 2005 to July 2006. This effort was followed by the current development effort which began in July 2006 and continues through September 2018. Production started in FY 2010 and continues through FY 2026.

Acronyms and Abbreviations

IOT&E - Initial Operational Test and Evaluation
LUT - Limited User Test

Performance

Performance Characteristics				
SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
Net Ready				
Fully support execution of all operational activities.	Fully support execution of all operational activities.	Fully support execution of joint critical operational activities.	Met Threshold	Support execution of all critical operational activities
Performance				
6000' PA, 95 F OGE Hover (lbs/payload)				
4,100	4,100	3,400	Met Threshold	3400
Mission Reliability				
MTBF(M) hrs.				
Lot 1				
22	22	15.3	Met Objective	24.5
Lot 4				
22	22	17	Met Objective	24.5
MR for 3.5 hr. flight (%)				
85	85	80	Met Objective	86.7
Survivability				
Safe operation (minutes)				
30	30	30	Met Objective	30
Survive Band IV MANPADS IR Missile Engagement				
IAW JROCM 086-10	IAW JROCM 086-10	IAW JROCM 086-10	Met Objective	IAW JROCM 086-10
Force Protection				
Crewstation armor survivability (mm)				
IAW JROCM 086-10	IAW JROCM 086-10	IAW JROCM 086-10	Met Objective	IAW JROCM 086-10
Crewstation armor barrier survivability (mm)				
IAW JROCM 086-10	IAW JROCM 086-10	IAW JROCM 086-10	Met Objective	IAW JROCM 086-10

Requirements Reference

CPD dated June 1, 2010

Change Explanations

(Ch-1) The Mission Reliability Current Estimate revised to reflect latest unit data.

Notes

Net Ready KPP compliance is achieved by meeting the information exchange capabilities required by the Integrated Architectures Operational View-1 and is demonstrated by completing Joint Interoperability Certification, Army Interoperability Certification and DoD Information Assurance and Accreditation Process.

Mission Reliability based on Reliability, Availability and Maintainability data derived from performance of fielded aircraft and scored aircraft data from testing.

Materiel Availability = Operational Availability (Fully Mission Capable (FMC) Time plus Partially Mission Capable (PMC) Time).

The cumulative Operational Availability rate of fielded AH-64E aircraft as of the November reporting period for aircraft engaged in combat operations is 86%.

Acronyms and Abbreviations

% - Percent

' - feet

F - Fahrenheit

hr - hour

hrs - hours

IAW - In Accordance With

IR - Infrared

JROCM - Joint Requirements Oversight Council Memorandum

lbs - Pounds

MANPADS - Man Portable Air Defense System

mm - Millimeters

MR - Mission Reliability

MTBF (M) - Mean Time Between Failure (Mission)

OGE - Out of Ground Effect

PA - Pressure Altitude

Track to Budget

RDT&E

Appn	BA	PE	
Army	2040	07	0203744A
	Project	Name	
	D17	Aircraft Modifications/Product Improvement Programs (Sunk)	
Army	2040	07	0607135A
	Project	Name	
	ES2	Apache Product Improvement Program	

Procurement

Appn	BA	PE	
Army	2031	01	0210100A
	Line Item	Name	
	A05111	AH-64 Apache Block IIIA Reman	
Army	2031	02	0210102A
	Line Item	Name	
	AA6606	AH-64 Mods (Sunk)	
	Notes:	Prior to FY 2009 and creation of the AH-64E program, this line was shared to reflect AH-64E advance procurement.	

Acq O&M

Appn	BA	PE	
Army	2020	04	0702806A
	Subactivity Group	Name	
	435	Acquisition and Management Support: Attack Helicopter (Shared)	

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2010 \$M			BY 2010 \$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	1611.8	1504.2	1654.6	1502.4	1664.7	1557.8	1551.1
Procurement	8856.9	10088.1	11096.9	10976.0	10231.9	12041.7	12835.9
Flyaway	--	--	--	10145.6	--	--	11838.0
Recurring	--	--	--	10096.9	--	--	11780.2
Non Recurring	--	--	--	48.7	--	--	57.8
Support	--	--	--	830.4	--	--	997.9
Other Support	--	--	--	651.7	--	--	781.6
Initial Spares	--	--	--	178.7	--	--	216.3
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	128.3	0.0	0.0	161.3
Total	10468.7	11592.3	N/A	12606.7	11896.6	13599.5	14548.3

Cost Notes

In accordance with section 842 of the National Defense Authorization Act for FY 2017, which amended title 10 U.S.C. §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.

Beginning in FY 2019, the Army realigned direct civilian personnel pay costs from RDT&E and Procurement investment accounts to O&M to provide additional transparency and auditability.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	5	5	5
Procurement	634	634	634
Total	639	639	639

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	1459.7	60.0	31.0	0.2	0.2	0.0	0.0	0.0	1551.1
Procurement	6236.3	935.9	927.8	999.3	959.2	900.0	678.7	1198.7	12835.9
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	18.8	19.1	19.5	19.9	20.3	63.7	161.3
PB 2019 Total	7696.0	995.9	977.6	1018.6	978.9	919.9	699.0	1262.4	14548.3
PB 2018 Total	7701.5	996.0	999.9	1019.1	918.0	1002.8	941.3	754.7	14333.3
Delta	-5.5	-0.1	-22.3	-0.5	60.9	-82.9	-242.3	507.7	215.0

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	5	0	0	0	0	0	0	0	0	5
Production	0	292	50	48	48	51	43	35	67	634
PB 2019 Total	5	292	50	48	48	51	43	35	67	639
PB 2018 Total	5	292	50	50	49	48	48	49	48	639
Delta	0	0	0	-2	-1	3	-5	-14	19	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding							
2040 RDT&E Research, Development, Test, and Evaluation, Army							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2005	--	--	--	--	--	--	57.0
2006	--	--	--	--	--	--	107.1
2007	--	--	--	--	--	--	119.9
2008	--	--	--	--	--	--	184.8
2009	--	--	--	--	--	--	218.2
2010	--	--	--	--	--	--	149.0
2011	--	--	--	--	--	--	90.7
2012	--	--	--	--	--	--	89.8
2013	--	--	--	--	--	--	120.7
2014	--	--	--	--	--	--	112.4
2015	--	--	--	--	--	--	86.1
2016	--	--	--	--	--	--	63.0
2017	--	--	--	--	--	--	61.0
2018	--	--	--	--	--	--	60.0
2019	--	--	--	--	--	--	31.0
2020	--	--	--	--	--	--	0.2
2021	--	--	--	--	--	--	0.2
Subtotal	5	--	--	--	--	--	1551.1

Annual Funding 2040 RDT&E Research, Development, Test, and Evaluation, Army							
Fiscal Year	Quantity	BY 2010 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2005	--	--	--	--	--	--	61.7
2006	--	--	--	--	--	--	112.8
2007	--	--	--	--	--	--	123.4
2008	--	--	--	--	--	--	186.6
2009	--	--	--	--	--	--	217.5
2010	--	--	--	--	--	--	146.3
2011	--	--	--	--	--	--	87.4
2012	--	--	--	--	--	--	85.2
2013	--	--	--	--	--	--	112.6
2014	--	--	--	--	--	--	102.9
2015	--	--	--	--	--	--	77.6
2016	--	--	--	--	--	--	56.2
2017	--	--	--	--	--	--	53.5
2018	--	--	--	--	--	--	51.9
2019	--	--	--	--	--	--	26.4
2020	--	--	--	--	--	--	0.2
2021	--	--	--	--	--	--	0.2
Subtotal	5	--	--	--	--	--	1502.4

Annual Funding							
2031 Procurement Aircraft Procurement, Army							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2009	--	28.4	--	--	28.4	--	28.4
2010	8	230.0	--	--	230.0	--	230.0
2011	16	508.4	--	--	508.4	--	508.4
2012	27	609.3	--	--	609.3	--	609.3
2013	37	593.6	--	--	593.6	--	593.6
2014	35	671.6	--	18.0	689.6	62.9	752.5
2015	53	1034.9	--	2.6	1037.5	85.9	1123.4
2016	64	1256.9	--	2.7	1259.6	93.8	1353.4
2017	52	937.0	--	3.7	940.7	96.6	1037.3
2018	50	855.0	--	3.4	858.4	77.5	935.9
2019	48	838.5	--	3.6	842.1	85.7	927.8
2020	48	902.3	--	3.7	906.0	93.3	999.3
2021	51	863.2	--	3.9	867.1	92.1	959.2
2022	43	799.5	--	3.9	803.4	96.6	900.0
2023	35	582.7	--	4.0	586.7	92.0	678.7
2024	47	774.9	--	4.1	779.0	84.2	863.2
2025	20	294.0	--	4.2	298.2	37.3	335.5
Subtotal	634	11780.2	--	57.8	11838.0	997.9	12835.9

Annual Funding							
2031 Procurement Aircraft Procurement, Army							
Fiscal Year	Quantity	BY 2010 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2009	--	28.1	--	--	28.1	--	28.1
2010	8	224.0	--	--	224.0	--	224.0
2011	16	486.3	--	--	486.3	--	486.3
2012	27	573.1	--	--	573.1	--	573.1
2013	37	548.7	--	--	548.7	--	548.7
2014	35	611.8	--	16.4	628.2	57.3	685.5
2015	53	929.3	--	2.3	931.6	77.1	1008.7
2016	64	1115.2	--	2.4	1117.6	83.2	1200.8
2017	52	817.4	--	3.2	820.6	84.3	904.9
2018	50	732.1	--	2.9	735.0	66.4	801.4
2019	48	703.0	--	3.0	706.0	71.9	777.9
2020	48	741.7	--	3.0	744.7	76.8	821.5
2021	51	695.7	--	3.1	698.8	74.2	773.0
2022	43	631.7	--	3.1	634.8	76.3	711.1
2023	35	451.4	--	3.1	454.5	71.2	525.7
2024	47	588.5	--	3.1	591.6	63.9	655.5
2025	20	218.9	--	3.1	222.0	27.8	249.8
Subtotal	634	10096.9	--	48.7	10145.6	830.4	10976.0

Cost Quantity Information		
2031 Procurement Aircraft Procurement, Army		
Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned With Quantity) BY 2010 \$M
2009	--	--
2010	8	184.2
2011	16	382.6
2012	27	531.6
2013	37	641.4
2014	35	556.3
2015	53	707.1
2016	64	1078.3
2017	52	794.2
2018	50	777.0
2019	48	851.4
2020	48	859.0
2021	51	713.5
2022	43	750.7
2023	35	474.0
2024	47	581.7
2025	20	213.9
Subtotal	634	10096.9

Annual Funding		
2020 Acq O&M Operation and Maintenance, Army		
Fiscal Year	TY \$M	
	Total Program	
2019	18.8	
2020	19.1	
2021	19.5	
2022	19.9	
2023	20.3	
2024	20.8	
2025	21.2	
2026	21.7	
Subtotal	161.3	

Annual Funding		
2020 Acq O&M Operation and Maintenance, Army		
Fiscal Year	BY 2010 \$M	
	Total Program	
2019		16.0
2020		16.0
2021		16.0
2022		16.0
2023		16.0
2024		16.1
2025		16.1
2026		16.1
Subtotal		128.3

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	10/7/2010	10/7/2010
Approved Quantity	51	51
Reference	Milestone C ADM	Milestone C ADM
Start Year	2010	2010
End Year	2013	2013

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost \$M	Description
United Kingdom	6/24/2016	38	1186.0	Fully Implemented.

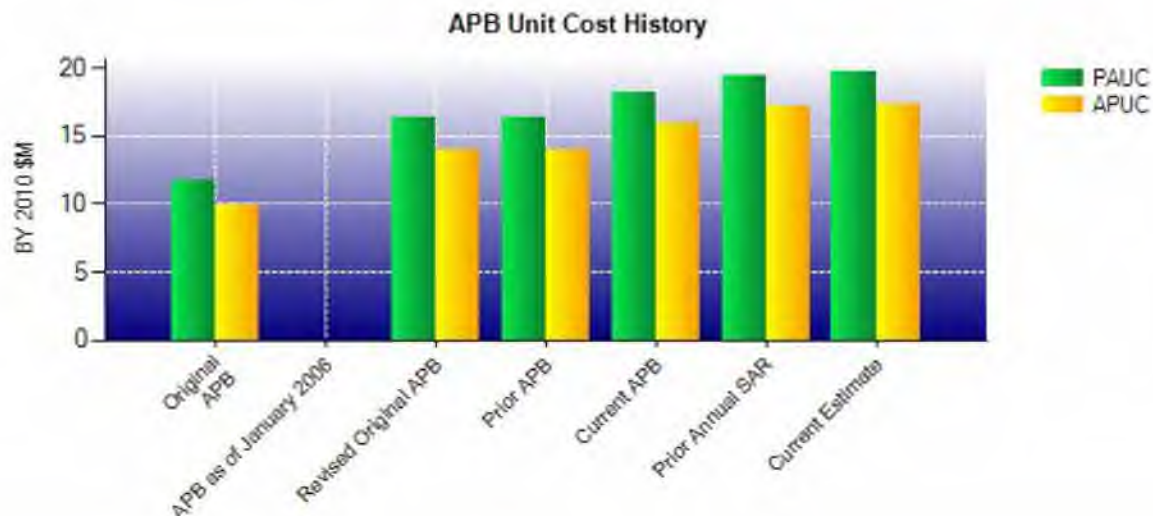
Notes

Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2010 \$M	BY 2010 \$M	% Change
	Current UCR Baseline (Nov 2012 APB)	Current Estimate (Dec 2017 SAR)	
Program Acquisition Unit Cost			
Cost	11592.3	12606.7	
Quantity	639	639	
Unit Cost	18.141	19.729	+8.75
Average Procurement Unit Cost			
Cost	10088.1	10976.0	
Quantity	634	634	
Unit Cost	15.912	17.312	+8.80
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2010 \$M	BY 2010 \$M	% Change
	Revised Original UCR Baseline (Dec 2010 APB)	Current Estimate (Dec 2017 SAR)	
Program Acquisition Unit Cost			
Cost	10468.7	12606.7	
Quantity	639	639	
Unit Cost	16.383	19.729	+20.42
Average Procurement Unit Cost			
Cost	8856.9	10976.0	
Quantity	634	634	
Unit Cost	13.970	17.312	+23.92



APB Unit Cost History					
Item	Date	BY 2010 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Aug 2006	11.735	9.945	13.445	11.649
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	Dec 2010	16.383	13.970	18.618	16.139
Prior APB	Dec 2010	16.383	13.970	18.618	16.139
Current APB	Nov 2012	18.141	15.912	21.282	18.993
Prior Annual SAR	Dec 2016	19.407	17.226	22.431	20.201
Current Estimate	Dec 2017	19.729	17.312	22.767	20.246

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial PAUC Development Estimate	Changes								PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
13.445	-0.626	-0.159	0.231	0.000	3.961	0.000	1.766	5.173	18.618

Current SAR Baseline to Current Estimate (TY \$M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
18.618	0.047	0.000	-0.025	0.000	5.232	0.000	-1.105	4.149	22.767

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
11.649	-0.614	-0.056	0.233	0.000	3.147	0.000	1.780	4.490	16.139

Current SAR Baseline to Current Estimate (TY \$M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
16.139	0.031	0.000	-0.074	0.000	5.263	0.000	-1.113	4.107	20.246

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	Jun 2006	Jun 2006	Jul 2006
Milestone C	N/A	Apr 2010	Jul 2010	Sep 2010
IOC	N/A	Jan 2013	May 2013	Nov 2013
Total Cost (TY \$M)	N/A	8093.9	11896.6	14548.3
Total Quantity	N/A	602	639	639
PAUC	N/A	13.445	18.618	22.767

Cost Variance

Summary TY \$M					
Item	RDT&E	Procurement	MILCON	Acq O&M	Total
SAR Baseline (Production Estimate)	1664.7	10231.9	--	--	11896.6
Previous Changes					
Economic	+11.5	+80.4	--	--	+91.9
Quantity	--	--	--	--	--
Schedule	--	-65.3	--	--	-65.3
Engineering	--	--	--	--	--
Estimating	-150.5	+3328.8	--	--	+3178.3
Other	--	--	--	--	--
Support	--	-768.2	--	--	-768.2
Subtotal	-139.0	+2575.7	--	--	+2436.7
Current Changes					
Economic	-1.3	-60.7	--	--	-62.0
Quantity	--	--	--	--	--
Schedule	+30.8	+18.4	--	--	+49.2
Engineering	--	--	--	--	--
Estimating	-4.1	+8.2	--	+161.3	+165.4
Other	--	--	--	--	--
Support	--	+62.4	--	--	+62.4
Subtotal	+25.4	+28.3	--	+161.3	+215.0
Total Changes	-113.6	+2604.0	--	+161.3	+2651.7
CE - Cost Variance	1551.1	12835.9	--	161.3	14548.3
CE - Cost & Funding	1551.1	12835.9	--	161.3	14548.3

Summary BY 2010 \$M					
Item	RDT&E	Procurement	MILCON	Acq O&M	Total
SAR Baseline (Production Estimate)	1611.8	8856.9	--	--	10468.7
Previous Changes					
Economic	--	--	--	--	--
Quantity	--	--	--	--	--
Schedule	--	-8.9	--	--	-8.9
Engineering	--	--	--	--	--
Estimating	-132.0	+2763.3	--	--	+2631.3
Other	--	--	--	--	--
Support	--	-690.1	--	--	-690.1
Subtotal	-132.0	+2064.3	--	--	+1932.3
Current Changes					
Economic	--	--	--	--	--
Quantity	--	--	--	--	--
Schedule	+25.9	--	--	--	+25.9
Engineering	--	--	--	--	--
Estimating	-3.3	+8.0	--	+128.3	+133.0
Other	--	--	--	--	--
Support	--	+46.8	--	--	+46.8
Subtotal	+22.6	+54.8	--	+128.3	+205.7
Total Changes	-109.4	+2119.1	--	+128.3	+2138.0
CE - Cost Variance	1502.4	10976.0	--	128.3	12606.7
CE - Cost & Funding	1502.4	10976.0	--	128.3	12606.7

Previous Estimate: December 2016

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-1.3
Schedule Variance to align Follow-on Operational Test & Evaluation II with Joint Air-to-Ground Missile Operational Test Event. (Schedule)	+25.9	+30.8
Revised estimate to reflect actuals. (Estimating)	-4.5	-5.4
Adjustment for current and prior escalation. (Estimating)	+1.2	+1.3
RDT&E Subtotal	+22.6	+25.4

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-60.7
Stretch-out of procurement buy profile FY 2025 to FY 2026. (Schedule)	0.0	+18.4
Revised estimate to reflect actuals. (Estimating)	+2.1	+2.4
Revised estimate to align with FY 2019 PB. (Estimating)	+98.2	+124.8
Revised estimate Army realigned direct civilian personnel pay costs from RDT&E and Procurement investment accounts to O&M to provide transparency and auditability (Estimating)	-110.1	-139.6
Adjustment for current and prior escalation. (Estimating)	+17.8	+20.6
Adjustment for current and prior escalation. (Support)	+1.9	+1.9
Revised estimate to reflect the Army's realignment of direct civilian pay costs from RDT&E and Procurement investment accounts to O&M to provide additional transparency and auditability. (Support)	-20.0	-21.6
Initial spares increase to reflect Multi-Year contract actuals. (Support)	+64.9	+82.1
Procurement Subtotal	+54.8	+28.3

Acq O&M	\$M	
Current Change Explanations	Base Year	Then Year
Revised estimate to reflect the Army's realignment of direct civilian pay costs from RDT&E and Procurement investment accounts to O&M to provide additional transparency and auditability. (Estimating)	+128.3	+161.3
Acq O&M Subtotal	+128.3	+161.3

Contracts

Contract Identification

Appropriation: Procurement
Contract Name: MTADS/PNVS Production/Services IDIQ
Contractor: Lockheed Martin
Contractor Location: 5600 W Sand Lake Road
 MP-263
 Orlando, FL 32819-8907
Contract Number: W52P1J-17-D-0043
Contract Type: Firm Fixed Price (FFP)
Award Date: April 28, 2017
Definitization Date: April 28, 2017

Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
261.6	N/A	135	261.6	N/A	135	4655.0	4655.0

Cost and Schedule Variance Explanations

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

Contract Identification

Appropriation: Procurement
Contract Name: AH-64E Apache Multi-Year Contract
Contractor: The Boeing Company
Contractor Location: 5000 E McDowell Road
Mesa, AZ 85215-9707
Contract Number: W58RGZ-16-C-0023
Contract Type: Firm Fixed Price (FFP)
Award Date: March 15, 2017
Definitization Date: March 15, 2017

Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
3030.5	N/A	244	3030.5	N/A	244	3030.5	3030.5

Cost and Schedule Variance Explanations

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

Notes

The Multi-Year contract has a floor of 240 AH-64E Remanufacture aircraft, 48 aircraft per year.

The reported quantity includes four Overseas Contingency Operations-funded AH-64E Remanufacture aircraft.

Contract Identification

Appropriation: Procurement
Contract Name: FRP Lots 5/6
Contractor: The Boeing Company
Contractor Location: 5000 E McDowell Road
Mesa, AZ 85215-9707
Contract Number: W58RGZ-14-C-0018
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: February 19, 2015
Definitization Date: April 07, 2016

Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1403.4	N/A	99	1527.6	N/A	117	1527.6	1527.6

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to additional quantities.

Cost and Schedule Variance Explanations

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

General Contract Variance Explanation

Cost and Schedule Variance are not reported for this contract because an EVM waiver was granted by the Army Acquisition Executive on December 6, 2015 since the contract is in mature production.

Notes

The Quantity includes six Overseas Contingency Operations (OCO)-funded AH-64E Remanufacture aircraft and 13 Omnibus OCO-funded aircraft.

Contract Identification

Appropriation: Procurement
Contract Name: FRP Lots 3/4
Contractor: The Boeing Company
Contractor Location: 5000 E McDowell Road
 Mesa, AZ 85215-9707
Contract Number: W58RGZ-12-C-0055
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: June 29, 2012
Definitization Date: June 27, 2014

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
N/A	246.6	72	1095.0	1124.5	72	1095.0	1095.0

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to an undefinitized contract action; the contract is now definitized.

Cost and Schedule Variance Explanations

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

General Contract Variance Explanation

Cost and Schedule Variance are not reported for this contract because an EVM waiver granted by the Army Acquisition Executive on December 6, 2015 since the contract is in mature production.

Contract Identification

Appropriation: RDT&E
Contract Name: AH 64E, Version 6 (V6) System Development and Demonstration (SDD)
Contractor: The Boeing Company
Contractor Location: 5000 E. McDowell Road
Mesa, AZ 85215
Contract Number: W58RGZ-15-C-0043
Contract Type: Cost Plus Incentive Fee (CPIF)
Award Date: April 15, 2015
Definitization Date: April 07, 2016

Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
321.8	N/A	0	336.7	N/A	0	337.0	321.8

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to Government directed changes.

Contract Variance

Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/21/2017)	-1.3	-1.8
Previous Cumulative Variances	+6.3	-4.8
Net Change	-7.6	+3.0

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to additional effort required to eliminate Priority 1-4 software faults before Follow-on Operational Test & Evaluation II as required by contract.

The favorable net change in the schedule variance is due to nearing the completion of the period of performance for the contract.

Contract Identification

Appropriation: Procurement
Contract Name: Modernized-Day Sensor Assembly (M-DSA)
Contractor: Lockheed Martin
Contractor Location: 5600 W Sand Lake Road
 Orlando, FL 32819
Contract Number: W52P1J-16-C-0015
Contract Type: Firm Fixed Price (FFP)
Award Date: December 23, 2015
Definitization Date: August 08, 2016

Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
71.3	N/A	73	175.0	N/A	161	175.0	175.0

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to additional quantities.

Cost and Schedule Variance Explanations

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

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	5	5	5	100.00%
Production	218	218	634	34.38%
Total Program Quantity Delivered	223	223	639	34.90%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	14548.3	Years Appropriated	14
Expended to Date	5489.4	Percent Years Appropriated	63.64%
Percent Expended	37.73%	Appropriated to Date	8691.9
Total Funding Years	22	Percent Appropriated	59.75%

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

Operating and Support Cost

Cost Estimate Details

Date of Estimate: January 24, 2018
Source of Estimate: POE
Quantity to Sustain: 634
Unit of Measure: Aircraft
Service Life per Unit: 20.00 Years
Fiscal Years in Service: FY 2012 - FY 2047

The O&S cost estimate is based upon the OSD CAPE ICE dated August 15, 2012. The estimate was last updated on January 24, 2018 for fact-of-life changes.

The sustainment quantity of 634 aircraft differs from the acquisition quantity of 639 aircraft by five aircraft. Those five aircraft were procured as limited test articles only and do not become part of the operational inventory.

Sustainment Strategy

The AH-64E Apache is maintained by a mix of soldier and civilian maintainers. Assumes the fielding of 634 Remanufactured aircraft, each flying 238.8 hours per year. The Mean Time Between Failure goal for the aircraft system is 22 hours at maturity once the total program reaches 50,000 operational hours.

Antecedent Information

The antecedent to the AH-64E Apache is the AH-64D Longbow. The AH-64D Longbow will be in service until 2046. There are currently 633 AH-64D Longbow aircraft in operation. The AH-64D Longbow will have a total of 14,847 Fleet Years of operational tempo. Longbow antecedent data is derived from the Milestone C estimate, updated January 15, 2013.

14,847 Fleet Years x \$3,420K per operation hour = \$50,776.7M (BY 2010 \$M); \$58,146.7M (TY)

Annual O&S Costs BY2010 \$K		
Cost Element	AH-64E Remanufacture Average Annual Cost Per Aircraft	Longbow Apache (Antecedent) Average Annual Cost Per Aircraft
Unit-Level Manpower	1161.000	1538.000
Unit Operations	126.400	205.000
Maintenance	659.200	1148.000
Sustaining Support	600.400	355.000
Continuing System Improvements	72.500	73.000
Indirect Support	39.200	101.000
Other	0.000	0.000
Total	2658.700	3420.000

Item	Total O&S Cost \$M			
	AH-64E Remanufacture			Longbow Apache (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	38506.0	42356.6	33711.4	50776.7
Then Year	53639.0	N/A	48281.8	N/A

The AH-64E Remanufacture estimate is updated to reflect fact-of-life changes to the Apache AH-64E support program as of January 24, 2018.

Equation to Translate Annual Cost to Total Cost

634 Helicopters x 20 Years Operational Life x \$2,658.7K Unitized Cost = \$33,712.3M (BY 2010 \$M)

The discrepancy between the reported cost and the equation is due to rounding.

O&S Cost Variance		
Category	BY 2010 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2016 SAR	35928.6	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	145.1	Re-estimated Systems Engineering Program Management.
Cost Data Update	-2248.2	Updated Sustainment Systems Technical Support (SSTS), spares and reparable, and Petroleum Oil and Lubricants (POL) with latest actuals.
Labor Rate	-114.1	Labor rates from Army Military-Civilian Costing System and rates for SSTS.
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	-2217.2	
Current Estimate	33711.4	

Disposal Estimate Details

Date of Estimate: August 15, 2012
Source of Estimate: CAPE ICE
Disposal/Demilitarization Total Cost (BY 2010 \$M): Total costs for disposal of all Aircraft are 46.0

Total Disposal Costs for both the AH-64E Remanufacture and AH-64E New Build aircraft is \$46.03M (BY 2010 \$M) in accordance with the OSD CAPE ICE dated August 15, 2012.