Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-278

CH-47F Improved Cargo Helicopter (CH-47F)

As of December 31, 2012

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Program Information

Program Name

CH-47F Improved Cargo Helicopter (CH-47F)

DoD Component

Army

Responsible Office

Responsible Office

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Date Assigned August 3, 2012

References

SAR Baseline (Production Estimate)

Army Acquisition Executive (AAE) Approved Acquisition Program Baseline (APB) dated November 22, 2004

Approved APB

Army Acquisition Executive (AAE) Approved Acquisition Program Baseline (APB) dated April 22, 2010

Mission and Description

The CH-47F supports the Army's requirement to be strategically responsive across the full spectrum of operations. It will provide continued support, coverage, and sustainment of Maneuver, Fire Support, Air Defense, and Survivability mission areas. Its mission is transportation of ground forces, class III/class V supplies, and other battle critical cargo in support of all future contingencies. The CH-47F enables the Army to support the rapid response capability necessary for forcible and early entry contingency missions, as well as tactical and operational nonlinear, noncontiguous, simultaneous, or sequential operations, which will be characteristic of future operations.

The CH-47F is a future force system that supports the Army Vision. The CH-47F is a twin-turbine, tandem-rotor, heavy-lift transport helicopter with a useful load of up to 25,000 pounds. The CH-47F's lift capability is invaluable as the Army transforms from a heavy-division dominated force to a more deployable medium weight force focused toward 21st Century Army requirements. The CH-47F, with its upgraded engines, the Common Avionics Architecture System (CAAS) with advanced Avionics, monolithic machined frame components and airframe modifications, will reduce operating costs and continue to be a national asset providing peacetime disaster relief and wartime service to this country for another 20 years.

The CH-47F program fills the Army's Aviation Transformation Chinook requirement for upgraded aircraft and is comprised of both remanufactured and new aircraft. The total remanufactured aircraft will consist of CH-47Fs and MH-47Gs. The MH-47G configuration replaces the current MH-47E/Ds for the special operations. The CH-47F program installs a new digital cockpit, incorporates all new airframe components, and modifies the aircraft to reduce vibration. The CAAS digital cockpit will provide future growth potential. It includes a digital data bus that permits installation of enhanced communications and navigation equipment for improved situational awareness, mission performance, and survivability. New airframe structural components and modifications will reduce harmful vibrations, improving Operations and Support (O&S) efficiency and crew endurance. Other airframe modifications reduce the time required for aircraft tear down and build-up during C-5/C-17 deployment by 60 percent. These modifications significantly enhance the CH-47F's strategic deployment capability.

Executive Summary

The program is in full rate production and remains on schedule with 308 aircraft on contract (203 New Build and 105 ReNew). A total of 290 aircraft have been delivered as of March 21, 2013: 231 CH47Fs and 59 MH-47Gs.

Negotiations for the second planned Multiyear contract completed on December 10, 2012. The Cost Assessment and Program Evaluation Office (CAPE) completed an independent Multiyear II cost savings analysis, and the acting Under Secretary of Defense for Acquisition, Technology, and Logistics certified this multiyear contract on March 1, 2012. The projected award date is May 15, 2013.

CH-47F Product Manager's Office (PMO) is tasked by Department of the Army to continue CH-47F training of Active Component, National Guard and Reserve Component Combat Aviation Brigades (CAB) via New Equipment Training (NET) through FY 2015. NET Team #1 completed NET of the 3rd Infantry Division (ID) CAB (12th Unit Equipped), Savannah, GA and began training 1ID CAB (14th Unit Equipped) on October 15, 2012. 1ID NET Iteration #1 of three completed on December 11, 2012 and NET Iteration #2 of three completed on March 5, 2013; 1ID will complete NET on April 29, 2013. NET Team #2 completed training of the 16th CAB (13th Unit Equipped), Fairbanks, Alaska, on October 26, 2012 and completed Iowa/Minnesota National Guard (15th Unit Equipped) NET on March 7, 2013. NET Team #2 began training the Nebraska/Colorado National Guard (16th Unit Equipped) on March 26, 2013.

Twelve CH-47F aircraft were fielded to the 16th CAB in Ft. Wainwright for NET in an unprecedented ferry divided into three sorties that spanned 3,400 nautical miles. The new CH-47F aircraft were flown in three sorties lasting two weeks each staggered over March through May 2012. The ferry started in Savannah, GA and ended in Fairbanks, AK and was the largest transport over such a vast terrain in the 50-year history of the CH-47.

Rockwell Collins Field Service Representatives and Boeing Logistics Services Representatives continue to support units in Operation Enduring Freedom (OEF).

The fifteenth, sixteenth, seventeenth and eighteenth Transportable Flight Proficiency Simulators (TFPS) were produced and delivered by Yulista Aviation Services in Huntsville, AL. This completes the PMO requirement to produce 18 TFPS units.

The CH-47F PMO is installing InfraRed Suppression System (IRSS) and other Army-directed modifications at the Millville, New Jersey modification center.

The funding and quantity profile contained in this SAR assumes an award of a follow-on Multiyear contract beginning in Fiscal Year (FY) 2013.

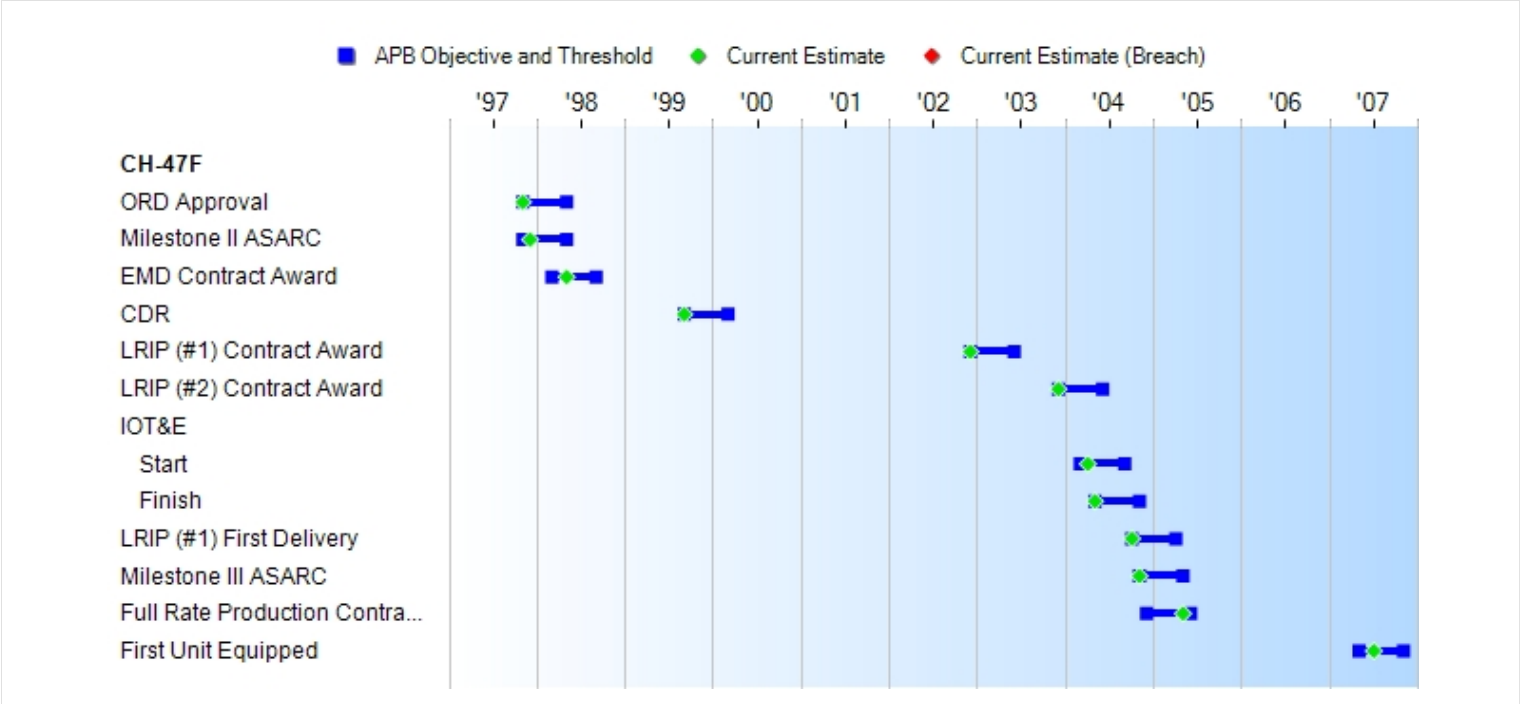
There are no significant software-related issues with this program at this time.

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



Milestones	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate
ORD Approval	NOV 1997	NOV 1997	MAY 1998	NOV 1997
Milestone II ASARC	NOV 1997	NOV 1997	MAY 1998	DEC 1997
EMD Contract Award	MAR 1998	MAR 1998	SEP 1998	MAY 1998
CDR	SEP 1999	SEP 1999	MAR 2000	SEP 1999
LRIP (#1) Contract Award	DEC 2002	DEC 2002	JUN 2003	DEC 2002
LRIP (#2) Contract Award	DEC 2003	DEC 2003	JUN 2004	DEC 2003
IOT&E				
Start	MAR 2004	MAR 2004	SEP 2004	APR 2004
Finish	MAY 2004	MAY 2004	NOV 2004	MAY 2004
LRIP (#1) First Delivery	OCT 2004	OCT 2004	APR 2005	OCT 2004
Milestone III ASARC	NOV 2004	NOV 2004	MAY 2005	NOV 2004
Full Rate Production Contract Award	DEC 2004	DEC 2004	JUN 2005	MAY 2005
First Unit Equipped	MAY 2007	MAY 2007	NOV 2007	JUL 2007

Acronyms And Abbreviations

ASARC - Army Systems Acquisition Review Council
CDR - Critical Design Review
EMD - Engineering and Manufacturing Development
IOT&E - Initial Operational Test and Evaluation
LRIP - Low Rate Initial Production
ORD - Operational Requirements Document

Change Explanations

None

Memo

IOT&E is a single effort divided into two phases. Phase I, completed in May 2004, supported Full Rate Production. Phase II, completed in June 2007, supported First Unit Equipped.

Performance

Characteristics	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate	
Self-deploy w/30 min fuel reserve (nm)	1260	1260	1056	1130	1130	
Transport 16,000 lbs of internal/external cargo (nm)	100	100	50	56	56	
Transport combat equipped troops:						
Number of Troops	44	44	31	31	31	
Range (nm)	150	150	100	150	150	
Reliability:						
MTBEMA (flt hrs)	3.5	3.5	3.3	6.1	3.48	(Ch-1)
Maintenance:						
Total Maintenance Ratio (mmh/flt hr)	9.2	9.2	9.8	4.24	2.71	(Ch-2)

Requirements Source: Operational Requirements Document (ORD) Revision 4 dated January 26, 2006

Acronyms And Abbreviations

flt - flight
hr(s) - hour(s)
lbs - pounds
min - minutes
mmh - maintenance man hour
MTBEMA - Mean Time Between Essential Maintenance Actions
nm - nautical miles
w/ - with

Change Explanations

(Ch-1) The current estimate for reliability (MTBEMA) changed from 6.0 to 3.48 based on data from the Aviation and Missile Research Development and Engineering Center (AMRDEC) CH-47 Reliability and Maintainability (RAM) Report and the Army Material Systems Analysis Activity (AMSAA), Aviation System Usage/Parts Replacement Analysis as of March 2013.

(Ch-2) The current estimate for maintainability (Total Maintenance Ratio) changed from 3.67 to 2.71 based on data from the AMRDEC CH-47 RAM Report and the AMSAA Aviation System Usage/Parts Replacement Analysis as of March 2013.

Memo

Operational Test was completed on June 4, 2007; RAM data final scoring conference completed on June 5, 2007. Demonstrated Performance based on the Army Test and Evaluation Command (ATEC) CH-47F Cargo Helicopter

System Evaluation Report (SER) dated May 2007 with the exception of maintenance, which is extracted from 2007 RAM data collection efforts.

Track To Budget

General Memo

Item Control Number AA0252 is shared with CH-47D modifications applied to currently fielded D aircraft. The CH-47F's funding lines have been changed starting FY 2010 to CH-47 Helicopter (A05101) - a parent (rollup) of New Build and Service Life Extension Program (SLEP), CH-47 SLEP (A05105), and CH-47 New Build (A05008). CH-47F funding for FY 2009 and prior resides on the previously combined AA0252 line.

RDT&E

APPN 2040	BA 07	PE 0203744A	(Army)	
	Project D430	Aircraft Modifications/Product Improvement Program/Improved Cargo Helicopter	(Shared)	(Sunk)

Procurement

APPN 2031	BA 01		(Army)	
	ICN A05008	CH-47 NEW BUILD	(Shared)	
	ICN A05105	CH-47 SLEP	(Shared)	
APPN 2031	BA 02		(Army)	
	ICN AA0252	CH-47 CARGO HELICOPTER MODS	(Shared)	(Sunk)

A05008 and A05105 fund other aircraft modification efforts.

Cost and Funding

Cost Summary

Total Acquisition Cost and Quantity

Appropriation	BY2005 $M			BY2005 $M	TY $M		
	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Prod Est	Current APB Production Objective	Current Estimate
RDT&E	179.7	183.3	201.6	183.3	171.0	171.6	171.6
Procurement	10435.1	11869.0	13055.9	12332.3	11976.4	13464.6	14215.4
Flyaway	9840.9	--	--	11591.0	11304.4	--	13363.5
Recurring	9566.2	--	--	11251.8	11032.5	--	13031.1
Non Recurring	274.7	--	--	339.2	271.9	--	332.4
Support	594.2	--	--	741.3	672.0	--	851.9
Other Support	533.4	--	--	682.4	600.2	--	781.9
Initial Spares	60.8	--	--	58.9	71.8	--	70.0
MILCON	0.0	0.0	--	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	10614.8	12052.3	N/A	12515.6	12147.4	13636.2	14387.0

Confidence Level for Current APB Cost 50% - The Confidence Level of the CH-47F Acquisition Program Baseline (APB) cost estimate, which was approved on April 22, 200, is 50% in accordance with Army Service Cost Position (SCP) policy.

Quantity	SAR Baseline Prod Est	Current APB Production	Current Estimate
RDT&E	2	2	2
Procurement	510	523	530
Total	512	525	532

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2014 President's Budget / December 2012 SAR (TY$ M)

Appropriation	Prior	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	To Complete	Total
RDT&E	171.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	171.6
Procurement	9616.9	985.3	868.6	879.5	1154.4	710.7	0.0	0.0	14215.4
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2014 Total	9788.5	985.3	868.6	879.5	1154.4	710.7	0.0	0.0	14387.0
PB 2013 Total	9714.8	1066.3	858.7	855.7	1106.6	654.6	0.0	0.0	14256.7
Delta	73.7	-81.0	9.9	23.8	47.8	56.1	0.0	0.0	130.3

Program funding and production quantities listed in this SAR are consistent with the FY 2014 President's Budget (PB). The FY 2014 PB did not reflect the enacted DoD appropriation for FY 2013, nor sequestration; it reflected the President's requested amounts for FY 2013.

Quantity	Undistributed	Prior	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	To Complete	Total
Development	2	0	0	0	0	0	0	0	0	2
Production	0	368	38	28	30	39	27	0	0	530
PB 2014 Total	2	368	38	28	30	39	27	0	0	532
PB 2013 Total	2	368	38	28	30	39	27	0	0	532
Delta	0	0	0	0	0	0	0	0	0	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding TY$
2040 | RDT&E | Research, Development, Test, and Evaluation, Army

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
1995	--	--	--	--	--	--	2.7
1996	--	--	--	--	--	--	4.3
1997	--	--	--	--	--	--	16.6
1998	--	--	--	--	--	--	22.6
1999	--	--	--	--	--	--	23.8
2000	--	--	--	--	--	--	27.1
2001	--	--	--	--	--	--	37.7
2002	--	--	--	--	--	--	17.7
2003	--	--	--	--	--	--	3.3
2004	--	--	--	--	--	--	7.3
2005	--	--	--	--	--	--	--
2006	--	--	--	--	--	--	7.0
2007	--	--	--	--	--	--	1.5
Subtotal	**2**	**--**	**--**	**--**	**--**	**--**	**171.6**

Annual Funding BY$
2040 | RDT&E | Research, Development, Test, and Evaluation, Army

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2005 $M	Non End Item Recurring Flyaway BY 2005 $M	Non Recurring Flyaway BY 2005 $M	Total Flyaway BY 2005 $M	Total Support BY 2005 $M	Total Program BY 2005 $M
1995	--	--	--	--	--	--	3.1
1996	--	--	--	--	--	--	4.8
1997	--	--	--	--	--	--	18.4
1998	--	--	--	--	--	--	24.9
1999	--	--	--	--	--	--	25.9
2000	--	--	--	--	--	--	29.1
2001	--	--	--	--	--	--	39.9
2002	--	--	--	--	--	--	18.5
2003	--	--	--	--	--	--	3.4
2004	--	--	--	--	--	--	7.3
2005	--	--	--	--	--	--	--
2006	--	--	--	--	--	--	6.6
2007	--	--	--	--	--	--	1.4
Subtotal	**2**	**--**	**--**	**--**	**--**	**--**	**183.3**

Annual Funding TY$
2031 | Procurement | Aircraft Procurement, Army

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	--	--	--	41.6	41.6	17.7	59.3
2002	--	--	--	45.5	45.5	14.9	60.4
2003	14	353.8	--	224.8	578.6	18.6	597.2
2004	16	227.8	--	--	227.8	23.2	251.0
2005	30	700.3	--	4.6	704.9	15.0	719.9
2006	24	461.4	--	2.6	464.0	40.6	504.6
2007	43	1121.7	--	13.3	1135.0	88.3	1223.3
2008	53	1253.8	--	--	1253.8	60.4	1314.2
2009	52	1216.3	--	--	1216.3	57.3	1273.6
2010	39	852.2	--	--	852.2	76.1	928.3
2011	49	1198.9	--	--	1198.9	113.7	1312.6
2012	48	1352.5	--	--	1352.5	20.0	1372.5
2013	38	893.2	--	--	893.2	92.1	985.3
2014	28	782.0	--	--	782.0	86.6	868.6
2015	30	837.1	--	--	837.1	42.4	879.5
2016	39	1109.2	--	--	1109.2	45.2	1154.4
2017	27	670.9	--	--	670.9	39.8	710.7
Subtotal	**530**	**13031.1**	**--**	**332.4**	**13363.5**	**851.9**	**14215.4**

Annual Funding BY$
2031 | Procurement | Aircraft Procurement, Army

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2005 $M	Non End Item Recurring Flyaway BY 2005 $M	Non Recurring Flyaway BY 2005 $M	Total Flyaway BY 2005 $M	Total Support BY 2005 $M	Total Program BY 2005 $M
2001	--	--	--	43.9	43.9	18.7	62.6
2002	--	--	--	47.4	47.4	15.5	62.9
2003	14	360.5	--	228.9	589.4	19.0	608.4
2004	16	225.8	--	--	225.8	22.9	248.7
2005	30	675.4	--	4.4	679.8	14.5	694.3
2006	24	433.2	--	2.4	435.6	38.2	473.8
2007	43	1032.4	--	12.2	1044.6	81.4	1126.0
2008	53	1135.8	--	--	1135.8	54.7	1190.5
2009	52	1086.0	--	--	1086.0	51.2	1137.2
2010	39	747.5	--	--	747.5	66.8	814.3
2011	49	1030.3	--	--	1030.3	97.7	1128.0
2012	48	1136.4	--	--	1136.4	16.8	1153.2
2013	38	732.5	--	--	732.5	75.6	808.1
2014	28	628.3	--	--	628.3	69.6	697.9
2015	30	660.0	--	--	660.0	33.5	693.5
2016	39	858.3	--	--	858.3	34.9	893.2
2017	27	509.4	--	--	509.4	30.3	539.7
Subtotal	**530**	**11251.8**	**--**	**339.2**	**11591.0**	**741.3**	**12332.3**

Minor deltas in quantities exist in FY 2012 and FY 2013 between the SAR and the FY 2014 President's Budget (PB) submission. The SAR quantities include one additional MH-47G in FY 2012 for Special Operations Aviation. The FY 2014 PB submission includes six Overseas Contingency Operations (OCO) aircraft in FY 2013 for $231.3 million that are not reported in this SAR since the funds for the FY 2013 OCO have not been received.

Cost Quantity Information
2031 | Procurement | Aircraft Procurement, Army

Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned with Quantity) BY 2005 $M
2001	--	--
2002	--	--
2003	14	348.3
2004	16	224.9
2005	30	672.1
2006	24	415.6
2007	43	1037.8
2008	53	1133.7
2009	52	1076.6
2010	39	746.6
2011	49	1016.7
2012	48	1090.6
2013	38	763.3
2014	28	616.3
2015	30	656.9
2016	39	858.5
2017	27	593.9
Subtotal	**530**	**11251.8**

Low Rate Initial Production

	Initial LRIP Decision	Current Total LRIP
Approval Date	5/19/1998	8/19/2002
Approved Quantity	30	30
Reference	Milestone II ADM	LRIP ADM
Start Year	2003	2003
End Year	2004	2004

Milestone II and Low Rate Initial Production (LRIP) Acquisition Decision Memorandums (ADMs) specified LRIP quantity as "up to 30 aircraft."

The FY 2003 President's Budget funded 23 LRIP aircraft (7 in FY 2003 and 16 in FY 2004) . Of these, 1 aircraft in FY 2003 was a CH-47F and the remaining 22 were MH-47Gs.

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost $M	Memo
United Arab Emirates	6/28/2011	16	598.7	
Turkey	7/9/2010	6	252.0	
Australia	3/19/2010	7	249.0	

The sale dates above are Letter Of Acceptance (LOA) signature dates. The costs above are for the aircraft only.

The CH-47F aircraft capabilities and operational successes in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) are generating a lot of interest and inquiries from foreign CH-47D customers. The Common Avionics Architecture System (CAAS) cockpit provides pilot workload reductions and enhanced flight capabilities through flight control coupling. Foreign customers requesting configuration modifications to the aircraft which change the CAAS software, aircraft handling qualities, mission equipment or performance will incur non-recurring and recurring costs to develop, test, qualify, certify, field, and maintain the software and related hardware as well as increase the lead time to deliver the modified CH-47F. Foreign Military Sales will help ensure a robust supply chain and industrial base.

Nuclear Cost

None

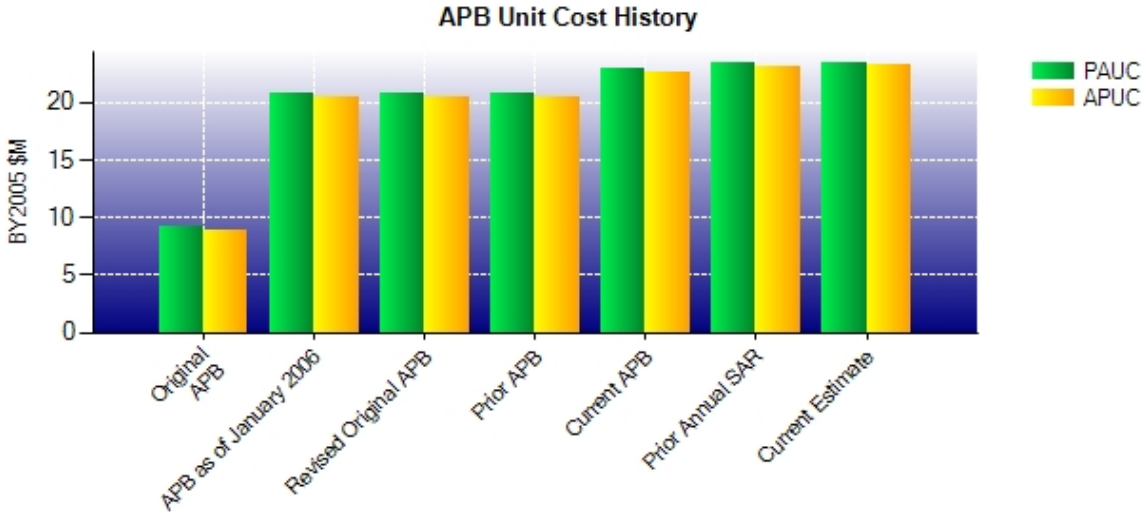
Unit Cost

Unit Cost Report

Unit Cost	BY2005 $M Current UCR Baseline (APR 2010 APB)	BY2005 $M Current Estimate (DEC 2012 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	12052.3	12515.6	
Quantity	525	532	
Unit Cost	22.957	23.526	+2.48
Average Procurement Unit Cost (APUC)			
Cost	11869.0	12332.3	
Quantity	523	530	
Unit Cost	22.694	23.268	+2.53

Unit Cost	BY2005 $M Revised Original UCR Baseline (NOV 2004 APB)	BY2005 $M Current Estimate (DEC 2012 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	10614.8	12515.6	
Quantity	512	532	
Unit Cost	20.732	23.526	+13.48
Average Procurement Unit Cost (APUC)			
Cost	10435.1	12332.3	
Quantity	510	530	
Unit Cost	20.461	23.268	+13.72

Unit Cost History



		BY2005 $M		TY $M	
	Date	PAUC	APUC	PAUC	APUC
Original APB	MAY 1998	9.283	8.840	10.316	9.909
APB as of January 2006	NOV 2004	20.732	20.461	23.725	23.483
Revised Original APB	NOV 2004	20.732	20.461	23.725	23.483
Prior APB	NOV 2004	20.732	20.461	23.725	23.483
Current APB	APR 2010	22.957	22.694	25.974	25.745
Prior Annual SAR	DEC 2011	23.448	23.191	26.798	26.576
Current Estimate	DEC 2012	23.526	23.268	27.043	26.822

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	
10.316	-0.491	3.003	-0.164	2.273	7.378	0.000	1.410	13.409	23.725

Current SAR Baseline to Current Estimate (TY $M)

PAUC Prod Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
23.725	0.077	0.054	-0.649	0.410	3.113	0.000	0.313	3.318	27.043

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	
9.909	-0.487	3.180	-0.171	2.282	7.354	0.000	1.416	13.574	23.483

Current SAR Baseline to Current Estimate (TY $M)

APUC Prod Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
23.483	0.079	0.064	-0.651	0.410	3.123	0.000	0.314	3.339	26.822

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	NOV 1997	NOV 1997	DEC 1997
Milestone III	N/A	JAN 2004	NOV 2004	NOV 2004
FUE	N/A	SEP 2004	MAY 2007	JUL 2007
Total Cost (TY $M)	N/A	3115.4	12147.4	14387.0
Total Quantity	N/A	302	512	532
Prog. Acq. Unit Cost (PAUC)	N/A	10.316	23.725	27.043

Cost Variance

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	171.0	11976.4	--	12147.4
Previous Changes				
Economic	-0.9	-35.0	--	-35.9
Quantity	--	+502.9	--	+502.9
Schedule	--	-345.1	--	-345.1
Engineering	+0.5	+217.5	--	+218.0
Estimating	+1.0	+1645.6	--	+1646.6
Other	--	--	--	--
Support	--	+122.8	--	+122.8
Subtotal	+0.6	+2108.7	--	+2109.3
Current Changes				
Economic	--	+77.0	--	+77.0
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	+9.5	--	+9.5
Other	--	--	--	--
Support	--	+43.8	--	+43.8
Subtotal	--	+130.3	--	+130.3
Total Changes	+0.6	+2239.0	--	+2239.6
CE - Cost Variance	171.6	14215.4	--	14387.0
CE - Cost & Funding	171.6	14215.4	--	14387.0

Summary Base Year 2005 $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	179.7	10435.1	--	10614.8
Previous Changes				
Economic	--	--	--	--
Quantity	--	+417.0	--	+417.0
Schedule	--	-42.0	--	-42.0
Engineering	+0.5	+176.9	--	+177.4
Estimating	+3.1	+1191.0	--	+1194.1
Other	--	--	--	--
Support	--	+113.3	--	+113.3
Subtotal	+3.6	+1856.2	--	+1859.8
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	+7.2	--	+7.2
Other	--	--	--	--
Support	--	+33.8	--	+33.8
Subtotal	--	+41.0	--	+41.0
Total Changes	+3.6	+1897.2	--	+1900.8
CE - Cost Variance	183.3	12332.3	--	12515.6
CE - Cost & Funding	183.3	12332.3	--	12515.6

Previous Estimate: December 2011

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+77.0
Revised estimate due to negotiated settlement of Multiyear II contract. (Estimating)	+23.2	+28.4
Adjustment for current and prior escalation. (Estimating)	-16.0	-18.9
Adjustment for current and prior escalation. (Support)	-0.8	-1.3
Increase in Other Support due to revised estimate for obsolesence/concurrency upgrades of training devices. (Support)	+33.9	+44.4
Increase in Initial Spares due to increased Multiyear II hardware cost. (Support)	+0.7	+0.7
Procurement Subtotal	+41.0	+130.3

Contracts

Appropriation: RDT&E	
Contract Name	**New Build Recurring**
Contractor	Boeing Helicopter
Contractor Location	Philadelphia, PA 19142
Contract Number, Type	W58RGZ-04-C-0012/2, FFP
Award Date	December 02, 2003
Definitization Date	December 21, 2004

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
616.6	N/A	19	1632.5	N/A	59	1632.5	1632.5

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date	0.0	0.0
Previous Cumulative Variances	--	--
Net Change	+0.0	+0.0

Cost And Schedule Variance Explanations

None

Contract Comments

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

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

Appropriation: Procurement

Contract Name	**Multiyear I**
Contractor	Boeing Helicopter
Contractor Location	Philadelphia, PA 19142
Contract Number, Type	W58RGZ-04-C-0098/1, FFP
Award Date	August 26, 2008
Definitization Date	August 26, 2008

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
722.7	N/A	35	4387.3	N/A	215	4387.3	4387.3

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 increase in aircraft on contract.

Appropriation: RDT&E

Contract Name	**Full Rate Production G Lot 6**
Contractor	Boeing Helicopter
Contractor Location	Philadelphia, PA 19142
Contract Number, Type	W58RGZ-04-G-0023/78, FFP
Award Date	July 23, 2007
Definitization Date	January 11, 2008

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
81.5	N/A	6	88.1	N/A	6	88.1	88.1

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date	0.0	0.0
Previous Cumulative Variances	--	--
Net Change	+0.0	+0.0

Cost And Schedule Variance Explanations

None

Contract Comments

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to definitization of the contract.

Although the MH-47G funding for the common portion to CH-47F aircraft is included in CH-47F total program funding, the contract is managed by the Technology Application Program Office (TAPO).

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

Appropriation: RDT&E

Contract Name	**Full Rate Prdn MH47G Lt7**
Contractor	THE BOEING COMPANY
Contractor Location	ROUTE 291 & STEWART AVE RIDLEY PARK, PA 19078
Contract Number, Type	W58RGZ-04-G-0023/106, FFP
Award Date	May 01, 2008
Definitization Date	December 17, 2008

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
77.6	N/A	6	77.9	N/A	6	77.9	77.9

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date	0.0	0.0
Previous Cumulative Variances	--	--
Net Change	+0.0	+0.0

Cost And Schedule Variance Explanations

None

Contract Comments

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

This contract is managed by the Special Operations Aviation office and PM Cargo does not have insight into the details of the contract. We fund the common components, $77.9 M, which comprise only a portion of the total contract.

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

Deliveries and Expenditures

Deliveries To Date	Plan To Date	Actual To Date	Total Quantity	Percent Delivered
Development	2	2	2	100.00%
Production	286	290	530	54.72%
Total Program Quantities Delivered	288	292	532	54.89%

Expenditures and Appropriations (TY $M)			
Total Acquisition Cost	14387.0	Years Appropriated	19
Expenditures To Date	7982.4	Percent Years Appropriated	82.61%
Percent Expended	55.48%	Appropriated to Date	10773.8
Total Funding Years	23	Percent Appropriated	74.89%

The above data is current as of 3/21/2013.

Operating and Support Cost

CH-47F

Assumptions and Ground Rules

Cost Estimate Reference:

The Operating and Support (O&S) costs for the CH-47F are taken from the March 2013 Project Office Estimate (POE) which is based on methodology from the 2004 CH-47F Army Cost Position (ACP). It assumes an end state of 440 CH-47F operational aircraft when fully fielded flying 180 each peacetime hours per year. The total O&S cost is based on a 20-year useful life. While the common production costs of 66 MH-47Gs are included in the procurement costs, they are excluded from the O&S cost as they are managed by SOA. The 24 attrition CH-47F aircraft procured also incur no O&S costs.

Sustainment Strategy:

The sustainment approach for the CH-47F is a blend of Government and Contractor Logistics Support (CLS) in conjunction with the Supportability Strategy. There is a continued focus on reducing maintenance burden and O&S costs including the use of Performance Based Logistics (PBLs) when appropriate.

The total APB reportable CH-47F production quantity is 464 CH-47F aircraft, and the O&S costs assume a steady state of 440 CH-47F operational aircraft when fully fielded flying 180 each peacetime hours per year. The total O&S timespan is 35 years. The first fielding was in 2004 and the last aircraft leaves service in 2038.

Antecedent Information:

The antecedent to the CH-47F is the CH-47D, for which the O&S costs are from the D model POE. The total O&S cost is based on 306 systems with an operating span of 20 years peacetime operating tempo spanning 1997 to 2018. The O&S costs are based on actuals extracted from the Operating and Support Management Information System (OSMIS).

Unitized O&S Costs BY2005 $K		
Cost Element	**CH-47F Average Annual Per Aircraft**	**CH-47D (Antecedent) Average Annual Per Aircraft**
Unit-Level Manpower	409.484	658.828
Unit Operations	70.107	76.408
Maintenance	1200.573	1208.797
Sustaining Support	16.944	470.291
Continuing System Improvements	127.061	11.359
Indirect Support	101.131	652.265
Other	0.000	0.000
Total	1925.300	3077.948

Unitized Cost Comments:

Both the CH-47F and CH-47D estimates utilize the latest DoD inflation indices in Automated Cost Estimating Integrated Tools (ACEIT), dated March 2013.

The CH-47F Program Office Estimate assumes an steady state of 440 CH-47F operational aircraft when fully fielded flying 180 peacetime hours per year. The CH-47D Program Office Estimate assumes an end state of 306 CH-47D operational aircraft when fully fielded flying each 180 peacetime hours per year.The total O&S cost is based on a 20-year useful life for both the CH-47D and CH-47F.

The CH-47D and CH-47F costs are based on CH-47D actuals extracted from the Operating and Support Management Information System (OSMIS). To calculate the CH-47F costs, these CH-47D actuals were augmented by an improvement factor to account for the increased reliability of recapitalized parts, new airframe, and vibration engineering.

	Total O&S Cost $M			
	Current Production APB Objective/Threshold		Current Estimate	
	CH-47F		CH-47F	CH-47D (Antecedent)
Base Year	16379.4	18017.3	16942.6	18837.0
Then Year	22285.6	N/A	24105.3	19437.0

Total O&S Costs Comments:
Both the CH-47F and CH-47D estimates utilize the latest DoD inflation indices in ACEIT, dated March 2013. The total O&S costs assume an end state of 440 CH-47F operational aircraft when fully fielded flying each 180 peacetime hours per year. The total O&S time span for the CH-47F is 35 years.

Variance Explanations:

CH-47F cost variance is due a reduction to post production modifications requirements as well as a change in inflation factors. The CH-47F O&S total net change from the 2011 SAR is **-$485.699 (BY 2005 $M)**.

CH-47D cost variance is due a change in inflation factors.The CH-47D O&S total net change from the 2011 SAR is **$-34.172 (BY 2005 $M)**.

Disposal Costs

Life-cycle demilitarization/disposal costs for the CH-47F are $6.502 (BY 2005 $M) and are included in the above estimate.