Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-101

H-1 Upgrades (4BW/4BN) (H-1 Upgrades)

As of FY 2019 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

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
H-1 Upgrades (4BW/4BN) (H-1 Upgrades)

DoD Component
Navy

Responsible Office

Col David Walsh
PMA-276 USMC Light/Attack Helicopter
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Date Assigned: March 3, 2017

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References

SAR Baseline (Production Estimate)
Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated December 22, 2008

Approved APB
Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated February 11, 2011

Mission and Description

The AH-1Z and UH-1Y were designed as upgrades to the AH-1W and UH-1N aircraft. The mission of the AH-1Z attack helicopter is to provide rotary wing close air support, anti-armor, armed escort, armed/visual reconnaissance and fire support coordination capabilities under day/night and adverse weather conditions. The mission of the UH-1Y utility helicopter is to provide command, control and assault support under day/night and adverse weather conditions. Major modifications incorporated in the UH-1Y and AH-1Z include a new four-bladed rotor system and fully integrated common cockpits/avionics.

Executive Summary

Both the UH-1Y and AH-1Z aircraft continue to meet all KPPs. All west coast Marine Expeditionary Units (MEU) deploy with UH-1Y and AH-1Z aircraft. East coast MEUs deploy with UH-1Y and AH-1W aircraft and are in the process of transitioning to AH-1Zs.

Production of H-1 Upgrades aircraft continues at Bell Helicopter with final assembly and delivery occurring in Amarillo, Texas. There are 307 aircraft (Lots 1-14) on contract, which includes 10 UH-1Y remanufactured and 150 Build New UH-1Y, 37 AH-1Z remanufactured and 110 AH-1Z Build New (ZBN) aircraft, including 12 Pakistan AH-1Z Build New aircraft. As of December 19, 2017, 239 production aircraft (156 UH-1Ys, 37 remanufactured AH-1Zs, and 46 ZBNs) have been delivered to the Fleet. All remaining AH-1Z deliveries are Build New aircraft.

The program of record remains 349 aircraft (160 UH-1Ys and 189 AH-1Zs). However, the program is currently funded to procure 342 aircraft (160 UH-1Ys and 182 AH-1Zs). Since production ends within the FYDP, and seven aircraft have not been included in the budget, the APUC/PAUC has been calculated based on 342 aircraft, causing a reduction in APUC of 0.136% since the December 2016 SAR. The H-1 Program remains 1.81% below the current baseline.

The program office continues to make progress on improving material availability, reliability, and depot capability. Corrective action plans for readiness degraders are maturing and progressing. Several improvements are being validated or have fielded and readiness has improved over the past 12 months. Depot capability continues to increase across the Fleet Readiness Centers. A risk item for the H-1 Program is increasing Bell overhead rates as H-1 production ends, and decreased business base at Bell may drive increased direct and indirect rates, adversely impacting production quantities (up to four aircraft) and sustainment costs.

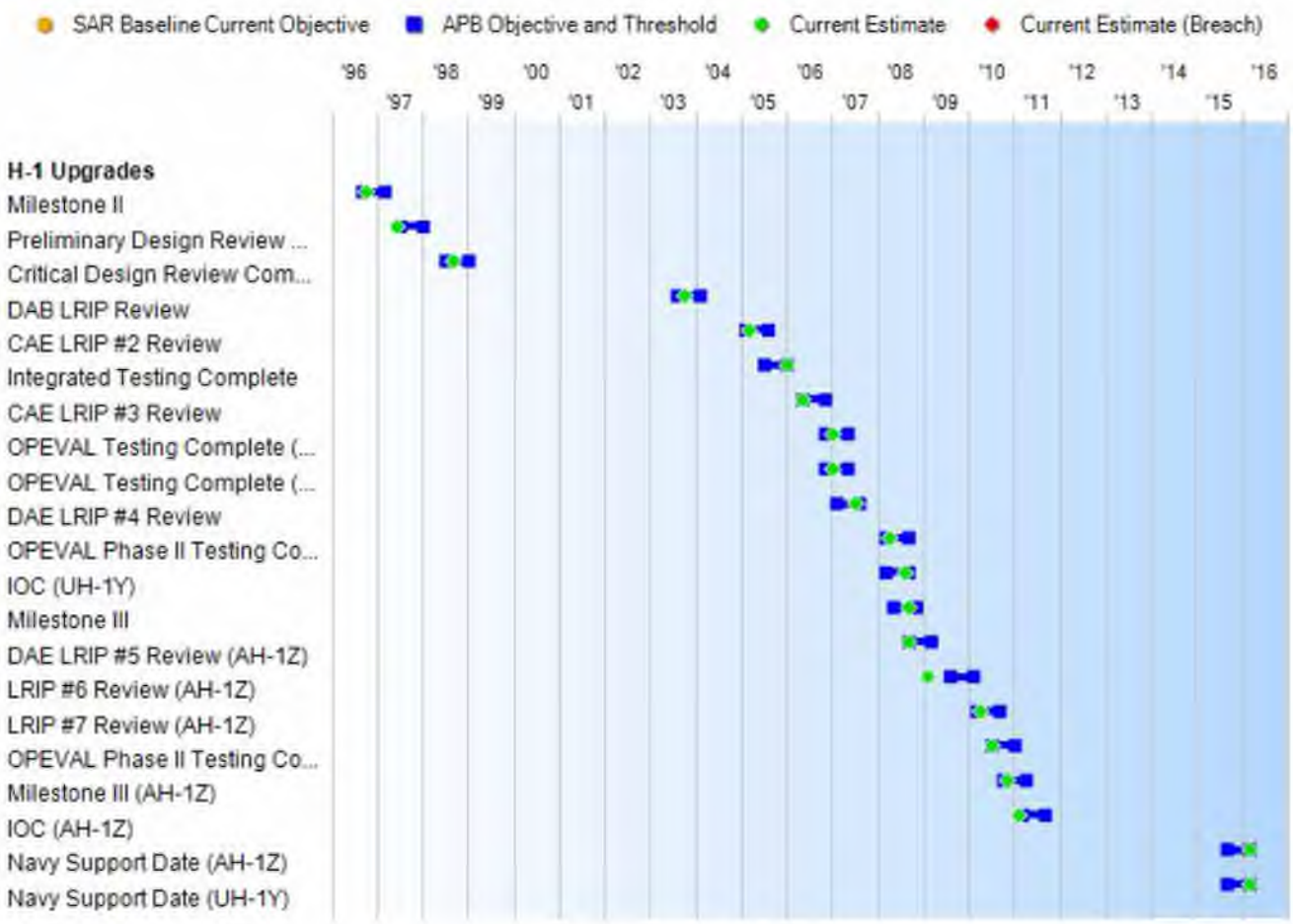
There are no significant software-related issues with this program at this time.

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


SAR Baseline Current Objective
APB Objective and Threshold
Current Estimate
Current Estimate (Breach)
'96
'97
'98
'99
'00
'01
'02
'03
'04
'05
'06
'07
'08
'09
'10
'11
'12
'13
'14
'15
'16
H-1 Upgrades
Milestone II
Preliminary Design Review ...
Critical Design Review Com...
DAB LRIP Review
CAE LRIP #2 Review
Integrated Testing Complete
CAE LRIP #3 Review
OPEVAL Testing Complete (...
OPEVAL Testing Complete (...
DAE LRIP #4 Review
OPEVAL Phase II Testing Co...
IOC (UH-1Y)
Milestone III
DAE LRIP #5 Review (AH-1Z)
LRIP #6 Review (AH-1Z)
LRIP #7 Review (AH-1Z)
OPEVAL Phase II Testing Co...
Milestone III (AH-1Z)
IOC (AH-1Z)
Navy Support Date (AH-1Z)
Navy Support Date (UH-1Y)

Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate
Milestone II	Sep 1996	Sep 1996	Mar 1997	Oct 1996
Preliminary Design Review Complete	Jul 1997	Jul 1997	Jan 1998	Jun 1997
Critical Design Review Complete	Jul 1998	Jul 1998	Jan 1999	Sep 1998
DAB LRIP Review	Aug 2003	Aug 2003	Feb 2004	Oct 2003
CAE LRIP #2 Review	Feb 2005	Feb 2005	Aug 2005	Mar 2005
Integrated Testing Complete	Jul 2005	Jul 2005	Jan 2006	Jan 2006
CAE LRIP #3 Review	May 2006	May 2006	Nov 2006	May 2006
OPEVAL Testing Complete (AH-1Z)	Nov 2006	Nov 2006	May 2007	Jan 2007
OPEVAL Testing Complete (UH-1Y)	Nov 2006	Nov 2006	May 2007	Jan 2007
DAE LRIP #4 Review	Feb 2007	Feb 2007	Aug 2007	Jul 2007
OPEVAL Phase II Testing Complete (UH-1Y)	Mar 2008	Mar 2008	Sep 2008	Apr 2008
IOC (UH-1Y)	Mar 2008	Mar 2008	Sep 2008	Aug 2008
Milestone III	May 2008	May 2008	Nov 2008	Sep 2008
DAE LRIP #5 Review (AH-1Z)	Sep 2008	Sep 2008	Mar 2009	Sep 2008
LRIP #6 Review (AH-1Z)	Aug 2009	Aug 2009	Feb 2010	Feb 2009
LRIP #7 Review (AH-1Z)	Mar 2010	Mar 2010	Sep 2010	Apr 2010
OPEVAL Phase II Testing Complete (AH-1Z)	Jul 2010	Jul 2010	Jan 2011	Jul 2010
Milestone III (AH-1Z)	Oct 2010	Oct 2010	Apr 2011	Nov 2010
IOC (AH-1Z)	Mar 2011	Mar 2011	Sep 2011	Feb 2011
Navy Support Date (AH-1Z)	Mar 2012	Sep 2015	Mar 2016	Mar 2016
Navy Support Date (UH-1Y)	Mar 2012	Sep 2015	Mar 2016	Mar 2016

Change Explanations

None

Acronyms and Abbreviations

CAE - Component Acquisition Executive
OPEVAL - Operational Evaluation

Performance

Performance Characteristics				
SAR Baseline Production Estimate	**Current APB Production Objective/Threshold**		**Demonstrated Performance**	**Current Estimate**
4BW (AH-1W/AH-1Z)				
MFHBA (hrs)				
35.0	35.0	24.0	63.8	63.8
MMH/FH (hrs)				
3.6	3.6	4.3	2.5	2.5
Cruise Speed (kts)				
165	165	135	139	139
Payload (Hot Day) (lbs)				
3500 lbs	3500 lbs	2500 lbs 6 Wing Stations 4 Universal Under Wing Stations	3429	3429
Weapon Stations				
Universal Mounts				
6	6	4	4	4
Precision Guided Munitions				
16	16	12	16	16
Maneuverability/Agility (G's)				
-0.5 to +2.5	-0.5 to +2.5	-0.5 to +2.5	-0.5 to +2.5	-0.5 to +2.5
Mission Radius (NM)				
200 NM	200 NM	110 NM	135 NM x 1	135 NM x 1
Shipboard Compatibility				
Fully compatible to include blade fold.	Fully compatible to include blade fold.	Fully compatible to include blade fold.	Fully compatible to include blade fold.	Fully compatible to include blade fold.
Interoperability				
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	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	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-	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	The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net Centric military

operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	operations to include: 1) DISR-mandated GIG IT standards and profiles identified in the TV-1, 2) DISR-mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	Centric military operations to include: 1) DISR-mandated GIG IT standards and profiles identified in the TV-1, 2) DISR-mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an IATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.
Force Protection (Seating)				
Two AH-1Z pilot seats that are stroking, crashworthy, and capable of sustaining 20Gs longitudinal, 20Gs vertical, and 10 Gs laterally.	Two AH-1Z pilot seats that are stroking, crashworthy, and capable of sustaining 20Gs longitudinal, 20Gs vertical, and 10 Gs laterally.	Two AH-1Z pilot seats that are stroking, crashworthy, and capable of sustaining 20Gs longitudinal, 20Gs vertical, and 10 Gs laterally.	Two AH-1Z pilot seats that are stroking, crashworthy, and capable of sustaining 20Gs longitudinal, 20Gs vertical, and 10Gs laterally.	Two AH-1Z pilot seats that are stroking, crashworthy, and capable of sustaining 20Gs longitudinal, 20Gs vertical, and 10Gs laterally.
Survivability (Ballistic Tolerance/Hardening)				
Airframe structure and flight critical systems shall be ballistic tolerant/ hardened against 23 mm HEI.	Airframe structure and flight critical systems shall be ballistic tolerant/ hardened against 23 mm HEI.	Airframe structure and flight critical systems shall be ballistic tolerant/ hardened against 12.7 mm API.	Airframe structure and flight critical systems shall be ballistic tolerant/hardened against 12.7 mm API.	Airframe structure and flight critical systems shall be ballistic tolerant/hardened against 12.7 mm API.
4BN (UH-1N/UH-1Y)				
MFHBA (hrs)				

40.2	40.2	33.1	56.6	56.6
MMH/FH (hrs)				
2.9	2.9	3.9	2.0	2.0
Cruise Speed (kts)				
165	165	140	155	155
Payload (Hot Day) (lbs)				
4500	4500	2800	2982	2982
Weapon Stations				
2 Univ. Mounts	2 Univ. Mounts	2 Hard Mounts	2 Hard Mounts	2 Hard Mounts
Maneuverability/Agility (G's)				
-0.5 to +2.5	-0.5 to +2.5	-0.5 to +2.3	-0.5 to +2.3	-0.5 to +2.3
Mission Radius (NM)				
200 NM	200 NM	110 NM	130 NM	130 NM
Shipboard Compatibility				
Fully compatible to include blade fold.	Fully compatible to include blade fold.	Fully compatible to include blade fold.	Fully compatible to include blade fold.	Fully compatible to include blade fold.
Interoperability				
The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net Centric military operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authenticat-ion, confidentiality, and non-repudiation,	The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include: 1) DISR-mandated GIG IT standards and profiles identified in the TV-1, 2) DISR-mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) DISR-mandated GIG IT standards and profiles identified in the TV-1, 2) DISR-mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authentication,	The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net Centric military operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and	The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net Centric military operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and

and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	non-repudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	confidentiality, and non-repudiation, and issuance of an IATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	non-repudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	non-repudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.
Force Protection (Seating)				
Two UH-1Y pilot seats and ten UH-1Y cabin seats that are stroking, crash-worthy, and capable of sustain-ing 20Gs longitudinal, 20Gs vertical, and 10 Gs laterally.	Two UH-1Y pilot seats and ten UH-1Y cabin seats that are stroking, crash-worthy, and capable of sustaining 20Gs longitudinal, 20Gs vertical, and 10 Gs laterally.	Two UH-1Y pilot seats and ten UH-1Y cabin seats that are stroking, crash-worthy, and capable of sustaining 20Gs longitudinal, 20Gs vertical, and 10 Gs laterally.	Two UH-1Y pilot seats and ten UH-1Y cabin seats that are stroking, crashworthy, and capable of sustaining 20Gs longitudinal, 20Gs vertical, and 10Gs laterally.	Two UH-1Y pilot seats and ten UH-1Y cabin seats that are stroking, crashworthy, and capable of sustaining 20Gs longitudinal, 20Gs vertical, and 10Gs laterally.
Survivability (Ballistic Tolerance/Hardening)				
Airframe structure and flight critical systems shall be ballistic tolerant/hardened against 23 mm HEI.	Airframe structure and flight critical systems shall be ballistic tolerant/hardened against 23 mm HEI.	Airframe structure and flight critical systems shall be ballistic tolerant/hardened against 12.7 mm API.	Airframe structure and flight critical systems shall be ballistic tolerant/hardened against 12.7 mm API.	Airframe structure and flight critical systems shall be ballistic tolerant/hardened against 12.7 mm API.

Requirements Reference

UH-1Y CPD and AH-1Z CPD dated June 11, 2007 as modified by JROC Memorandum 195-08 dated October 14, 2008

Change Explanations

None

Acronyms and Abbreviations

API - Armor Piercing Incendiary
ATO - Authority to Operate
DAA - Designated Approving Authority
DISR - DoD Information Technology Standards Registry
FRACAS - Failure Reporting, Analysis and Corrective Action System
G's - Gravitational forces
GIG - Global Information Grid
HEI - High Explosive Incendiary
hrs - Hours
IATO - Interim Authority to Operate
IT - Information Technology
KIP - Key Interface Protocol
kts - Knots
lbs - Pounds
MFHBA - Mean Flight Hours Between Abort
mm - Millimeter
MMH/FH - Maintenance Man Hours per Flight Hours
NCOW - Net-Centric Operation and Warfare
NM - Nautical Miles
R&M - Reliability and Maintainability
RM - Reference Model
TV-1 - Technical Standards Profile
Univ. - Universal

Track to Budget

RDT&E

Appn	BA	PE
Navy 1319	05	0604245N

Project	Name	
2279	H-1 Upgrades	(Sunk)

Procurement

Appn	BA	PE
Navy 1506	01	0206131M

Line Item	Name	
0178	H-1 Upgrades (UH-1Y/AH-1Z)	

Appn	BA	PE
Navy 1506	06	0206131M

Line Item	Name	
0605	Spares and Repair Parts	(Sunk)

MILCON

Appn	BA	PE
Navy 1205	01	0216496M

Project	Name	
991	H-1 Y/Z Helicopter Gearbox Repair & Test Facility	(Sunk)

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2008 $M			BY 2008 $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	1799.2	1848.3	2033.1	1704.1	1644.1	1696.2	1537.1
Procurement	9404.2	10088.4	11097.2	9784.9	10542.7	11022.1	10730.2
Flyaway	--	--	--	8205.5	--	--	9052.8
Recurring	--	--	--	7714.6	--	--	8538.9
Non Recurring	--	--	--	490.9	--	--	513.9
Support	--	--	--	1579.4	--	--	1677.4
Other Support	--	--	--	1333.7	--	--	1429.7
Initial Spares	--	--	--	245.7	--	--	247.7
MILCON	0.0	16.3	17.9	16.0	0.0	17.6	17.6
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	11203.4	11953.0	N/A	11505.0	12186.8	12735.9	12284.9

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.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	4	4	4
Procurement	349	349	342
Total	353	353	346

Quantity Notes

The four RDT&E aircraft include two UH-1Ys and two AH-1Zs. The 342 Procurement aircraft include 37 AH-1W helicopters remanufactured into AH-1Zs, 145 AH-1Z Build New models, 10 UH-1N helicopters remanufactured into UH-1Ys, and 150 new UH-1Y models. Program currently funded to 342 aircraft; Program of Record remains 349.

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	1537.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1537.1
Procurement	9100.7	720.5	820.8	62.7	7.7	7.8	8.0	2.0	10730.2
MILCON	17.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.6
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2019 Total	10655.4	720.5	820.8	62.7	7.7	7.8	8.0	2.0	12284.9
PB 2018 Total	10655.4	720.5	602.6	64.6	9.0	9.2	11.4	0.0	12072.7
Delta	0.0	0.0	218.2	-1.9	-1.3	-1.4	-3.4	2.0	212.2

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	4	0	0	0	0	0	0	0	0	4
Production	0	295	22	25	0	0	0	0	0	342
PB 2019 Total	4	295	22	25	0	0	0	0	0	346
PB 2018 Total	4	295	22	18	0	0	0	0	0	339
Delta	0	0	0	7	0	0	0	0	0	7

Cost and Funding

Annual Funding By Appropriation

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1996	--	--	--	--	--	--	10.9
1997	--	--	--	--	--	--	67.9
1998	--	--	--	--	--	--	81.3
1999	--	--	--	--	--	--	116.7
2000	--	--	--	--	--	--	178.5
2001	--	--	--	--	--	--	138.2
2002	--	--	--	--	--	--	167.4
2003	--	--	--	--	--	--	232.9
2004	--	--	--	--	--	--	99.1
2005	--	--	--	--	--	--	168.2
2006	--	--	--	--	--	--	58.6
2007	--	--	--	--	--	--	26.4
2008	--	--	--	--	--	--	12.6
2009	--	--	--	--	--	--	4.4
2010	--	--	--	--	--	--	28.1
2011	--	--	--	--	--	--	57.6
2012	--	--	--	--	--	--	60.6
2013	--	--	--	--	--	--	27.7
Subtotal	4	--	--	--	--	--	1537.1

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2008 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1996	--	--	--	--	--	--	13.3
1997	--	--	--	--	--	--	82.0
1998	--	--	--	--	--	--	97.4
1999	--	--	--	--	--	--	138.1
2000	--	--	--	--	--	--	208.3
2001	--	--	--	--	--	--	159.1
2002	--	--	--	--	--	--	190.7
2003	--	--	--	--	--	--	261.5
2004	--	--	--	--	--	--	108.3
2005	--	--	--	--	--	--	179.0
2006	--	--	--	--	--	--	60.5
2007	--	--	--	--	--	--	26.6
2008	--	--	--	--	--	--	12.5
2009	--	--	--	--	--	--	4.3
2010	--	--	--	--	--	--	27.0
2011	--	--	--	--	--	--	54.1
2012	--	--	--	--	--	--	56.0
2013	--	--	--	--	--	--	25.4
Subtotal	4	--	--	--	--	--	1704.1

Annual Funding 1506 | Procurement | Aircraft Procurement, Navy							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2001	--	--	--	--	--	6.0	6.0
2002	--	--	--	--	--	--	--
2003	--	--	--	--	--	--	--
2004	9	197.8	--	23.8	221.6	105.9	327.5
2005	7	136.9	--	18.7	155.6	78.3	233.9
2006	7	150.9	--	42.2	193.1	162.0	355.1
2007	11	228.8	--	136.5	365.3	170.1	535.4
2008	15	315.5	--	25.2	340.7	154.3	495.0
2009	24	514.0	--	42.6	556.6	80.5	637.1
2010	27	655.7	--	34.8	690.5	70.7	761.2
2011	31	688.5	--	77.6	766.1	127.0	893.1
2012	25	567.6	--	46.3	613.9	120.0	733.9
2013	30	772.8	--	3.8	776.6	89.6	866.2
2014	23	574.3	--	1.6	575.9	85.6	661.5
2015	31	792.3	--	--	792.3	106.7	899.0
2016	29	780.5	--	--	780.5	60.3	840.8
2017	26	759.8	--	6.4	766.2	88.8	855.0
2018	22	658.2	--	--	658.2	62.3	720.5
2019	25	745.3	--	--	745.3	75.5	820.8
2020	--	--	--	54.4	54.4	8.3	62.7
2021	--	--	--	--	--	7.7	7.7
2022	--	--	--	--	--	7.8	7.8
2023	--	--	--	--	--	8.0	8.0
2024	--	--	--	--	--	2.0	2.0
Subtotal	342	8538.9	--	513.9	9052.8	1677.4	10730.2

Annual Funding 1506 | Procurement | Aircraft Procurement, Navy							
Fiscal Year	Quantity	BY 2008 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2001	--	--	--	--	--	6.8	6.8
2002	--	--	--	--	--	--	--
2003	--	--	--	--	--	--	--
2004	9	212.6	--	25.6	238.2	113.8	352.0
2005	7	143.1	--	19.6	162.7	81.8	244.5
2006	7	153.5	--	42.9	196.4	164.8	361.2
2007	11	227.5	--	135.7	363.2	169.1	532.3
2008	15	309.0	--	24.7	333.7	151.1	484.8
2009	24	496.5	--	41.2	537.7	77.7	615.4
2010	27	620.4	--	32.9	653.3	66.9	720.2
2011	31	638.8	--	72.0	710.8	117.9	828.7
2012	25	519.3	--	42.4	561.7	109.7	671.4
2013	30	699.6	--	3.4	703.0	81.1	784.1
2014	23	513.3	--	1.4	514.7	76.6	591.3
2015	31	698.1	--	--	698.1	94.1	792.2
2016	29	675.5	--	--	675.5	52.1	727.6
2017	26	646.4	--	5.4	651.8	75.6	727.4
2018	22	550.0	--	--	550.0	52.0	602.0
2019	25	611.0	--	--	611.0	61.9	672.9
2020	--	--	--	43.7	43.7	6.7	50.4
2021	--	--	--	--	--	6.1	6.1
2022	--	--	--	--	--	6.0	6.0
2023	--	--	--	--	--	6.1	6.1
2024	--	--	--	--	--	1.5	1.5
Subtotal	342	7714.6	--	490.9	8205.5	1579.4	9784.9

Cost Quantity Information 1506 | Procurement | Aircraft Procurement, Navy		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2008 $M**
2001	--	--
2002	--	--
2003	--	--
2004	9	212.6
2005	7	143.1
2006	7	153.5
2007	11	227.5
2008	15	309.0
2009	24	496.5
2010	27	572.6
2011	31	632.5
2012	25	521.3
2013	30	693.3
2014	23	518.0
2015	31	695.9
2016	29	682.8
2017	26	653.1
2018	22	556.7
2019	25	646.2
2020	--	--
2021	--	--
2022	--	--
2023	--	--
2024	--	--
Subtotal	342	7714.6

Annual Funding 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	TY $M Total Program
2012	17.6
Subtotal	17.6

Annual Funding 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	**BY 2008 $M**
	Total Program
2012	16.0
Subtotal	16.0

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	10/22/2003	6/7/2010
Approved Quantity	28	55
Reference	LRIP ADM	LRIP VII ADM
Start Year	2004	2004
End Year	2005	2010

The Current Total LRIP Quantity is more than 10% of the total production quantity due to the need to permit an orderly increase in the production rate and efficiency until successful completion of operational testing.

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost $M	Description
Pakistan	7/10/2015	12	621.4	FMS Case PK-P-BSO, AH-1Z helicopters, initial support, and training.

Notes

Total Cost reflects the procurement of twelve total aircraft. Initial three aircraft awarded in FY 2015 and the remaining nine aircraft awarded in FY 2016.

PK-P-SBO is the only H-1 Upgrades active FMS case at this time.

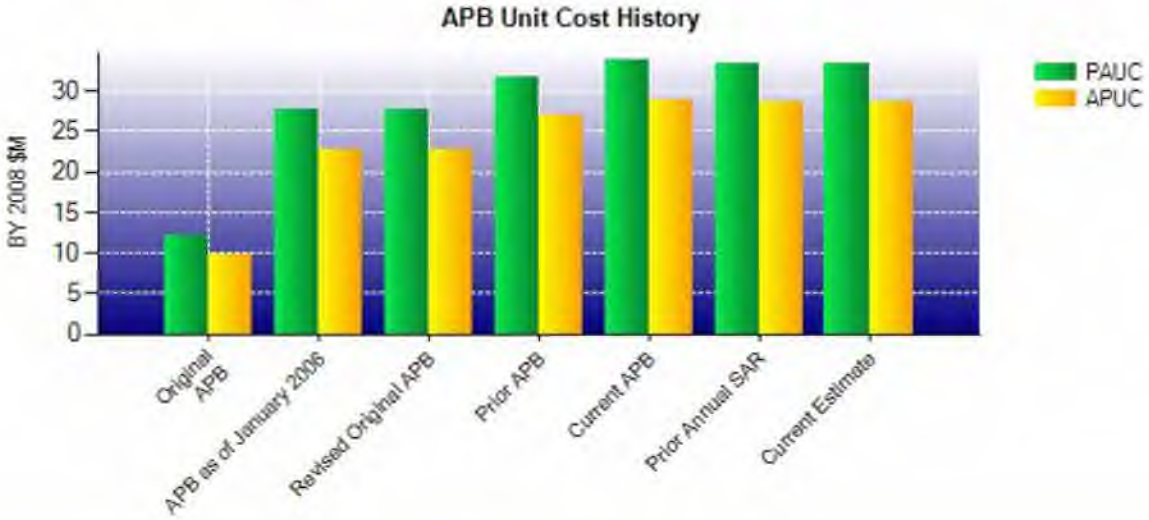
Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2008 $M Current UCR Baseline (Feb 2011 APB)	BY 2008 $M Current Estimate (Dec 2017 SAR)	% Change
Program Acquisition Unit Cost			
Cost	11953.0	11505.0	
Quantity	353	346	
Unit Cost	33.861	33.251	-1.80
Average Procurement Unit Cost			
Cost	10088.4	9784.9	
Quantity	349	342	
Unit Cost	28.907	28.611	-1.02

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2008 $M Revised Original UCR Baseline (Apr 2005 APB)	BY 2008 $M Current Estimate (Dec 2017 SAR)	% Change
Program Acquisition Unit Cost			
Cost	7852.2	11505.0	
Quantity	284	346	
Unit Cost	27.649	33.251	+20.26
Average Procurement Unit Cost			
Cost	6352.9	9784.9	
Quantity	280	342	
Unit Cost	22.689	28.611	+26.10



APB Unit Cost History					
Item	Date	BY 2008 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	Oct 1996	12.089	9.903	12.491	10.554
APB as of January 2006	Apr 2005	27.649	22.689	28.172	23.843
Revised Original APB	Apr 2005	27.649	22.689	28.172	23.843
Prior APB	Dec 2008	31.738	26.946	34.524	30.208
Current APB	Feb 2011	33.861	28.907	36.079	31.582
Prior Annual SAR	Dec 2016	33.386	28.650	35.613	31.397
Current Estimate	Dec 2017	33.251	28.611	35.505	31.375

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	
12.491	-0.078	-1.056	1.772	2.351	15.397	0.000	3.647	22.033	34.524

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
34.524	-0.746	0.129	-0.052	0.279	1.379	0.000	-0.008	0.981	35.505

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	
10.554	-0.003	-0.686	1.722	1.632	13.299	0.000	3.690	19.654	30.208

Current SAR Baseline to Current Estimate (TY $M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
30.208	-0.762	0.042	-0.052	0.000	1.947	0.000	-0.008	1.167	31.375

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	Sep 1996	Sep 1996	Oct 1996
Milestone III	N/A	Feb 2004	May 2008	Sep 2008
IOC	N/A	Jun 2005	Mar 2008	Aug 2008
Total Cost (TY $M)	N/A	3547.5	12186.8	12284.9
Total Quantity	N/A	284	353	346
PAUC	N/A	12.491	34.524	35.505

Cost Variance

Summary TY $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1644.1	10542.7	--	12186.8
Previous Changes				
Economic	+2.4	-245.5	+0.3	-242.8
Quantity	--	-386.3	--	-386.3
Schedule	--	-17.3	--	-17.3
Engineering	+96.7	--	--	+96.7
Estimating	-206.1	+642.3	+17.3	+453.5
Other	--	--	--	--
Support	--	-17.9	--	-17.9
Subtotal	-107.0	-24.7	+17.6	-114.1
Current Changes				
Economic	-0.1	-15.1	--	-15.2
Quantity	--	+189.2	--	+189.2
Schedule	--	-0.6	--	-0.6
Engineering	--	--	--	--
Estimating	+0.1	+23.5	--	+23.6
Other	--	--	--	--
Support	--	+15.2	--	+15.2
Subtotal	--	+212.2	--	+212.2
Total Changes	-107.0	+187.5	+17.6	+98.1
CE - Cost Variance	1537.1	10730.2	17.6	12284.9
CE - Cost & Funding	1537.1	10730.2	17.6	12284.9

Summary BY 2008 $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1799.2	9404.2	--	11203.4
Previous Changes				
Economic	--	--	--	--
Quantity	--	-313.7	--	-313.7
Schedule	--	-23.6	--	-23.6
Engineering	+83.6	--	--	+83.6
Estimating	-178.8	+546.8	+16.0	+384.0
Other	--	--	--	--
Support	--	-15.9	--	-15.9
Subtotal	-95.2	+193.6	+16.0	+114.4
Current Changes				
Economic	--	--	--	--
Quantity	--	+155.0	--	+155.0
Schedule	--	-0.5	--	-0.5
Engineering	--	--	--	--
Estimating	+0.1	+19.7	--	+19.8
Other	--	--	--	--
Support	--	+12.9	--	+12.9
Subtotal	+0.1	+187.1	--	+187.2
Total Changes	-95.1	+380.7	+16.0	+301.6
CE - Cost Variance	1704.1	9784.9	16.0	11505.0
CE - Cost & Funding	1704.1	9784.9	16.0	11505.0

Previous Estimate: December 2016

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.1
Adjustment for current and prior escalation. (Estimating)	+0.1	+0.1
RDT&E Subtotal	+0.1	0.0

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-15.1
Total Quantity variance resulting from an increase of seven helicopters from 335 to 342. (Subtotal)	+162.8	+198.6
Quantity variance resulting from an increase of seven helicopters from 335 to 342. (Quantity)	(+144.0)	(+175.7)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(-0.5)	(-0.6)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(+19.3)	(+23.5)
Additional quantity variance resulting from increase of seven helicopters. (Quantity)	+11.0	+13.5
Revised estimate for updated production line shutdown strategy. (Estimating)	-1.1	-1.3
Revised estimate for updated Engineering Change Order strategy. (Estimating)	-7.0	-8.2
Adjustment for current and prior escalation. (Estimating)	+8.5	+9.5
Adjustment for current and prior escalation. (Support)	+0.8	+1.3
Increase in Other Support due to updated support strategy. (Support)	+12.1	+13.9
Procurement Subtotal	+187.1	+212.2

(QR) Quantity Related

Contracts

Contract Identification

Appropriation: Procurement
Contract Name: H-1 Upgrades Production Contract Lot 12
Contractor: Bell Helicopter Textron Inc.
Contractor Location: 600 E Hurst Blvd
Hurst, TX 76053
Contract Number: N00019-13-C-0023/12
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: March 27, 2014
Definitization Date: August 25, 2015

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
59.7	59.7	26	648.3	661.0	34	648.3	648.3

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the award of Advance Procurement of long lead items and contract definitization. Lot 12 includes three FMS Pakistan AH-1Z Build New aircraft. The contract also includes Firm Fixed Price and Cost Plus Fixed Fee Acquisition Logistics Support and Systems Engineering/Program Management efforts.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/2/2017)	+27.2	-20.7
Previous Cumulative Variances	+14.7	-45.6
Net Change	+12.5	+24.9

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to favorable manufacturing performance and material prices.

The favorable net change in the schedule variance is due to recovery of previous late parts in fuselage group, drive group, and electrical subsystems.

Contract Identification

Appropriation: Procurement
Contract Name: H-1 Upgrades Production Contract Lot 13
Contractor: Bell Helicopter Textron
Contractor Location: 600 E. Hurst Blvd
Hurst, TX 76053
Contract Number: N00019-13-C-0023/13
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: August 25, 2015
Definitization Date: March 14, 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
58.1	58.1	29	741.6	755.7	38	741.6	741.6

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the award of Advance Procurement of long lead items and contract definitization. Lot 13 includes one FY 2014 funded aircraft and nine FMS Pakistan AH-1Z Build New aircraft. The contract also includes Firm Fixed Price and Cost Plus Fixed Fee Acquisition Logistics Support and Systems Engineering/Program Management (SEPM) efforts. Increase is due to an option exercise of CY 2018 SEPM.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/2/2017)	+16.0	-53.4
Previous Cumulative Variances	+4.1	-16.5
Net Change	+11.9	-36.9

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to favorable manufacturing performance and material prices.

The unfavorable net change in the schedule variance is due to late delivery of cabin parts and drive group.

Contract Identification

Appropriation: Procurement
Contract Name: H-1 Upgrades Production Contract Lot 14
Contractor: Bell Helicopter Textron
Contractor Location: 600 E. Hurst Blvd
Hurst, TX 76053
Contract Number: N00019-16-C-0003/14
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: March 14, 2016
Definitization Date: February 08, 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
55.9	55.9	25	517.7	527.9	27	517.7	517.7

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the award of Advance Procurement of long lead items and contract definitization. Lot 14 includes one FY 2016 funded aircraft. Increase is due to addition of two AH-1Z aircraft in November 2017.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/2/2017)	-0.1	+1.2
Previous Cumulative Variances	0.0	0.0
Net Change	-0.1	+1.2

Cost and Schedule Variance Explanations

The unfavorable cumulative cost variance is due to the Contractor's Material Requirements Planning (MRP) replan's effect on rate structure. Earned value reporting for this contract began 4th quarter FY 2017.

The favorable cumulative schedule variance is due to early delivery of components.

Contract Identification

Appropriation: Procurement
Contract Name: H-1 Upgrades Production Contract Lot 15
Contractor: Bell Helicopter Textron, Inc.
Contractor Location: 600 E Hurst Blvd
Hurst, TX 76053
Contract Number: N00019-17-C-0030/15
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: February 07, 2017
Definitization Date:

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
49.1	N/A	22	49.1	N/A	22	49.1	49.1

Cost and Schedule Variance Explanations

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

General Contract Variance Explanation

Cost and schedule variances are not reported for this contract, because earned value management reporting has not commenced because the contract has not yet been definitized.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	4	4	4	100.00%
Production	239	239	342	69.88%
Total Program Quantity Delivered	243	243	346	70.23%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	12284.9	Years Appropriated	23
Expended to Date	9490.0	Percent Years Appropriated	79.31%
Percent Expended	77.25%	Appropriated to Date	11375.9
Total Funding Years	29	Percent Appropriated	92.60%

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

Program of Record remains 349 aircraft.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	February 02, 2018
Source of Estimate:	POE
Quantity to Sustain:	349
Unit of Measure:	Aircraft
Service Life per Unit:	30.00 Years
Fiscal Years in Service:	FY 2007 - FY 2051

The program of record for H-1 Upgrades is 349 production aircraft. This quantity is reflected in the O&S cost estimate. The four development aircraft are EMD assets that are not assigned to the fleet and will not be sustained.

2018 inflation rates are included in this estimate.

PB 2018 Flight Hour controls are used in this estimate.

H-1 Procurement Profile: 189 AH-1Z, 160 UH-1Y.

H-1 Primary Authorized Aircraft profile: 146 AH-1Z, 119 UH-1Y which does not include test assets.

Combined squadrons are composed of 15 AH-1Z and 12 UH-1Y aircraft.

The life cycle includes a 30-year service life with an average annual usage of 296.4 flight hours per AH-1Z aircraft and an average annual usage of 224.4 flight hours per UH-1Y aircraft. The life cycle includes a total of 8,130 operating aircraft years derived from the Primary Authorized Aircraft from the latest Aircraft Program Data File and a manual squadron ramp down based on attrition and the estimated service life.

Each aircraft has a designed fatigue life of 10,000 hours per aircraft.

Average attrition rate is .09% for AH-1Z and UH-1Y.

Average pipeline rate is 7% for AH-1Z and UH-1Y.

Maintenance Costs consisting of Aviation Depot Level Repairable and Consumables are estimated using a bottoms-up model, utilizing historical costs and demand rates for both the UH-1Y and AH-1Z.

O&S cost estimate is based on three levels of organic maintenance with chargeable manning (fleet squadron) estimated at 100%.

Sustainment Strategy

The sustainment strategy for H-1 Upgrade aircraft is based on three major tenets: 1) ensuring Organizational maintenance capability is optimized and that the Program Office aggressively addresses Fleet readiness issues, 2) ensuring planned Intermediate level maintenance capability is established and expanded based on approved Business Case Analysis (BCAs), and 3) ensuring organic Depot level capability, for core components, is established by focusing on components that have the greatest impact on Fleet readiness first. These three tenets are outlined in a Program Office Playbook that identifies major efforts the Program Office is implementing in support of improving Fleet readiness and

sustaining the H-1 Upgrade aircraft. Detailed Plan of Action and Milestones (POA&Ms) exist for each effort and are monitored through internal Program Office reviews and other external meetings to ensure they remain on schedule. Finally, the tenets of the H-1 Sustainment Strategy represent a combination of tactical and strategic solutions. The strategic solutions include a series of outcome based strategic solutions, supported by long-term performance based contracts to include a Captains of Industry and component Performance Based Logistics (PBL) contracts with Bell Helicopter and other key vendors. These strategic solutions are designed to improve readiness, reduce the cost per flight hour, and transition from transactional to out-come based arrangements and are foundational to the H-1 Sustainment Strategy.

Antecedent Information

The H-1 antecedent estimate is a composite of AH-1W and UH-1N series aircraft. Cost per aircraft is the combined three-year (FY 2007 - FY 2009) average of costs reported in the Naval Visibility and Management of Operating and Support Costs Aviation Type Model Series Report database. Manpower for antecedent and upgrade aircraft are set equal as the table of organization is deemed to be equivalent. Antecedent aircraft have historically flown 21.7 flight hours per month and 260 flight hours annually. The UH-1N aircraft began retiring in FY 2010.

Annual O&S Costs BY2008 $M		
Cost Element	**H-1 Upgrades Average Annual Cost Per Aircraft**	**UH-1N/AH-1W (Antecedent) Average Annual Cost Per Aircraft**
Unit-Level Manpower	1.167	1.167
Unit Operations	0.368	0.230
Maintenance	1.515	1.510
Sustaining Support	0.092	0.110
Continuing System Improvements	0.191	0.340
Indirect Support	0.576	0.530
Other	0.000	0.000
Total	3.909	3.887

Item	Total O&S Cost $M			
	H-1 Upgrades			UH-1N/AH-1W (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	33301.8	36632.0	31776.8	31597.8
Then Year	0.0	N/A	48667.7	N/A

Equation to Translate Annual Cost to Total Cost

H-1 Upgrades Average Annual Cost Per Aircraft = Total O&S Cost (BY) / Total Operating Aircraft Years.

$3.909 M Per Year Per Aircraft = $31,776.8M / 8,130 Total Operating Aircraft Years.

O&S Cost Variance		
Category	**BY 2008 $M**	**Change Explanations**

Prior SAR Total O&S Estimates - Dec 2016 SAR	31406.8	
Programmatic/Planning Factors	-28.1	Updated attrition, flight hour usage rates, pipeline factors, and authorized aircraft allocations.
Cost Estimating Methodology	-822.5	Removed squadron personnel from I-level calculations, included I-level head counts in indirect calculations, removed resupply calculations to maintain the scope of the baseline estimate.
Cost Data Update	106.2	Updated to the latest actuals, updated the Flying Hour Program to FY 2017 prices, updated to 2018 inflation indices.
Labor Rate	260.0	Incorporated FY 2018 Military Composite Pay Rates, updated depot labor rates, and software maintenance rates.
Energy Rate	-71.7	Updated the fuel rate to reflect FY 2017 actuals.
Technical Input	926.1	Updated the Flying Hour Program Reliability predictions and updated the fleet maintenance contract including the planned award of the expanded contractor logistics support contract.
Other	0.0	
Total Changes	370.0	
Current Estimate	31776.8	

Disposal Estimate Details

Date of Estimate: February 02, 2018

Source of Estimate: POE

Disposal/Demilitarization Total Cost (BY 2008 $M): Total costs for disposal of all Aircraft are 80.2