Selected Acquisition Report (SAR)

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

H-1 UPGRADES (4BW/4BN)

As of December 31, 2010

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Program Information

Designation And Nomenclature (Popular Name)

H-1 UPGRADES (4BW/4BN)

DoD Component

Navy

Responsible Office

Responsible Office

Col Harry Hewson
Program Executive Officer (PMA-276)
Air ASW, Assault and Special Mission Programs, 48202 Bronson Road, 2nd Floor
Patuxent River, MD 20670-1547
harry.hewson@navy.mil

Phone 301-757-5534
Fax 301-342-3788
DSN Phone 757-5534
DSN Fax 342-3788

Date Assigned November 21, 2008

References

SAR Baseline (Production Estimate)

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

Approved APB

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

Mission and Description

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 for the United States Marine Corps (USMC). The mission of the UH-1Y utility helicopter is to provide command, control and assault support under day/night and adverse weather conditions. Both the AH-1Z and UH-1Y aircraft incorporate state of the art designs, which serve to improve capability, lethality and survivability. Major modifications include a new four-bladed rotor system with semi-automatic blade fold of the new composite rotor blades, new performance matched transmissions, a new four-bladed tail rotor and drive system, upgraded landing gear, and pylon structural modifications. The H-1 Upgrades aircraft have increased maneuverability, speed, and payload capability. Both aircraft have fully integrated common cockpits/avionics that reduce operator workload and improve situational awareness, thus increasing safety.

Executive Summary

The AH-1Z Operational Test Readiness Review (OTRR) was successfully completed on March 24, 2010, with approval to begin Operational Evaluation (OPEVAL). The AH-1Z OPEVAL completed on June 30, 2010, and the final report was issued on September 22, 2010, with a determination that the AH-1Z is operationally effective and suitable and ready for fleet introduction.

An Acquisition Decision Memorandum (ADM) was signed by the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) on June 7, 2010, to authorize the AH-1Z Low Rate Initial Production (LRIP) VII and the contract was awarded on June 16, 2010.

On July 28, 2010, the Headquarters Marine Corps (HQMC) issued a requirement to restructure the H-1 squadron configuration from 18 AH-1Zs and 9 UH-1Ys to 15 AH-1Zs and 12 UH-1Ys. As a result, the aircraft procurement mix changed to 131 remanufactured AH-1Zs, 58 AH-1Z 'Build New', 10 remanufactured UH-1Ys, and 150 new UH-1Ys. The total aircraft procurement remains the same at 349.

A Program Deviation Report (PDR) was submitted on September 24, 2010, to report that the H-1 Upgrades program was deviating from the approved Acquisition Program Baseline (APB), dated December 22, 2008, in two areas: (1) Schedule for the UH-IY/AH-IZ Navy Support Date (NSD) and (2) Cost for the Operations and Support (O&S) estimate. Facilities limitations at Fleet Readiness Center-East (FRC-E) in Cherry Point, NC, will preclude the UH-1Y/AH-1Z from satisfying the NSD requirement of fourth quarter FY 2012. Military Construction funding has been provided in FY 2012 for a new facility to house H-1 gearbox test equipment to be completed by fourth quarter FY 2015. The O&S estimate in the Service Cost Position (SCP) exceeded the current APB threshold. The O&S increase was due to an update to reflect the change in the HQMC squadron structure from 18Z/9Y aircraft to 15Z/12Y aircraft, and changes in the overall estimating methodology and assumptions.

In support of the AH-1Z Full Rate Production (FRP) decision, a new SCP was established on October 1, 2010.

An ADM was signed by the USD(AT&L) on November 28, 2010, to approve the AH-1Z FRP, approve the updated Acquisition Strategy, and re-designate the H-1 Upgrades Program as an Acquisition Category (ACAT) 1C.
A revision to the APB was approved by the Navy Acquisition Executive on February 11, 2011, to rebaseline the costs to the new SCP, as well as to change the NSD schedule objective to September 2015.

Production of aircraft continues at Bell Helicopter with final assembly and delivery occurring in Amarillo, TX. Ninety-eight aircraft (Lots 1-7) are on contract. As of March 1, 2011, 52 aircraft (38 UH-1Ys and 14 AH-1Zs) have been delivered to the fleet. Lots 1-5 aircraft deliveries are complete, and Lot 6 deliveries are progressing on schedule.

The second Operation Enduring Freedom (OEF) UH-1Y combat deployment was completed in November 2010. The third OEF UH-1Y deployment is ongoing. Based on data as of December 2010, each detachment averaged 3,134 flight hours, with an average of 54.7 hours per month per aircraft. The deployed readiness of the UH-1Y is 85% mission capable. The UH-1Y/AH-1Z fleet has accumulated over 28,000 operational flight hours. The fourth OEF deployment will begin in summer FY 2011 with nine aircraft in Afghanistan.

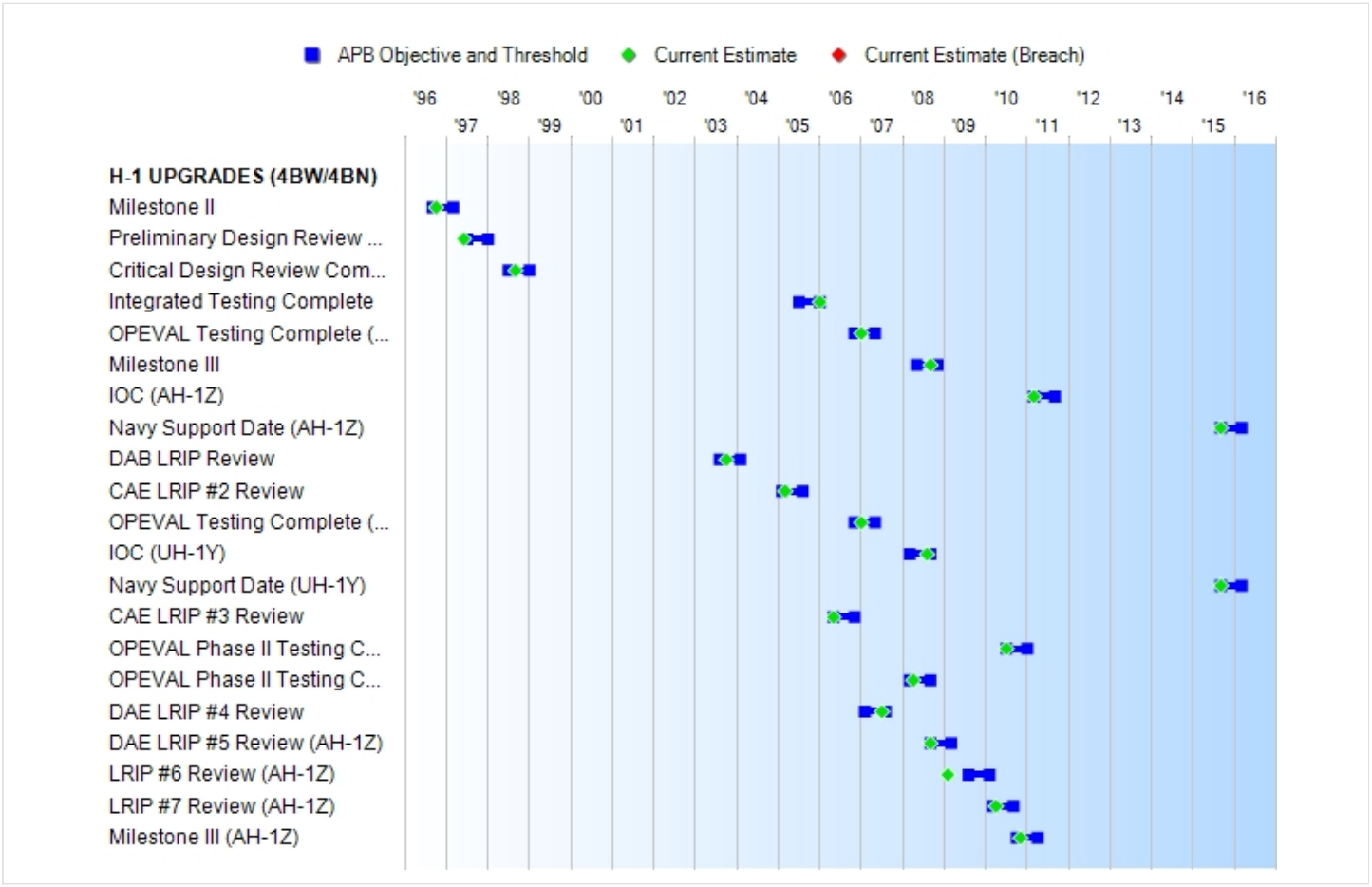
There are no significant software related issues with this program at this time.

Threshold Breaches

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

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

Schedule


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 (4BW/4BN)
Milestone II
Preliminary Design Review ...
Critical Design Review Com...
Integrated Testing Complete
OPEVAL Testing Complete (...
Milestone III
IOC (AH-1Z)
Navy Support Date (AH-1Z)
DAB LRIP Review
CAE LRIP #2 Review
OPEVAL Testing Complete (...
IOC (UH-1Y)
Navy Support Date (UH-1Y)
CAE LRIP #3 Review
OPEVAL Phase II Testing C...
OPEVAL Phase II Testing C...
DAE LRIP #4 Review
DAE LRIP #5 Review (AH-1Z)
LRIP #6 Review (AH-1Z)
LRIP #7 Review (AH-1Z)
Milestone III (AH-1Z)

Milestones	SAR Baseline Prod Est	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	
Integrated Testing Complete	JUL 2005	JUL 2005	JAN 2006	JAN 2006	
OPEVAL Testing Complete (AH-1Z)	NOV 2006	NOV 2006	MAY 2007	JAN 2007	
Milestone III	MAY 2008	MAY 2008	NOV 2008	SEP 2008	
IOC (AH-1Z)	MAR 2011	MAR 2011	SEP 2011	MAR 2011	
Navy Support Date (AH-1Z)	MAR 2012	SEP 2015	MAR 2016	SEP 2015	(Ch-1)
DAB LRIP Review	AUG 2003	AUG 2003	FEB 2004	OCT 2003	
CAE LRIP #2 Review	FEB 2005	FEB 2005	AUG 2005	MAR 2005	
OPEVAL Testing Complete (UH-1Y)	NOV 2006	NOV 2006	MAY 2007	JAN 2007	
IOC (UH-1Y)	MAR 2008	MAR 2008	SEP 2008	AUG 2008	
Navy Support Date (UH-1Y)	MAR 2012	SEP 2015	MAR 2016	SEP 2015	(Ch-1)
CAE LRIP #3 Review	MAY 2006	MAY 2006	NOV 2006	MAY 2006	
OPEVAL Phase II Testing Complete (AH-1Z)	JUL 2010	JUL 2010	JAN 2011	JUL 2010	
OPEVAL Phase II Testing Complete (UH-1Y)	MAR 2008	MAR 2008	SEP 2008	APR 2008	
DAE LRIP #4 Review	FEB 2007	FEB 2007	AUG 2007	JUL 2007	
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	
Milestone III (AH-1Z)	OCT 2010	OCT 2010	APR 2011	NOV 2010	(Ch-2)

Acronyms And Abbreviations

CAE - Component Acquisition Executive
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
IOC - Initial Operational Capability
LRIP - Low Rate Initial Production
OPEVAL - Operational Evaluation

Change Explanations

(Ch-1) The Current Estimate for the Navy Support Date (NSD) (AH-1Z and UH-1Y) changed from March 2012 to September 2015. Due to facilities limitations at Fleet Readiness Center-East (FRC-E) in Cherry Point, NC, the UH-IY/AH-IZ was not able to satisfy the original NSD threshold requirement of September 2012. This was due to the lack of a facility to house H-1 gearbox test equipment. Based on receiving $17.6M of Military Construction (MILCON) funding in FY 2012 and construction planning activities to date, the program estimate of a new NSD is fourth quarter FY 2015. This change is reflected in the new Acquisition Program Baseline (APB) dated February 11, 2011.

(Ch-2) The Current Estimate for Milestone III (AH-1Z) changed from October 2010 to November 2010 to reflect the actual signature date of the Full Rate Production (FRP) Acquisition Decision Memorandum (ADM).

Memo

Performance

Characteristics	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate	
4BW (AH-1W/AH-1Z)						
MFHBA (hrs)	35.0	35.0	24.0	49.7	49.7	(Ch-1)
MMH/FH (hrs)	3.6	3.6	4.3	2.9	2.9	(Ch-1)
Cruise Speed (kts)	165	165	135	137	137	(Ch-1)
Payload (Hot Day) (lbs)	3500 lbs	3500 lbs	2500 lbs 6 Wing Stations 4 Universal Under Wing Stations	3179	3179	
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	-.5 to +2.79	-.5 to +2.5	
Mission Radius (NM)	200 NM	200 NM	110 NM	135NM x 1	135NM 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 operations to include: 1)	The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include: 1)	The 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	The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net Centric military operations to include: 1)	The 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, authenticatio n, confidentiality , and nonrepudiati on, 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	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, authenticatio n, 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	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, authenticatio n, 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	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, authenticatio n, confidentiality , and nonrepudiati on, 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	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, authenticatio n, confidentiality , and nonrepudiati on, 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.	applicable joint and system integrated architecture views.	the applicable joint and system integrated architecture views.	applicable joint and system integrated architecture views.	applicable joint and system integrated architecture views.	
Force Protection (Seating)	Two AH-1Z pilots 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 pilots that are stroking, crashworthy, and capable of sustaining 20Gs longitudinal, 20Gs vertical, and 10 Gs laterally.	Two AH-1Z pilots that are stroking, crashworthy, and capable of sustaining 20Gs longitudinal, 20Gs vertical, and 10 Gs laterally.	
Survivability (Ballistic Tolerance/Hardening)	Airframe structure and flight critical systems shall be ballistic tolerant/hard ened against 23 mm HEI.	Airframe structure and flight critical systems shall be ballistic tolerant/hard ened against 23 mm HEI.	Airframe structure and flight critical systems shall be ballistic tolerant/hard ened against 12.7 mm API.	Airframe structure and flight critical systems shall be ballistic tolerant/hard ened against 12.7 mm API.	Airframe structure and flight critical systems shall be ballistic tolerant/hard ened against 12.7 mm API.	
4BN (UH-1N/UH-1Y)						
MFHBA (hrs)	40.2	40.2	33.1	54.6	54.6	(Ch-1)
MMH/FH (hrs)	2.9	2.9	3.9	1.6	1.6	(Ch-1)
Cruise Speed (kts)	165	165	140	152	152	(Ch-1)
Payload (Hot Day) (lbs)	4500	4500	2800	3079	3079	
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	129NM	129NM	
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	The system must fully support execution of all operational activities identified in the	The system must fully support execution of joint critical operational activities identified in the	The system must fully support execution of all operational activities identified in the	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, authenticatio n, confidentiality , and nonrepudiati on, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical	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, authenticatio n, confidentiality , and non-repudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical	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, authenticatio n, confidentiality , and non-repudiation, and issuance of an IATO by the DAA, and 5) Operationally effective information exchanges; and mission	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, authenticatio n, confidentiality , and nonrepudiati on, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical	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, authenticatio n, confidentiality , and nonrepudiati on, 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.	performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	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, 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.
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 Source:
UH-1Y Capability Production Document (CPD) and AH-1Z CPD both approved by JROCM 138-07, dated June 11, 2007.
UH-1Y Maneuverability Key Performance Parameter modified/approved by JROCM 195-08, dated October 14,

2008.

Acronyms And Abbreviations

API - Armor Piercing Incendiary
ATO - Authority to Operate
DAA - Designated Approving Authority
DISR - DoD Information Technology Standards Registry
GIG - Global Information Grid
G's - Gravitational forces
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
RM - Reference Model
TV-1 - Technical Standards Profile
Univ. - Universal

Change Explanations

(Ch-1) Changes were made to the Demonstrated Performance and Current Estimate to reflect actual performance data captured as a result of the Operational Evaluation completed in June 2010.

Memo

Demonstrated Performance values are based on performance data from the Operational Evaluation completed in June 2010.

Track To Budget

RDT&E			
APPN 1319	BA 05	PE 0604245N	(Navy)
	Project 2279	H-1 Upgrades	

Procurement			
APPN 1506	BA 01	PE 0206131M	(Navy)
	ICN 0178	4BW/4BN UH-1Y/AH-1Z	
	ICN 0605	4BW/4BN UH-1Y/AH-1Z Initial Spares	

Aircraft Procurement, Navy - Budget Activity (BA) 05 for Item Control Number (ICN) 0532, Program Element (PE) 0206131M is incorporated into the program as a subset of total Operations and Support.

MILCON			
APPN 1205		PE 02166490M	(Navy)
		H-1 Upgrades Gearbox Facility	

Cost and Funding

Cost Summary

Total Acquisition Cost and Quantity

	BY2008 $M			BY2008 $M	TY $M		
Appropriation	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Prod Est	Current APB Production Objective	Current Estimate
RDT&E	1799.2	1848.3	2033.1	1843.1	1644.1	1696.2	1690.5
Procurement	9404.2	10088.4	11097.2	10088.8	10542.7	11022.1	11010.8
Flyaway	7821.8	--	--	8477.9	8831.3	--	9311.7
Recurring	7537.2	--	--	7560.8	8537.6	--	8309.7
Non Recurring	284.6	--	--	917.1	293.7	--	1002.0
Support	1582.4	--	--	1610.9	1711.4	--	1699.1
Other Support	1252.0	--	--	1359.7	1371.0	--	1446.6
Initial Spares	330.4	--	--	251.2	340.4	--	252.5
MILCON	0.0	16.3	17.9	16.3	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	11948.2	12186.8	12735.9	12718.9

The estimate recommendation aims to provide sufficient resources to execute the program under normal conditions, encountering average levels of technical, schedule and programmatic risk and external interference. It is consistent with average resource expenditures on historical efforts of similar size, scope, and complexity and represents a 50% confidence level.

Quantity	SAR Baseline Prod Est	Current APB Production	Current Estimate
RDT&E	4	4	4
Procurement	349	349	349
Total	353	353	353

The four RDT&E aircraft include two UH-1Ys and two AH-1Zs. The 349 Procurement aircraft include 131 AH-1W helicopters remanufactured into AH-1Zs, 58 AH-1Z build new (ZBN) models, ten UH-1N helicopters remanufactured into UH-1Ys and 150 new UH-1Y models.

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2012 President's Budget / December 2010 SAR (TY$ M)

Appropriation	Prior	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	To Complete	Total
RDT&E	1388.8	60.5	72.6	28.1	44.7	47.5	48.3	0.0	1690.5
Procurement	3351.0	924.9	801.5	777.6	854.3	825.0	824.3	2652.2	11010.8
MILCON	0.0	0.0	17.6	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 2012 Total	4739.8	985.4	891.7	805.7	899.0	872.5	872.6	2652.2	12718.9
PB 2011 Total	4738.6	985.5	907.5	885.6	906.9	876.1	1079.1	1740.8	12120.1
Delta	1.2	-0.1	-15.8	-79.9	-7.9	-3.6	-206.5	911.4	598.8

Quantity	Undistributed	Prior	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	To Complete	Total
Development	4	0	0	0	0	0	0	0	0	4
Production	0	100	31	26	27	27	27	27	84	349
PB 2012 Total	4	100	31	26	27	27	27	27	84	353
PB 2011 Total	4	100	31	30	30	30	30	36	62	353
Delta	0	0	0	-4	-3	-3	-3	-9	22	0

Cost and Funding

Annual Funding By Appropriation

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

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
1996	--	--	--	--	--	--	10.9
1997	--	--	--	--	--	--	67.9
1998	--	--	--	--	--	--	81.3
1999	--	--	--	--	--	--	116.8
2000	--	--	--	--	--	--	178.6
2001	--	--	--	--	--	--	133.3
2002	--	--	--	--	--	--	167.4
2003	--	--	--	--	--	--	233.7
2004	--	--	--	--	--	--	99.1
2005	--	--	--	--	--	--	168.2
2006	--	--	--	--	--	--	58.9
2007	--	--	--	--	--	--	26.4
2008	--	--	--	--	--	--	10.6
2009	--	--	--	--	--	--	4.4
2010	--	--	--	--	--	--	31.3
2011	--	--	--	--	--	--	60.5
2012	--	--	--	--	--	--	72.6
2013	--	--	--	--	--	--	28.1
2014	--	--	--	--	--	--	44.7
2015	--	--	--	--	--	--	47.5
2016	--	--	--	--	--	--	48.3
Subtotal	**4**	**--**	**--**	**--**	**--**	**--**	**1690.5**

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

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2008 $M	Non End Item Recurring Flyaway BY 2008 $M	Non Recurring Flyaway BY 2008 $M	Total Flyaway BY 2008 $M	Total Support BY 2008 $M	Total Program BY 2008 $M
1996	--	--	--	--	--	--	13.3
1997	--	--	--	--	--	--	82.0
1998	--	--	--	--	--	--	97.4
1999	--	--	--	--	--	--	138.3
2000	--	--	--	--	--	--	208.4
2001	--	--	--	--	--	--	153.4
2002	--	--	--	--	--	--	190.7
2003	--	--	--	--	--	--	262.4
2004	--	--	--	--	--	--	108.3
2005	--	--	--	--	--	--	179.1
2006	--	--	--	--	--	--	60.8
2007	--	--	--	--	--	--	26.6
2008	--	--	--	--	--	--	10.5
2009	--	--	--	--	--	--	4.3
2010	--	--	--	--	--	--	30.3
2011	--	--	--	--	--	--	57.7
2012	--	--	--	--	--	--	68.2
2013	--	--	--	--	--	--	26.0
2014	--	--	--	--	--	--	40.6
2015	--	--	--	--	--	--	42.4
2016	--	--	--	--	--	--	42.4
Subtotal	**4**	**--**	**--**	**--**	**--**	**--**	**1843.1**

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

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
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	78.4	234.0
2006	7	150.9	--	42.2	193.1	162.0	355.1
2007	11	228.8	--	136.4	365.2	170.1	535.3
2008	15	315.4	--	25.2	340.6	154.2	494.8
2009	24	514.0	--	42.6	556.6	80.5	637.1
2010	27	655.8	--	34.8	690.6	70.6	761.2
2011	31	705.3	--	77.6	782.9	142.0	924.9
2012	26	608.9	--	47.6	656.5	145.0	801.5
2013	27	644.8	--	59.6	704.4	73.2	777.6
2014	27	662.1	--	62.3	724.4	129.9	854.3
2015	27	669.0	--	60.4	729.4	95.6	825.0
2016	27	694.5	--	69.2	763.7	60.6	824.3
2017	28	725.4	--	104.4	829.8	77.3	907.1
2018	28	726.3	--	98.6	824.9	57.0	881.9
2019	28	673.8	--	98.6	772.4	90.8	863.2
Subtotal	**349**	**8309.7**	**--**	**1002.0**	**9311.7**	**1699.1**	**11010.8**

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

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2008 $M	Non End Item Recurring Flyaway BY 2008 $M	Non Recurring Flyaway BY 2008 $M	Total Flyaway BY 2008 $M	Total Support BY 2008 $M	Total Program BY 2008 $M
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	82.0	244.7
2006	7	153.5	--	42.9	196.4	164.9	361.3
2007	11	227.6	--	135.6	363.2	169.2	532.4
2008	15	309.3	--	24.7	334.0	151.3	485.3
2009	24	498.3	--	41.3	539.6	78.0	617.6
2010	27	627.5	--	33.3	660.8	67.6	728.4
2011	31	665.0	--	73.2	738.2	133.9	872.1
2012	26	565.0	--	44.2	609.2	134.5	743.7
2013	27	588.4	--	54.4	642.8	66.8	709.6
2014	27	594.1	--	55.9	650.0	116.5	766.5
2015	27	590.2	--	53.3	643.5	84.4	727.9
2016	27	602.5	--	60.0	662.5	52.6	715.1
2017	28	618.8	--	89.1	707.9	65.9	773.8
2018	28	609.2	--	82.7	691.9	47.8	739.7
2019	28	555.7	--	81.3	637.0	74.9	711.9
Subtotal	**349**	**7560.8**	**--**	**917.1**	**8477.9**	**1610.9**	**10088.8**

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	227.6
2008	15	309.3
2009	24	498.3
2010	27	579.2
2011	31	647.9
2012	26	567.1
2013	27	588.2
2014	27	593.9
2015	27	590.1
2016	27	597.7
2017	28	618.5
2018	28	609.2
2019	28	624.6
Subtotal	**349**	**7560.8**

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

Fiscal Year	Total Program TY $M
2012	17.6
Subtotal	**17.6**

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

Fiscal Year	Total Program BY 2008 $M
2012	16.3
Subtotal	**16.3**

Low Rate Initial Production

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

Three additional AH-1Z Low Rate Initial Production (LRIP) lots were added per the December 22, 2008, Acquisition Program Baseline (APB) and Acquisition Strategy (AS). The Acquisition Decision Memorandum (ADM) dated June 7, 2010, approved LRIP 7, the last LRIP for AH-1Z. The quantity of LRIP aircraft exceeds 10% of the expected final inventory but was necessary to permit an orderly increase in the production rate and efficient production until successful completion of operational testing. The total LRIP quantity is 55 aircraft.

Foreign Military Sales

None

Nuclear Cost

None

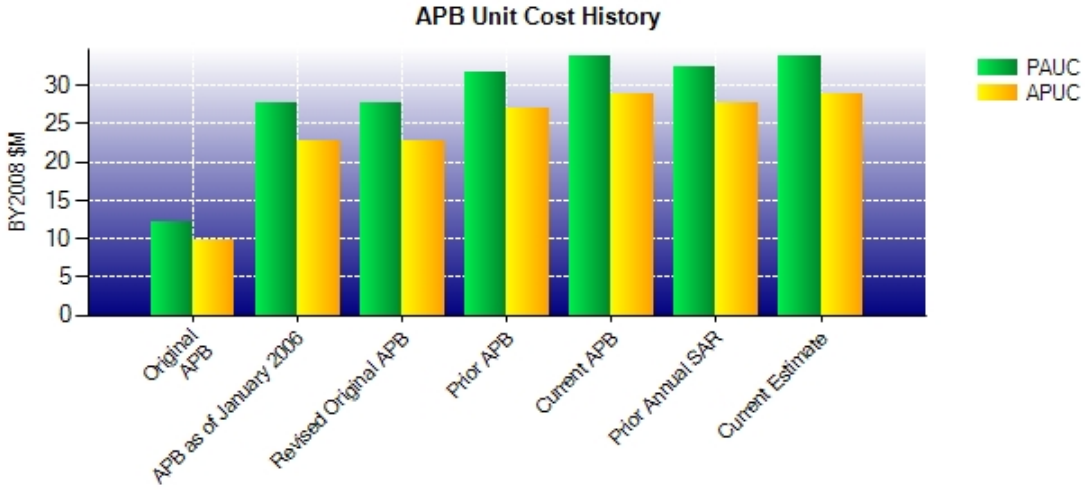
Unit Cost

Unit Cost Report

Unit Cost	BY2008 $M Current UCR Baseline (FEB 2011 APB)	BY2008 $M Current Estimate (DEC 2010 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	11953.0	11948.2	
Quantity	353	353	
Unit Cost	33.861	33.848	-0.04
Average Procurement Unit Cost (APUC)			
Cost	10088.4	10088.8	
Quantity	349	349	
Unit Cost	28.907	28.908	0.00

Unit Cost	BY2008 $M Revised Original UCR Baseline (APR 2005 APB)	BY2008 $M Current Estimate (DEC 2010 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	7852.2	11948.2	
Quantity	284	353	
Unit Cost	27.649	33.848	+22.42
Average Procurement Unit Cost (APUC)			
Cost	6352.9	10088.8	
Quantity	280	349	
Unit Cost	22.689	28.908	+27.41

Unit Cost History



		BY2008 $M		TY $M	
	Date	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 2009	32.467	27.704	34.335	30.049
Current Estimate	DEC 2010	33.848	28.908	36.031	31.550

SAR Unit Cost History

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

Initial PAUC Dev Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
12.491	-0.758	-1.056	1.703	2.351	15.712	0.000	3.514	21.466	34.524

Current SAR Baseline to Current Estimate (TY $M)

PAUC Prod Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
34.524	-0.920	0.000	-0.458	0.137	2.672	0.000	0.076	1.507	36.031

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

Initial APUC Dev Est	Changes								APUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
10.554	-0.682	-0.686	1.653	1.632	13.642	0.000	3.555	19.114	30.208

Current SAR Baseline to Current Estimate (TY $M)

APUC Prod Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
30.208	-0.917	0.000	-0.463	0.000	2.644	0.000	0.077	1.341	31.550

SAR Baseline History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	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	12718.9
Total Quantity	N/A	284	353	353
Prog. Acq. Unit Cost (PAUC)	N/A	12.491	34.524	36.031

The current estimate for Initial Operational Capability (IOC) was corrected to reflect the IOC date for the UH-1Y aircraft.

Cost Variance

Cost Variance Summary

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	1644.1	10542.7	--	12186.8
Previous Changes				
Economic	-4.5	-307.0	--	-311.5
Quantity	--	--	--	--
Schedule	--	-49.1	--	-49.1
Engineering	--	--	--	--
Estimating	-6.6	+500.2	--	+493.6
Other	--	--	--	--
Support	--	-199.7	--	-199.7
Subtotal	-11.1	-55.6	--	-66.7
Current Changes				
Economic	-0.3	-13.0	--	-13.3
Quantity	--	--	--	--
Schedule	--	-112.4	--	-112.4
Engineering	+48.3	--	--	+48.3
Estimating	+9.5	+422.7	+17.6	+449.8
Other	--	--	--	--
Support	--	+226.4	--	+226.4
Subtotal	+57.5	+523.7	+17.6	+598.8
Total Changes	+46.4	+468.1	+17.6	+532.1
CE - Cost Variance	1690.5	11010.8	17.6	12718.9
CE - Cost & Funding	1690.5	11010.8	17.6	12718.9

Summary Base Year 2008 $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	1799.2	9404.2	--	11203.4
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-7.0	+435.2	--	+428.2
Other	--	--	--	--
Support	--	-170.6	--	-170.6
Subtotal	-7.0	+264.6	--	+257.6
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	-138.9	--	-138.9
Engineering	+42.4	--	--	+42.4
Estimating	+8.5	+359.8	+16.3	+384.6
Other	--	--	--	--
Support	--	+199.1	--	+199.1
Subtotal	+50.9	+420.0	+16.3	+487.2
Total Changes	+43.9	+684.6	+16.3	+744.8
CE - Cost Variance	1843.1	10088.8	16.3	11948.2
CE - Cost & Funding	1843.1	10088.8	16.3	11948.2

Previous Estimate: December 2009

RDT&E	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	-0.3
Revised estimate due to better definition of technical efforts. (Estimating)	+8.5	+9.5
Additional year of funding in FY 2016 to cover software upgrades, extension of scope, and new requirements. (Engineering)	+42.4	+48.3
RDT&E Subtotal	+50.9	+57.5

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	-13.0
Stretch-out of procurement buy profile affecting FY 2012 through FY 2019. (Schedule)	0.0	+50.3
Additional schedule change associated with a U.S. Marine Corps directed squadron mix change, reducing the number of more expensive AH-1Zs from 226 to 189 and increasing the number of less expensive UH-1Ys from 123 to 160. (Schedule)	-138.9	-162.7
Adjustment for current and prior escalation. (Estimating)	+1.2	+1.4
Increase in estimate due to most recent contract negotiations and subsequent learning curve adjustments. (Estimating)	+358.6	+421.3
Adjustment for current and prior escalation. (Support)	+0.2	+0.1
Increase in Other Support due to changes in estimating methodology from parametric to bottoms-up and one additional year of procurement. (Support)	+195.0	+222.2
Increase in Initial Spares due to additional dollars provided by Naval Inventory Control Point (NAVICP). (Support)	+3.9	+4.1
Procurement Subtotal	+420.0	+523.7

MILCON	$M	
Current Change Explanations	**Base Year**	**Then Year**
Additional funding to develop gear box test facility. (Estimating)	+16.3	+17.6
MILCON Subtotal	+16.3	+17.6

Contracts

Appropriation: Procurement

Contract Name	**LRIP III, IV and V**
Contractor	Bell Helicopter Textron
Contractor Location	Fort Worth, TX 76053
Contract Number, Type	N00019-06-C-0086, FFP
Award Date	July 20, 2006
Definitization Date	July 20, 2006

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
137.4	N/A	7	749.4	N/A	33	749.4	749.4

Cost And Schedule Variance Explanations

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

Contract Comments

From the Initial Contract Award, the Current Contract Price has increased to $749.4M due to contract award of Lots 4 and 5 aircraft and miscellaneous contract modifications, including various Product Change Authorizations (PCAs). The Initial Contract Price was for Lot 3 airframes (7 UH-1Y) and FY 2006 Flight Training Devices. Aircraft deliveries for Lots 3, 4 and 5 are complete; therefore, this is the final report for this contract.

Appropriation: RDT&E

Contract Name	**AH-1Z BUILD NEW (ZBN) UPGRADES**
Contractor	Bell Helicopter Textron
Contractor Location	Fort Worth, TX 76053
Contract Number, Type	N00019-06-G-0001/24, CPFF
Award Date	January 07, 2008
Definitization Date	January 07, 2008

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
0.2	N/A	N/A	67.9	N/A	N/A	67.9	67.9

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2010)	-4.7	-0.9
Previous Cumulative Variances	0.0	0.0
Net Change	-4.7	-0.9

Cost And Schedule Variance Explanations

The cumulative unfavorable variances are due to the Non-Recurring Engineering estimate for 2D to 3D modeling drawing conversion being underestimated in complexity resulting in a cost overrun. Bell required additional funding to complete the effort. This effort occurred in parallel with a follow-on planned Phase 2 effort; therefore, there was no overall schedule slippage projected for the first AH-1Z Build New aircraft delivery. The cost overrun has been funded and the contractor is performing within the additional cost.

Contract Comments

This Contract/Delivery Order was awarded in January 2008 for procurement of AH-1Z Government and Contractor Furnished Equipment (GFE/CFE) at an inital cost of $0.2M. AH-1Z Build New (ZBN) Phase1 procurement was added in November 2008 to increase contract cost to $21M. In September 2009, a modification for ZBN Phase 2 was awarded to increase the cost to $62.1M. In February 2010, an additional modification was awarded to cover the cost overrun for a total contract cost of $67.9M.

Appropriation: Procurement

Contract Name	**Lot 6**
Contractor	Bell Helicopter Textron
Contractor Location	Fort Worth, TX 76053
Contract Number, Type	N00019-09-C-0023, FFP
Award Date	March 28, 2009
Definitization Date	March 28, 2009

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
298.0	N/A	18	381.1	N/A	22	381.1	381.1

Cost And Schedule Variance Explanations

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

Contract Comments

Current Contract Price has changed from the Original Award of $298M to $381.1M due to the exercise of an option to procure an additional four UH-1Ys and miscellaneous contract modifications. The Initial Contract was awarded for Lot 6 aircraft, including 11 Full Rate Production (FRP) UH-1Ys, five Low Rate Initial Production (LRIP) AH-1Zs and Rate Tooling.

Appropriation: Procurement

Contract Name	**Lot 7**
Contractor	Bell Helicopter Textron
Contractor Location	Fort Worth, TX 76053
Contract Number, Type	N00019-10-C-0035, FFP
Award Date	June 16, 2010
Definitization Date	June 16, 2010

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
546.0	N/A	29	594.9	N/A	29	594.9	594.9

Cost And Schedule Variance Explanations

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

Contract Comments

The Initial Contract was awarded for $546.0M for Lot 7 aircraft, including 18 Full Rate Production (FRP) UH-1Ys, nine Low Rate Initial Production (LRIP) Remanufactured AH-1Zs, and two AH-1Z 'Build New' aircraft. The current contract value of $594.9M reflects changes due to contract modifications for FY 2011 Acquisition Logisitics Support (ALS), FY 2011 Systems Engineeringand Program Management, Aircraft Defect Evaluation Disposition (ADED) Rework of Government Furnished Equipment (GFE), and Engineering Change Proposals (ECPs).

This is the first time this contract is being reported.

Appropriation: Procurement

Contract Name	**Lot 8 Advance Acquisition Contract**
Contractor	Bell Helicopter Textron
Contractor Location	Fort Worth, TX 76053
Contract Number, Type	N00019-10-C-0015, FFP
Award Date	February 05, 2010
Definitization Date	February 05, 2010

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
50.3	N/A	N/A	50.3	N/A	N/A	50.3	50.3

Cost And Schedule Variance Explanations

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

Contract Comments

The Initial Contract was awarded for $50.3M for Lot 8 long-lead items.

This is the first time this contract is being reported.

Deliveries and Expenditures

Deliveries To Date	Plan To Date	Actual To Date	Total Quantity	Percent Delivered
Development	4	4	4	100.00%
Production	52	52	349	14.90%
Total Program Quantities Delivered	56	56	353	15.86%

Expenditures and Appropriations (TY $M)			
Total Acquisition Cost	12718.9	Years Appropriated	16
Expenditures To Date	3283.1	Percent Years Appropriated	66.67%
Percent Expended	25.81%	Appropriated to Date	5725.2
Total Funding Years	24	Percent Appropriated	45.01%

All Engineering and Manufacturing Development (EMD) aircraft and Lot 1-5 aircraft have been delivered. Delivery information is current as of March 1, 2011.

Operating and Support Cost

Assumptions And Ground Rules

All costs were estimated in constant FY 2008 dollars. The Operating and Support (O&S) estimate source is the Milestone III AH-1Z Full Rate Production (FRP) Service Cost Position of October 2010.

The H-1 Upgrades program's operational aircraft quantities support Marine Corps 202K force strength with squadrons composed of 15 AH-1Z and 12 UH-1Y aircraft. The H-1 Upgrades program expects to be operating two more squadrons and 52 more aircraft than the antecedent H-1 system.

The Life Cycle Estimate includes a phase in period, 30 year operation with an annual usage of 222 flight hours per aircraft, and a phase out period, accumulating 7,999 operating aircraft years.

H-1 Procurement Profile: 189 AH-1Z, 160 UH-1Y. H-1 Primary Aircraft Authorization (PAA) Profile: 169 AH-1Z, 143 UH-1Y.

Each aircraft has a designed fatigue life of 10,000 hours per aircraft. Attrition rates are 1% for the AH-1Z and UH-1Y. Pipeline rates are 10% for the AH-1Z and UH-1Y.

O&S cost estimates are based on the organic three-levels of maintenance with chargeable manning (fleet squadron) estimated at 100%.

AH-1W and UH-1N are the antecedent systems used in a blended analysis to compare to H-1 Upgrades. Antecedent aircraft have historically flown 21.7 flight hours per month and 260 flight hours annually.

NOTE: The majority of O&S cost growth from the previous estimate can be attributed to the extension of the life cycle to include an additional nine year phase-out period and a change in methodology to include 100% of chargeable manpower vice 90%.

Costs BY2008 $K		
Cost Element	**H-1 UPGRADES (4BW/4BN) Average Annual Cost Per Aircraft**	**UH-1N/AH-1W Average Annual Cost Per Aircraft**
Unit-Level Manpower	1269	945
Unit Operations	201	221
Maintenance	1951	1627
Sustaining Support	127	122
Continuing System Improvements	174	332
Indirect Support	441	265
Other	0	0
Total Unitized Cost (Base Year 2008 $)	4163	3512

Total O&S Costs $M	H-1 UPGRADES (4BW/4BN)	UH-1N/AH-1W
Base Year	33302.0	--
Then Year	53722.0	--