Selected Acquisition Report (SAR)

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

H-1 UPGRADES (4BW/4BN)

As of December 31, 2011

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Program Information	3
Responsible Office	3
References	3
Mission and Description	3
Executive Summary	4
Threshold Breaches	5
Schedule	6
Performance	8
Track To Budget	14
Cost and Funding	15
Low Rate Initial Production	23
Nuclear Cost	23
Foreign Military Sales	23
Unit Cost	24
Cost Variance	27
Contracts	30
Deliveries and Expenditures	35
Operating and Support Cost	36

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 Anti-Submarine Warfare (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 (NAE) 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 Initial Operational Capability (IOC) was declared by Headquarters Marine Corps (HQMC) on February 24, 2011, with six aircraft ready to deploy.

In December 2011, to address an attack helicopter shortfall, the United States Marine Corps (USMC) decided to pursue an all AH-1Z Build New (ZBN) procurement strategy and leave AH-1W airframes in inventory rather than removing them to begin the remanufacture process. The transition to an all ZBN airframe strategy is planned to begin with Lot 10 (FY 2013) as reflected in the current USMC program of record. The previous mix of 131 remanufactured AH-1Z and 58 ZBN aircraft has been revised to delivery of 37 remanufactured AH-1Z and 152 ZBN aircraft, at no increase to cost. The total aircraft procurement numbers remain the same at 160 UH-1Ys and 189 AH-1Zs for a total of 349 aircraft.

Both the UH-1Y and AH-1Z continue to meet all Key Performance Parameters (KPPs). The fourth Operation Enduring Freedom (OEF) UH-1Y deployment (nine aircraft) is ongoing and aircraft continue to meet required readiness goals. This deployment marks two years in OEF with the UH-1Y flying nearly 11,500 hours in support of combat operations. The first all Upgrades (UH-1Y/AH-1Z) Marine Expeditionary Unit (MEU) departed on November 15, 2011, with the USS Makin Island Amphibious Ready Group. The aircraft continue to fly three times the normal Continental United States (CONUS)-based utilization rate in OEF and increased sortie rates are expected in support of the 11th MEU.

Production of aircraft continues at Bell Helicopter with final assembly and delivery occurring in Amarillo, TX. There are 131 aircraft (Lots 1-8) on contract, which includes 89 UH-1Y, 34 AH-1Z remanufactured, and eight ZBN aircraft. As of January 31, 2012, 75 production aircraft (54 UH-1Y and 21 AH-1Z) have been delivered to the fleet. All deliveries since June 2008 have been ahead of the contracted schedule. Lot 6 deliveries are continuing and Lot 7 deliveries began at the end of August 2011.

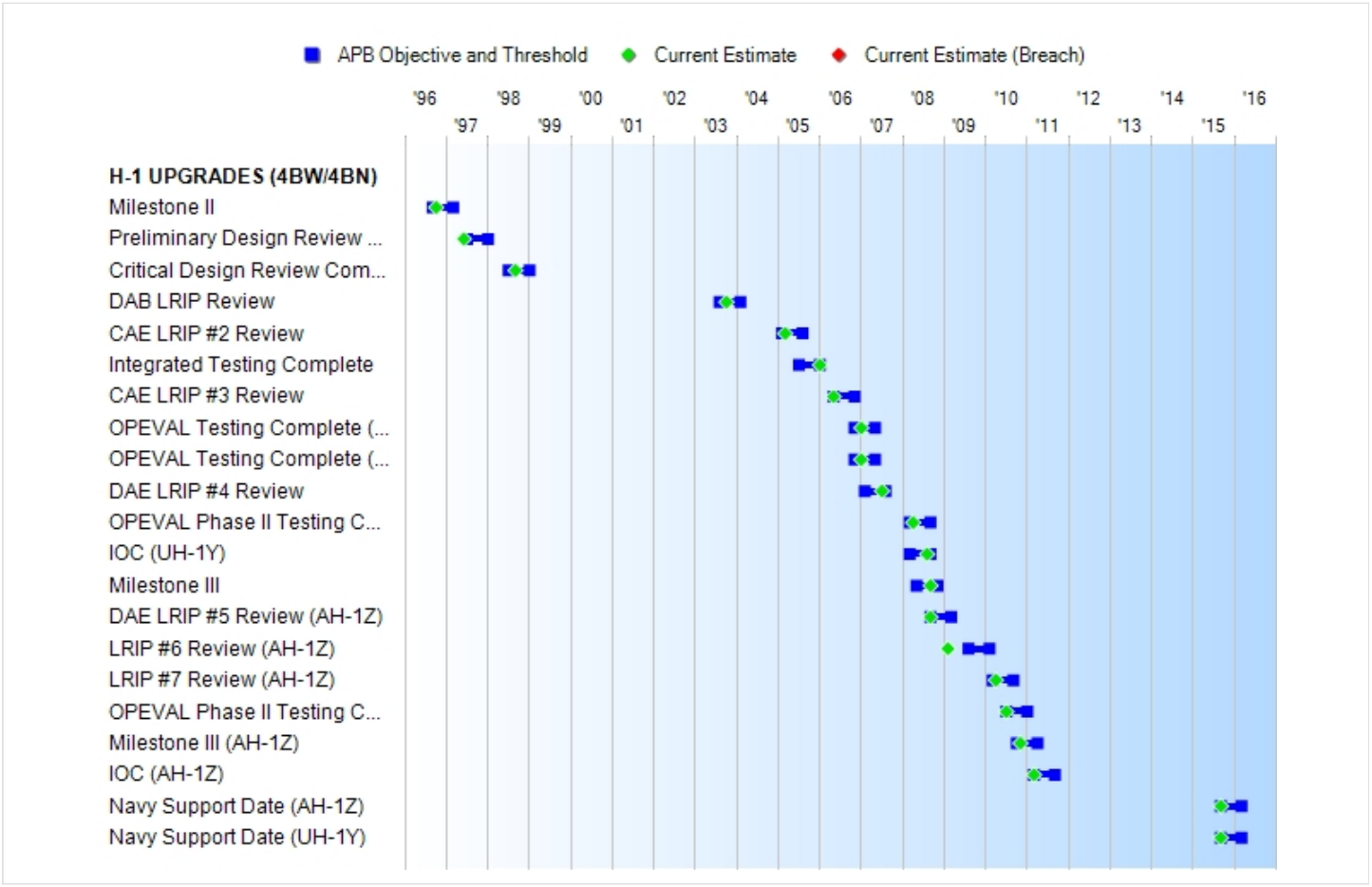
There are no significant software-related issues with this program at this time.

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...
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 C...
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 C...
Milestone III (AH-1Z)
IOC (AH-1Z)
Navy Support Date (AH-1Z)
Navy Support Date (UH-1Y)

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
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	MAR 2011
Navy Support Date (AH-1Z)	MAR 2012	SEP 2015	MAR 2016	SEP 2015
Navy Support Date (UH-1Y)	MAR 2012	SEP 2015	MAR 2016	SEP 2015

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

None

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
MMH/FH (hrs)	3.6	3.6	4.3	2.9	2.9
Cruise Speed (kts)	165	165	135	137	137
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 +2.5	-.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, authenticat-ion, confidential-ity, 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	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, confidential-ity, 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, authenticat-ion, confidential-ity, 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, authenticat-ion, confidential-ity, 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	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, confidential-ity, 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.	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
MMH/FH (hrs)	2.9	2.9	3.9	1.6	1.6
Cruise Speed (kts)	165	165	140	152	152
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, authenticat-ion, confidential-ity, 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 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, authenticat-ion, confidential-ity, 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 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, confidential-ity, 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.	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/hard-ened against 12.7 mm API.	Airframe structure and flight critical systems shall be ballistic tolerant/hard-ened against 12.7 mm API.

Requirements Source:
UH-1Y Capability Production Document (CPD) and AH-1Z CPD both approved by Joint Requirements Oversight Council Memo (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

None

Memo

Demonstrated Performance values are based on performance data from the Operational Evaluation (OPEVAL) 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	BA 01	PE 02166490M	(Navy)
	Project 991	H-1 Y/Z Gearbox Repair & Test 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	1870.9	1644.1	1696.2	1729.8
Procurement	9404.2	10088.4	11097.2	10041.6	10542.7	11022.1	11097.9
Flyaway	7821.8	--	--	8366.5	8831.3	--	9304.3
Recurring	7537.2	--	--	7393.3	8537.6	--	8222.8
Non Recurring	284.6	--	--	973.2	293.7	--	1081.5
Support	1582.4	--	--	1675.1	1711.4	--	1793.6
Other Support	1252.0	--	--	1431.7	1371.0	--	1548.5
Initial Spares	330.4	--	--	243.4	340.4	--	245.1
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	11928.5	12186.8	12735.9	12845.3

Confidence Level For the Current APB Cost 50% - 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 Research, Development, Test, and Evaluation (RDT&E) aircraft include two UH-1Ys and two AH-1Zs. The 349 Procurement aircraft include 37 AH-1W helicopters remanufactured into AH-1Zs, 152 AH-1Z build new (ZBN) models, 10 UH-1N helicopters remanufactured into UH-1Ys, and 150 new UH-1Y models.

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2013 President's Budget / December 2011 SAR (TY$ M)

Appropriation	Prior	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	To Complete	Total
RDT&E	1441.0	67.6	31.1	47.2	46.9	47.6	48.4	0.0	1729.8
Procurement	4250.0	737.1	824.1	844.9	842.8	828.4	975.2	1795.4	11097.9
MILCON	0.0	17.6	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 2013 Total	5691.0	822.3	855.2	892.1	889.7	876.0	1023.6	1795.4	12845.3
PB 2012 Total	5725.2	891.7	805.7	899.0	872.5	872.6	907.1	1745.1	12718.9
Delta	-34.2	-69.4	49.5	-6.9	17.2	3.4	116.5	50.3	126.4

Quantity	Undistributed	Prior	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	To Complete	Total
Development	4	0	0	0	0	0	0	0	0	4
Production	0	131	25	28	26	27	26	31	55	349
PB 2013 Total	4	131	25	28	26	27	26	31	55	353
PB 2012 Total	4	131	26	27	27	27	27	28	56	353
Delta	0	0	-1	1	-1	0	-1	3	-1	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	--	--	--	--	--	--	174.5
2001	--	--	--	--	--	--	133.3
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	--	--	--	--	--	--	58.6
2012	--	--	--	--	--	--	67.6
2013	--	--	--	--	--	--	31.1
2014	--	--	--	--	--	--	47.2
2015	--	--	--	--	--	--	46.9
2016	--	--	--	--	--	--	47.6
2017	--	--	--	--	--	--	48.4
Subtotal	**4**	**--**	**--**	**--**	**--**	**--**	**1729.8**

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	--	--	--	--	--	--	203.6
2001	--	--	--	--	--	--	153.4
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	--	--	--	--	--	--	55.3
2012	--	--	--	--	--	--	62.7
2013	--	--	--	--	--	--	28.4
2014	--	--	--	--	--	--	42.4
2015	--	--	--	--	--	--	41.3
2016	--	--	--	--	--	--	41.2
2017	--	--	--	--	--	--	41.2
Subtotal	**4**	**--**	**--**	**--**	**--**	**--**	**1870.9**

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	154.3	494.9
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	694.3	--	77.6	771.9	127.0	898.9
2012	25	576.3	--	46.2	622.5	114.6	737.1
2013	28	664.9	--	67.0	731.9	92.2	824.1
2014	26	633.6	--	60.8	694.4	150.5	844.9
2015	27	662.4	--	63.0	725.4	117.4	842.8
2016	26	674.4	--	72.9	747.3	81.1	828.4
2017	31	769.5	--	131.0	900.5	74.7	975.2
2018	28	709.2	--	118.7	827.9	85.4	913.3
2019	27	638.7	--	120.6	759.3	122.8	882.1
Subtotal	**349**	**8222.8**	**--**	**1081.5**	**9304.3**	**1793.6**	**11097.9**

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	81.9	244.6
2006	7	153.5	--	42.9	196.4	164.8	361.2
2007	11	227.5	--	135.5	363.0	169.1	532.1
2008	15	308.9	--	24.7	333.6	151.1	484.7
2009	24	496.3	--	41.1	537.4	77.8	615.2
2010	27	621.6	--	33.0	654.6	67.1	721.7
2011	31	646.5	--	72.3	718.8	118.3	837.1
2012	25	527.6	--	42.3	569.9	104.9	674.8
2013	28	598.5	--	60.3	658.8	83.0	741.8
2014	26	560.4	--	53.8	614.2	133.0	747.2
2015	27	575.5	--	54.7	630.2	102.0	732.2
2016	26	575.5	--	62.2	637.7	69.3	707.0
2017	31	645.1	--	109.8	754.9	62.6	817.5
2018	28	584.0	--	97.8	681.8	70.3	752.1
2019	27	516.7	--	97.6	614.3	99.3	713.6
Subtotal	**349**	**7393.3**	**--**	**973.2**	**8366.5**	**1675.1**	**10041.6**

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	308.9
2009	24	496.4
2010	27	573.9
2011	31	640.1
2012	25	529.8
2013	28	587.7
2014	26	560.3
2015	27	577.7
2016	26	559.4
2017	31	654.2
2018	28	585.0
2019	27	583.2
Subtotal	**349**	**7393.3**

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	16.0
Subtotal	**16.0**

Low Rate Initial Production

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

The Low Rate Initial Production (LRIP) quantity exceeds 10% of the expected final total production quantity, but was necessary to permit an orderly increase in the production rate and efficient production until successful completion of operational testing.

Foreign Military Sales

None

Nuclear Cost

None

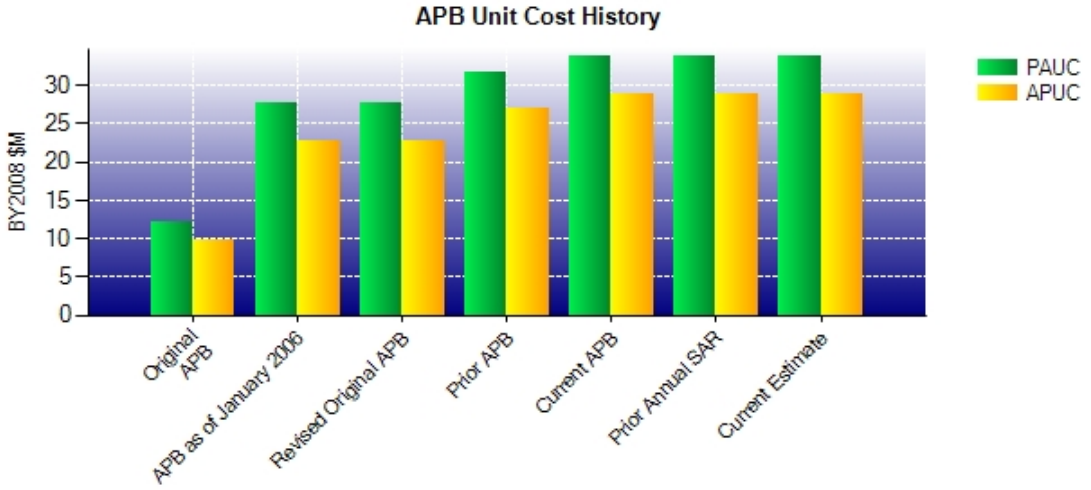
Unit Cost

Unit Cost Report

Unit Cost	BY2008 $M Current UCR Baseline (FEB 2011 APB)	BY2008 $M Current Estimate (DEC 2011 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	11953.0	11928.5	
Quantity	353	353	
Unit Cost	33.861	33.792	-0.20
Average Procurement Unit Cost (APUC)			
Cost	10088.4	10041.6	
Quantity	349	349	
Unit Cost	28.907	28.772	-0.47

Unit Cost	BY2008 $M Revised Original UCR Baseline (APR 2005 APB)	BY2008 $M Current Estimate (DEC 2011 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	7852.2	11928.5	
Quantity	284	353	
Unit Cost	27.649	33.792	+22.22
Average Procurement Unit Cost (APUC)			
Cost	6352.9	10041.6	
Quantity	280	349	
Unit Cost	22.689	28.772	+26.81

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 2010	33.848	28.908	36.031	31.550
Current Estimate	DEC 2011	33.792	28.772	36.389	31.799

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	-0.078	-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 Prod Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
34.524	-0.534	0.000	-0.454	0.274	2.278	0.000	0.301	1.865	36.389

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	-0.003	-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 Prod Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
30.208	-0.539	0.000	-0.459	0.000	2.284	0.000	0.305	1.591	31.799

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	12845.3
Total Quantity	N/A	284	353	353
Prog. Acq. Unit Cost (PAUC)	N/A	12.491	34.524	36.389

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	-4.8	-320.0	--	-324.8
Quantity	--	--	--	--
Schedule	--	-161.5	--	-161.5
Engineering	+48.3	--	--	+48.3
Estimating	+2.9	+922.9	+17.6	+943.4
Other	--	--	--	--
Support	--	+26.7	--	+26.7
Subtotal	+46.4	+468.1	+17.6	+532.1
Current Changes				
Economic	+4.0	+132.0	+0.3	+136.3
Quantity	--	--	--	--
Schedule	--	+1.3	--	+1.3
Engineering	+48.4	--	--	+48.4
Estimating	-13.1	-125.9	-0.3	-139.3
Other	--	--	--	--
Support	--	+79.7	--	+79.7
Subtotal	+39.3	+87.1	--	+126.4
Total Changes	+85.7	+555.2	+17.6	+658.5
CE - Cost Variance	1729.8	11097.9	17.6	12845.3
CE - Cost & Funding	1729.8	11097.9	17.6	12845.3

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	--	-138.9	--	-138.9
Engineering	+42.4	--	--	+42.4
Estimating	+1.5	+795.0	+16.3	+812.8
Other	--	--	--	--
Support	--	+28.5	--	+28.5
Subtotal	+43.9	+684.6	+16.3	+744.8
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	+41.2	--	--	+41.2
Estimating	-13.4	-111.4	-0.3	-125.1
Other	--	--	--	--
Support	--	+64.2	--	+64.2
Subtotal	+27.8	-47.2	-0.3	-19.7
Total Changes	+71.7	+637.4	+16.0	+725.1
CE - Cost Variance	1870.9	10041.6	16.0	11928.5
CE - Cost & Funding	1870.9	10041.6	16.0	11928.5

Previous Estimate: December 2010

RDT&E	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+4.0
Increase for software upgrades and additional requirements in FY 2017. (Engineering)	+41.2	+48.4
Adjustment for current and prior escalation. (Estimating)	-1.7	-1.8
Decrease in estimate to reflect actuals. (Estimating)	-11.7	-11.3
RDT&E Subtotal	+27.8	+39.3

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+132.0
Stretch-out of procurement buy profile from FY 2012 - FY 2019. (Schedule)	0.0	+1.3
Adjustment for current and prior escalation. (Estimating)	-26.3	-28.1
Decrease to reflect updated procurement strategy to exclusively procure AH-1Z Build New (ZBN) aircraft beginning in FY 2013. (Estimating) (QR)	-85.1	-97.8
Adjustment for current and prior escalation. (Support)	-4.8	-5.2
Increase in Other Support for the addition of five simulators (one per year) between FY 2013 and FY 2017. (Support)	+76.2	+92.3
Decrease in Initial Spares due to revised cost estimate. (Support)	-7.2	-7.4
Procurement Subtotal	-47.2	+87.1

(QR) Quantity Related

MILCON	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+0.3
Adjustment for current and prior escalation. (Estimating)	-0.3	-0.3
MILCON Subtotal	-0.3	0.0

Contracts

Appropriation: RDT&E

Contract Name	**AH-1Z BUILD NEW (ZBN) UPGRADES**
Contractor	Bell Helicopter Textron
Contractor Location	600 Hurst Blvd 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	-4.8	-9.0
Previous Cumulative Variances	-4.7	-0.9
Net Change	-0.1	-8.1

Cost And Schedule Variance Explanations

The unfavorable net change in the cost variance is due to planned supplier costs which have not yet been paid due to late delivery of the cabins to Bell from the supplier.

The unfavorable net change in the schedule variance is due to the cabin delivery schedule being approximately six months late from the supplier. Bell is reviewing options, including adjustments to the production line, to mitigate the impacts to the final aircraft delivery schedule.

Contract Comments

The difference between the initial contract price target and the current contract price target is due to contract modifications to include AH-1Z Build New (ZBN) Phase 1 and Phase 2 Non-Recurring Engineering, 401C Engine Qualification, and additional funding to cover cost overruns associated with underestimation of effort on drawing conversions.

Appropriation: Procurement	
Contract Name	**Lot 6**
Contractor	Bell Helicopter Textron
Contractor Location	600 Hurst Blvd 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	383.1	N/A	22	383.1	383.1

Cost And Schedule Variance Explanations

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

Contract Comments

The difference between the initial contract price target and the current contract price target is due to the exercise of an option to procure an additional four UH-1Ys and miscellaneous contract modifications and Engineering Change Proposals (ECPs).

Appropriation: Procurement

Contract Name	**Lot 7**
Contractor	Bell Helicopter Textron
Contractor Location	600 Hurst Blvd Fort Worth, TX 76053
Contract Number, Type	N00019-10-C-0035, FFP/CPFF
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	620.1	N/A	29	620.1	620.1

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date	-0.2	-2.2
Previous Cumulative Variances	--	--
Net Change	-0.2	-2.2

Cost And Schedule Variance Explanations

The unfavorable cumulative cost variance is due to higher material costs than planned and additional units required for casting material.

The unfavorable cumulative schedule variance is due to late material for castings and forgings.

Contract Comments

The difference between the initial contract price target and the current contract price target is due to contract modifications for FY 2011/2012 Acquisition Logistics Support (ALS), FY 2011 Systems Engineering and Program Management, Aircraft Defect Evaluation Disposition (ADED) Rework of Government Furnished Equipment (GFE), and Engineering Change Proposals (ECPs).

Only one Contract Line Item Number (CLIN) on this contract, which covers the AH-1Z Build New aircraft, is cost-type and requires Earned Value Management reporting.

Appropriation: Procurement

Contract Name	**Lot 8**
Contractor	Bell Helicopter Textron
Contractor Location	600 Hurst Blvd Fort Worth, TX 76053
Contract Number, Type	N00019-10-C-0015, FFP
Award Date	February 05, 2010
Definitization Date	July 25, 2011

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	598.2	N/A	32	598.2	598.2

Cost And Schedule Variance Explanations

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

Contract Comments

The difference between the initial contract price target and the current contract price target is due to final definitization of the Lot 8 production contract, to include procurement of 18 UH-1Y and 14 AH-1Z aircraft.

Appropriation: Procurement

Contract Name	**Lot 9**
Contractor	Bell Helicopter Textron
Contractor Location	600 Hurst Blvd Fort Worth, TX 76053
Contract Number, Type	N00019-11-C-0023, FFP
Award Date	March 14, 2011
Definitization Date	

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
56.3	N/A	N/A	56.3	N/A	N/A	56.3	56.3

Cost And Schedule Variance Explanations

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

Contract Comments

This is the undefinitized Lot 9 production contract awarded with an initial not to exceed price of $56.3M for Advance Acquisition of long lead items. Definitization, to include 25 production aircraft, is planned to be completed by May 2012.

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	75	75	349	21.49%
Total Program Quantities Delivered	79	79	353	22.38%

Expenditures and Appropriations (TY $M)			
Total Acquisition Cost	12845.3	Years Appropriated	17
Expenditures To Date	4037.5	Percent Years Appropriated	70.83%
Percent Expended	31.43%	Appropriated to Date	6513.3
Total Funding Years	24	Percent Appropriated	50.71%

All Lot 1-5 aircraft have been delivered. Delivery and expenditure information is current as of January 31, 2012.

Operating and Support Cost

Assumptions And Ground Rules

All costs were estimated in base year 2008 dollars. The Operating and Support (O&S) estimate source is the Milestone III AH-1Z Full Rate Production (FRP) Estimate of 2010 updated for programmatic changes.

Source: NAVAIR 4.2 Cost Department; Operating & Sustainment Division.

The H-1 Upgrades program's operational aircraft quantities support the Marine Corps with squadrons comprised of 15 AH-1Z and 12 UH-1Y aircraft.

The life cycle includes a phase-in period, 30-year operation with an annual usage of 222 flight hours per aircraft, and a phase-out period, accumulating 7,975 operating aircraft years.

H-1 Procurement Profile: 189 AH-1Z, 160 UH-1Y. H-1 Primary Authorized Aircraft (PAA) Profile: 156 AH-1Z, 132 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%.

The majority of growth between SAR 2010 and SAR 2011 was due to the maturity of the Aviation Depot Level Repairable (AVDLR) pricing as the platforms have moved through the Material Support Date (MSD) (3.29% increase of the total 3.64%). There were minimal changes in life cycle hours and PAA despite a squadron reduction through Aircraft Program Data File (APDF) 108. The total aircraft inventory did not change. With squadron manpower directly related to PAA, there was little change in personnel costs. There was no change to the 30-year aircraft operational period.

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.

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	1405	945
Unit Operations	178	221
Maintenance	2009	1627
Sustaining Support	131	122
Continuing System Improvements	174	332
Indirect Support	431	265
Other	0	0
Total Unitized Cost (Base Year 2008 $)	4328	3512

Total O&S Costs $M	H-1 UPGRADES (4BW/4BN)	UH-1N/AH-1W
Base Year	34515.0	--
Then Year	55012.0	--

As defined by Cost Assessment and Program Evaluation (CAPE), Operating and Support (O&S) Cost-Estimating Guide of October 2007, disposal costs are not part of O&S. They are not currently estimated for this program