

UNCLASSIFIED



Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-390



CH-53K King Stallion (CH-53K)

As of FY 2019 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

UNCLASSIFIED

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Sensitivity Originator

No originator info Available at this time.

Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
\$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
\$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
\$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President's Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

Program Information

Program Name

CH-53K King Stallion (CH-53K)

DoD Component

Navy

Responsible Office

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PMA-261 Heavy Lift Helicopters
Program Executive Office - Air, Anti-Submarine Warfare,
Assault & Special Mission Programs
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References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated April 4, 2017

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated April 4, 2017

Mission and Description

The CH-53K Heavy Lift Replacement Helicopter (CH-53K) program mission is to generate and support a robust United States Marine Corps heavy-lift capability. The primary mission is vertical heavy lift. The Program includes improvements in lift and range capabilities, commonality, reliability, maintainability, interoperability, ship integration, survivability, and force protection. The CH-53K helicopter will be a replacement for the CH-53E.

Executive Summary

Program Highlights Since Last Report

The CH-53K Heavy Lift Replacement Program received a MS C ADM on April 4, 2017 which approved entry into the Production and Deployment phase for the CH-53K King Stallion Program (previously referred to as the CH-53K Heavy Lift Helicopter program). In addition, the program was approved for LRIP quantities up to 26 aircraft. The primary activities occurring on the program at this time are the completion of the flight test program and transition of production activities from West Palm Beach, Florida to Stratford, Connecticut. Six Systems Demonstration Test Articles aircraft are in production.

The program awarded the LRIP Lot 2 Advanced Acquisition Contract (AAC) on May 22, 2017 and the LRIP Lot 1 contract, for two aircraft, on August 31, 2017. The program also awarded the LRIP Lot 1 and Lot 2 Engines contract on November 16, 2017.

Cost: The program is funded to the Component Cost Position (CCP) as documented in the MS C ADM. While the latest program cost estimates predict that development costs, production cost, and O&S cost will remain within APB thresholds, cost and affordability remain a constant focus. The program has realized savings which were incorporated into the CCP. Additional opportunities lie ahead which could positively affect production costs as well as O&S costs.

Performance: Currently, four Engineering Development Model (EDM) aircraft are in developmental flight test; with two of the four EDMs having already transitioned to NAS Patuxent River, Maryland. Dual point external lift capability was demonstrated on EDM aircraft in December 2017. Four System Demonstration Test Articles (SDTA) are in final Assembly. SDTA 1 conducted initial ground turns on December 31, 2017. Resolution of remaining technical issues and completion of airworthiness certification testing remain top priorities for planned entry into IOT&E in CY 2019. Current estimates are that the program will meet or exceed thresholds/objectives for all seven performance characteristics presented in the SAR.

Schedule: The program remains on schedule to meet APB milestones. Efficient resolution of technical issues followed by incorporation of configuration changes into test will be critical to meeting program schedule.

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

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	Significant Development Description
September 2003	Analysis of Alternatives completed, resulting in decision to initiate a Heavy Lift Replacement program
December 2004	JROC approved CH-53K ORD.
October 2005	The Heavy Lift Replacement (HLR) program completed a Milestone B Defense Acquisition Board (DAB).
December 2005	USD(AT&L) signed the Milestone B ADM for entry into System Development and Demonstration (SDD).
January 2006	SDD contract awarded to Sikorsky for the CH-53K
July 2010	The CH-53K program conducted the Critical Design Review.
June 2011	The Assistant Secretary of Defense for Research and Engineering completed a Post-CDR Assessment, determining the program situated to enter Systems Capability and Manufacturing Process Demonstration.
April 2013	Updated APB approved, based on an updated Program Life Cycle Cost Estimate (PLCCE) and January 2013 SCP.
May 2013	Contract awarded for 4 System Developmental Test Article (SDTA) aircraft. Beginning with this effort, the CH-53K program began procuring GE-38 (T-408) engines directly from General Electric Aviation.
October 2015	First flight completed on EDM aircraft.
April 2016	LRIP Lot 1 Advanced Acquisition Contract (AAC) awarded.
August 2016	Four EDM aircraft in flight test.
September 2016	Contract awarded for two additional SDTA aircraft to demonstrate that manufacturing processes are both mature and under control.
October 2016	Program successfully completed an initial Operational Assessment (OT-B1) in West Palm Beach, Florida.
January 2017	Letter of Request for Pricing and Availability received from Israel.
April 2017	USD (AT&L) signed the Milestone C ADM authorizing procurement of up to 26 aircraft. APB update approved.
May 2017	LRIP Lot 2 AAC awarded.
July 2017	Letter of Offer and Acceptance issued to Germany for potential Direct Commercial Sales.
August 2017	LRIP Lot 1 contract awarded for 2 aircraft.

Threshold Breaches

APB Breaches

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

Nunn-McCurdy Breaches

Current UCR Baseline

PAUC	None
APUC	None

Original UCR Baseline

PAUC	None
APUC	None

Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate
Milestone B DAB Review	Dec 2005	Dec 2005	Dec 2005	Dec 2005
CDR	Jul 2010	Jul 2010	Jul 2010	Jul 2010
Milestone C	Mar 2017	Mar 2017	Sep 2017	Apr 2017
TECHEVAL Complete	Apr 2019	Apr 2019	Oct 2019	Apr 2019
IOT&E (OPEVAL) Complete	Dec 2019	Dec 2019	Jun 2020	Dec 2019
IOC	Dec 2019	Dec 2019	Jun 2020	Dec 2019
FRP Decision Review	Sep 2020	Sep 2020	Mar 2021	Sep 2020

Change Explanations

None

Acronyms and Abbreviations

CDR - Critical Design Review

IOT&E - Initial Operational Test and Evaluation. Used interchangeably with Operational Evaluation (OPEVAL).

OPEVAL - Operational Evaluation. Used interchangeably with Initial Operational Test and Evaluation (IOT&E).

TECHEVAL - Technical Evaluation

Performance

Performance Characteristics				
SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
Net Ready (NR)				
Satisfy 100% of NR reqts in JIA	Satisfy 100% of NR reqts in JIA	Satisfy 100% of NR reqts designated as enterprise-level or critical in JIA	TBD	Satisfy 100% of NR reqts in JIA
Range and Payload (nm)				
110 w/30,000 lbs external load, no refuel	110 w/30,000 lbs external load, no refuel	110 w/27,000 lbs external load, no refuel	TBD	110 w/27,000 lbs external load, no refuel
Mission Reliability (MR)				
90%	90%	89%	TBD	89%
Logistics Footprint				
10% reduction from current CH-53E	10% reduction from current CH-53E	<= current CH-53E	TBD	<= current CH-53E
Sortie Generation Rate (SGR)/Average Sortie Duration (ASD)				
(T=O) 2.6 sorties/ 2.25 hrs	(T=O) 2.6 sorties/ 2.25 hrs	2.6 sorties/ 2.25 hrs	TBD	2.6 sorties/ 2.25 hrs

Classified Performance information is provided in the classified annex to this submission.

Requirements Reference

CPD dated March 15, 2017

Change Explanations

None

Notes

Net Ready KPP: JVMF, Link-16, and Mode 5 capabilities were approved for deferral by JROCM 142-10 of September 10, 2010 until IOC + 6 months for Mode 5 and IOC + 2 years for JVMF and Link-16.

Acronyms and Abbreviations

<= - Less Than or Equal To

hrs - Hours

JROCM - Joint Requirements Oversight Council Memorandum

JVMF - Joint Variable Message Format

lbs - Pounds

nm - Nautical Miles

O - Objective

reqts - Requirements

T - Threshold

Track to Budget

RDT&E

Appn	BA	PE
------	----	----

Navy 1319 05 0605212M

Project	Name
---------	------

3059 CH-53K Development

Notes: FY2019 - FY2023

Navy 1319 05 0605212N

Project	Name
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3059 CH-53K Development

(Sunk)

Notes: FY2002 - FY2018

Procurement

Appn	BA	PE
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Navy 1506 01 0206122M

Line Item	Name
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0158 CH-53K (Heavy Lift)

Navy 1506 06 0206122M

Line Item	Name
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0605 Spares and Repair Parts

MILCON

Appn	BA	PE
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Navy 1205 01 0202176M

Project	Name
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VARIOUS VARIOUS

(Sunk)

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2017 \$M			BY 2017 \$M	TY \$M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	7265.0	7265.0	7991.5	7225.3	6957.8	6957.8	6912.6
Procurement	20427.5	20427.5	22470.3	20678.0	24263.3	24263.3	24239.4
Flyaway	--	--	--	17720.1	--	--	20818.0
Recurring	--	--	--	17206.2	--	--	20210.1
Non Recurring	--	--	--	513.9	--	--	607.9
Support	--	--	--	2957.9	--	--	3421.4
Other Support	--	--	--	2317.7	--	--	2691.2
Initial Spares	--	--	--	640.2	--	--	730.2
MILCON	13.3	13.3	14.6	13.3	13.2	13.2	13.2
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	27705.8	27705.8	N/A	27916.6	31234.3	31234.3	31165.2

Current APB Cost Estimate Reference

SCP dated April 04, 2017

Cost Notes

In accordance with Section 842 of the National Defense Authorization Act for FY 2017, which amended title 10 U.S.C. § 2334, the Director of Cost Assessment and Program Evaluation, and the Secretary of the military department concerned or the head of the Defense Agency concerned, must issue guidance requiring a discussion of risk, the potential impacts of risk on program costs, and approaches to mitigate risk in cost estimates for MDAPs and major subprograms. The information required by the guidance is to be reported in each SAR. This guidance is not yet available; therefore, the information on cost risk is not contained in this SAR.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	6	6	6
Procurement	194	194	194
Total	200	200	200

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2019 President's Budget / December 2017 SAR (TY\$ M)									
Appropriation	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
RDT&E	5714.6	340.8	326.9	296.3	193.7	19.9	20.4	0.0	6912.6
Procurement	526.2	756.4	1333.9	1490.3	1989.8	2280.1	2304.5	13558.2	24239.4
MILCON	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.2
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2019 Total	6254.0	1097.2	1660.8	1786.6	2183.5	2300.0	2324.9	13558.2	31165.2
PB 2018 Total	6288.3	1097.1	1560.8	1788.9	2094.7	2208.0	2603.4	13518.6	31159.8
Delta	-34.3	0.1	100.0	-2.3	88.8	92.0	-278.5	39.6	5.4

Quantity Summary										
FY 2019 President's Budget / December 2017 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
Development	6	0	0	0	0	0	0	0	0	6
Production	0	2	4	8	9	14	19	19	119	194
PB 2019 Total	6	2	4	8	9	14	19	19	119	200
PB 2018 Total	6	2	4	7	9	13	18	22	119	200
Delta	0	0	0	1	0	1	1	-3	0	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding							
1319 RDT&E Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2002	--	--	--	--	--	--	2.0
2003	--	--	--	--	--	--	2.7
2004	--	--	--	--	--	--	4.7
2005	--	--	--	--	--	--	98.9
2006	--	--	--	--	--	--	251.9
2007	--	--	--	--	--	--	338.1
2008	--	--	--	--	--	--	386.2
2009	--	--	--	--	--	--	541.9
2010	--	--	--	--	--	--	503.9
2011	--	--	--	--	--	--	562.2
2012	--	--	--	--	--	--	604.4
2013	--	--	--	--	--	--	535.5
2014	--	--	--	--	--	--	446.7
2015	--	--	--	--	--	--	533.2
2016	--	--	--	--	--	--	563.2
2017	--	--	--	--	--	--	339.1
2018	--	--	--	--	--	--	340.8
2019	--	--	--	--	--	--	326.9
2020	--	--	--	--	--	--	296.3
2021	--	--	--	--	--	--	193.7
2022	--	--	--	--	--	--	19.9
2023	--	--	--	--	--	--	20.4
Subtotal	6	--	--	--	--	--	6912.6

Annual Funding							
1319 RDT&E Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2017 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2002	--	--	--	--	--	--	2.6
2003	--	--	--	--	--	--	3.5
2004	--	--	--	--	--	--	5.8
2005	--	--	--	--	--	--	119.9
2006	--	--	--	--	--	--	296.1
2007	--	--	--	--	--	--	388.0
2008	--	--	--	--	--	--	435.2
2009	--	--	--	--	--	--	602.9
2010	--	--	--	--	--	--	552.4
2011	--	--	--	--	--	--	601.9
2012	--	--	--	--	--	--	636.6
2013	--	--	--	--	--	--	558.2
2014	--	--	--	--	--	--	459.1
2015	--	--	--	--	--	--	541.4
2016	--	--	--	--	--	--	562.3
2017	--	--	--	--	--	--	333.0
2018	--	--	--	--	--	--	329.0
2019	--	--	--	--	--	--	309.8
2020	--	--	--	--	--	--	275.4
2021	--	--	--	--	--	--	176.5
2022	--	--	--	--	--	--	17.8
2023	--	--	--	--	--	--	17.9
Subtotal	6	--	--	--	--	--	7225.3

Annual Funding 1506 Procurement Aircraft Procurement, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2016	--	41.3	--	--	41.3	--	41.3
2017	2	319.2	--	3.1	322.3	162.6	484.9
2018	4	605.3	--	5.0	610.3	146.1	756.4
2019	8	949.8	--	28.0	977.8	356.1	1333.9
2020	9	1095.6	--	47.6	1143.2	347.1	1490.3
2021	14	1580.5	--	62.7	1643.2	346.6	1989.8
2022	19	1971.8	--	62.6	2034.4	245.7	2280.1
2023	19	2004.3	--	48.7	2053.0	251.5	2304.5
2024	25	2717.4	--	52.6	2770.0	298.7	3068.7
2025	25	2552.9	--	48.6	2601.5	303.9	2905.4
2026	25	2480.8	--	78.7	2559.5	300.5	2860.0
2027	25	2317.2	--	75.3	2392.5	268.6	2661.1
2028	19	1574.0	--	95.0	1669.0	229.7	1898.7
2029	--	--	--	--	--	82.9	82.9
2030	--	--	--	--	--	81.4	81.4
Subtotal	194	20210.1	--	607.9	20818.0	3421.4	24239.4

Annual Funding								
1506 Procurement Aircraft Procurement, Navy								
Fiscal Year	Quantity	BY 2017 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2016	--	40.7	--	--	40.7	--	40.7	
2017	2	309.3	--	3.0	312.3	157.5	469.8	
2018	4	576.0	--	4.8	580.8	139.0	719.8	
2019	8	886.7	--	26.1	912.8	332.6	1245.4	
2020	9	1003.0	--	43.6	1046.6	317.7	1364.3	
2021	14	1418.5	--	56.3	1474.8	311.0	1785.8	
2022	19	1735.0	--	55.1	1790.1	216.1	2006.2	
2023	19	1729.0	--	42.0	1771.0	217.0	1988.0	
2024	25	2298.2	--	44.5	2342.7	252.6	2595.3	
2025	25	2116.7	--	40.3	2157.0	252.0	2409.0	
2026	25	2016.6	--	64.0	2080.6	244.2	2324.8	
2027	25	1846.7	--	60.0	1906.7	214.1	2120.8	
2028	19	1229.8	--	74.2	1304.0	179.5	1483.5	
2029	--	--	--	--	--	63.5	63.5	
2030	--	--	--	--	--	61.1	61.1	
Subtotal	194	17206.2	--	513.9	17720.1	2957.9	20678.0	

Cost Quantity Information		
1506 Procurement Aircraft Procurement, Navy		
Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned With Quantity) BY 2017 \$M
2016	--	--
2017	2	280.3
2018	4	505.7
2019	8	876.3
2020	9	925.1
2021	14	1342.5
2022	19	1738.1
2023	19	1682.5
2024	25	2148.5
2025	25	2119.9
2026	25	2087.3
2027	25	1983.4
2028	19	1516.6
2029	--	--
2030	--	--
Subtotal	194	17206.2

Annual Funding 1205 MILCON Military Construction, Navy and Marine Corps		
Fiscal Year	TY \$M	
	Total Program	
2014		13.2
Subtotal		13.2

Annual Funding 1205 MILCON Military Construction, Navy and Marine Corps	
Fiscal Year	BY 2017 \$M
	Total Program
2014	13.3
Subtotal	13.3

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	11/22/2005	4/4/2017
Approved Quantity	29	26
Reference	Milestone B Acquisition Strategy (AS)	Milestone C ADM
Start Year	2012	2017
End Year	2015	2020

The Current Total LRIP Quantity is more than 10% of the total production quantity due to the need to plan for an efficient production ramp-up.

Foreign Military Sales

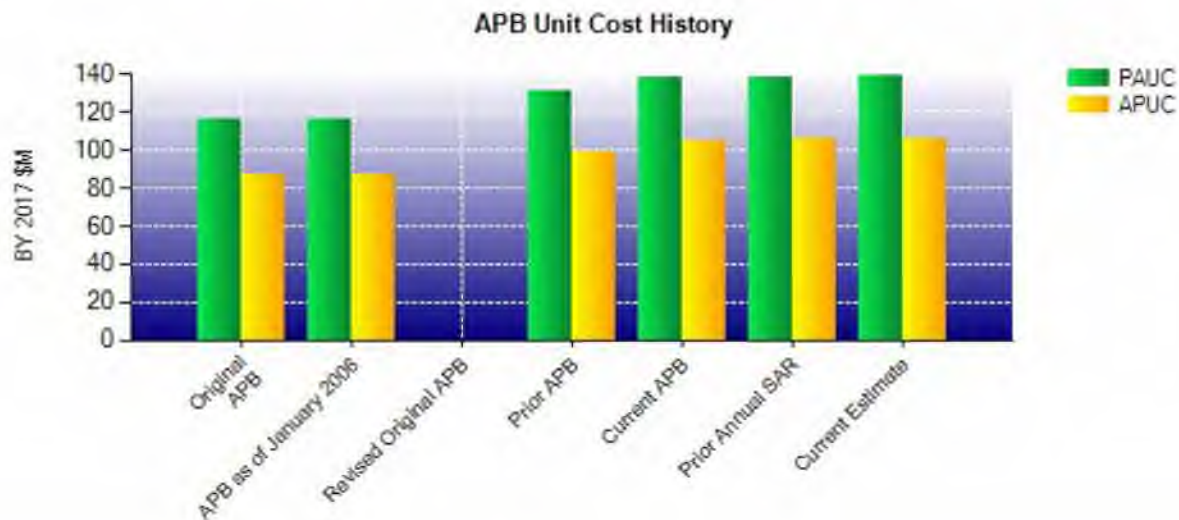
None

Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2017 \$M	BY 2017 \$M	% Change
	Current UCR Baseline (Apr 2017 APB)	Current Estimate (Dec 2017 SAR)	
Program Acquisition Unit Cost			
Cost	27705.8	27916.6	
Quantity	200	200	
Unit Cost	138.529	139.583	+0.76
Average Procurement Unit Cost			
Cost	20427.5	20678.0	
Quantity	194	194	
Unit Cost	105.296	106.588	+1.23
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2017 \$M	BY 2017 \$M	% Change
	Original UCR Baseline (Dec 2005 APB)	Current Estimate (Dec 2017 SAR)	
Program Acquisition Unit Cost			
Cost	18084.4	27916.6	
Quantity	156	200	
Unit Cost	115.926	139.583	+20.41
Average Procurement Unit Cost			
Cost	13301.6	20678.0	
Quantity	152	194	
Unit Cost	87.511	106.588	+21.80



APB Unit Cost History					
Item	Date	BY 2017 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Dec 2005	115.926	87.511	120.297	94.736
APB as of January 2006	Dec 2005	115.926	87.511	120.297	94.736
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	Apr 2013	130.940	99.272	142.503	113.157
Current APB	Apr 2017	138.529	105.296	156.172	125.069
Prior Annual SAR	Dec 2016	138.818	105.839	155.799	124.962
Current Estimate	Dec 2017	139.583	106.588	155.826	124.945

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial PAUC Development Estimate	Changes								PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
120.297	0.037	-10.579	18.691	-0.019	24.904	0.000	2.841	35.875	156.172

Current SAR Baseline to Current Estimate (TY \$M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
156.172	-1.436	0.000	-0.212	0.000	1.292	0.000	0.010	-0.346	155.826

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
94.736	-0.082	-5.412	12.974	0.000	20.258	0.000	2.595	30.333	125.069

Current SAR Baseline to Current Estimate (TY \$M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
125.069	-1.441	0.000	-0.218	0.000	1.525	0.000	0.011	-0.123	124.945

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	Oct 2005	Dec 2005	Dec 2005
Milestone C	N/A	Dec 2012	Mar 2017	Apr 2017
IOC	N/A	Sep 2015	Dec 2019	Dec 2019
Total Cost (TY \$M)	N/A	18766.3	31234.3	31165.2
Total Quantity	N/A	156	200	200
PAUC	N/A	120.297	156.172	155.826

Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	6957.8	24263.3	13.2	31234.3
Previous Changes				
Economic	-5.6	-151.7	--	-157.3
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-48.3	+120.1	--	+71.8
Other	--	--	--	--
Support	--	+11.0	--	+11.0
Subtotal	-53.9	-20.6	--	-74.5
Current Changes				
Economic	-2.2	-127.9	--	-130.1
Quantity	--	--	--	--
Schedule	--	-42.3	--	-42.3
Engineering	--	--	--	--
Estimating	+10.9	+175.8	--	+186.7
Other	--	--	--	--
Support	--	-8.9	--	-8.9
Subtotal	+8.7	-3.3	--	+5.4
Total Changes	-45.2	-23.9	--	-69.1
CE - Cost Variance	6912.6	24239.4	13.2	31165.2
CE - Cost & Funding	6912.6	24239.4	13.2	31165.2

Summary BY 2017 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	7265.0	20427.5	13.3	27705.8
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-47.3	+98.3	--	+51.0
Other	--	--	--	--
Support	--	+6.9	--	+6.9
Subtotal	-47.3	+105.2	--	+57.9
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	-0.5	--	-0.5
Engineering	--	--	--	--
Estimating	+7.6	+165.9	--	+173.5
Other	--	--	--	--
Support	--	-20.1	--	-20.1
Subtotal	+7.6	+145.3	--	+152.9
Total Changes	-39.7	+250.5	--	+210.8
CE - Cost Variance	7225.3	20678.0	13.3	27916.6
CE - Cost & Funding	7225.3	20678.0	13.3	27916.6

Previous Estimate: December 2016

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-2.2
Adjustment for current and prior escalation. (Estimating)	-3.0	-2.6
Adjustment to Follow-on (FOT&E) Operational Test and Evaluation for obsolescence. (Estimating)	+22.1	+25.2
Revised estimate to reflect actuals. (Estimating)	-11.5	-11.7
RDT&E Subtotal	+7.6	+8.7

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-127.9
Adjustment for current and prior escalation. (Estimating)	+3.3	+3.3
Revised estimate to reflect the application of new outyear escalation indices. (Estimating)	+104.2	+123.2
Acceleration of procurement buy profile resulting from moving three aircraft from FY 2023 to FY 2019 and FY 2021 - FY 2022. (Schedule)	0.0	-42.3
Additional schedule variance resulting from moving three aircraft from FY 2023 to FY 2019 and FY 2021 - FY 2022. (Schedule)	-0.5	0.0
Revised estimate for Airframe labor hours and material costs for LRIP lot 1 contract award and contractor labor rates. (Estimating)	+90.5	+93.8
Revised estimate for Engines for LRIP lots 1-2 contract award. (Estimating)	+0.5	-5.8
Revised estimate for Government Furnished Equipment (GFE) requirements. (Estimating)	-32.6	-38.7
Adjustment for current and prior escalation. (Support)	+1.3	+1.5
Increase due to methodology change from an analogy estimate to a component level bottoms-up estimate for Depot Capability Establishment Program (CEP). (Support)	+63.9	+86.2
Decrease in Initial Spares due to requirements. (Support)	-85.3	-96.6
Procurement Subtotal	+145.3	-3.3

Contracts

Contract Identification	
Appropriation:	RDT&E
Contract Name:	System Development and Demonstration
Contractor:	Sikorsky Aircraft Corporation
Contractor Location:	6900 Main Street Stratford, CT 06615-9129
Contract Number:	N00019-06-C-0081
Contract Type:	Cost Plus Incentive Fee (CPIF)
Award Date:	January 03, 2006
Definitization Date:	January 03, 2006

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
3052.2	N/A	5	3012.7	N/A	5	4455.2	4393.7

Target Price Change Explanation	
The difference between the Initial Contract Price Target and the Current Contract Price Target is due to a reduction in target fee associated with contract type conversion from Cost Plus Award Fee to Cost Plus Incentive Fee and scope adjustments. Program Manager's Estimated Price is equal to the current Estimate at Completion plus scope changes, profit and fee.	

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/31/2018)	-315.5	-86.6
Previous Cumulative Variances	-231.6	-15.4
Net Change	-83.9	-71.2

Cost and Schedule Variance Explanations	
The unfavorable net change in the cost variance is due to poor performance due to technical discovery during Flight/Ground Test and required aircraft modifications to the Ground Test Vehicle and Engineering Development Model aircraft.	
The unfavorable net change in the schedule variance is due to variance primarily resulted from delayed flight testing due to technical discovery as well as late receipt of parts needed for ground test activities caused by reallocation of dynamic component parts to the System Development and Demonstration (SDD)/System Demonstration Test Article (SDTA) aircraft, delaying test preparation and instrumentation activities.	

Notes

The Definitization date above reflects the Definitization of the interim System Development and Demonstration (iSDD) contract for \$7.63M. On April 5, 2006 the SDD contract was signed for the negotiated cost of \$2.73B.

Initial Contract Price Quantity was updated to correct previous submissions. The iSDD contract had a quantity of zero. This quantity was later negotiated to five when the full SDD contract was initialized.

Initial quantity has been updated to reflect the number of aircraft procured.

Contract Identification

Appropriation: RDT&E
Contract Name: System Demonstration Test Articles
Contractor: Sikorsky Aircraft Corporation
Contractor Location: 6900 Main Street
 Stratford, CT 06614
Contract Number: N00019-06-C-0081/2
Contract Type: Cost Plus Incentive Fee (CPIF)
Award Date: May 30, 2013
Definitization Date: May 30, 2013

Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
435.3	N/A	4	769.0	N/A	6	810.9	811.6

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to increase in scope to the contract, plus two additional aircraft.

Contract Variance

Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/31/2018)	-5.2	-10.9
Previous Cumulative Variances	+4.7	-33.7
Net Change	-9.9	+22.8

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to aircraft build inefficiencies on SDTA #2 and #3 as well as increased dynamic components backshop labor in support of fabrication and assembly of the Main Gearbox and Main Rotor Blade. Additionally, increased engineering support was required for configuration changes, discrepancy reports, and material review board actions.

The favorable net change in the schedule variance is due to delivery of previously late material and continued aircraft build in Operations. A majority of the material schedule variance resided in the Dynamics Integrated Product Team.

Notes

PM's estimates provided for this submission reflect the December 2016 Estimate at Completion. PM's estimated price is equal to the current estimate plus scope and quantity changes, profit and fee.

In addition, critical parts for SDTA's 5&6 were added to the contract.

Initial quantity has been updated to reflect the number of aircraft procured.

Contract Identification

Appropriation: RDT&E
Contract Name: SDTA Engines
Contractor: General Electric
Contractor Location: 1000 Western Avenue
 Lynn, MA 01905
Contract Number: N00013-13-C-0132/3
Contract Type: Firm Fixed Price (FFP)
Award Date: July 18, 2013
Definitization Date: July 31, 2014

Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
15.7	N/A	0	127.8	N/A	22	136.8	136.8

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to exercising options to procure engines and due to added scope for spares, supportability and cost reduction initiatives.

Cost and Schedule Variance Explanations

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

Notes

Initial contract price of \$15.7M was awarded on July 18, 2013 for critical parts, systems engineering and program management related to engine procurement. On July 31, 2014, the Government added FFP CLINs to procure 16 engines and the associated technical data and tooling. On January 15, 2015, the Government exercised an option to procure an additional six engines. PM's estimated price is equal to the current estimate plus scope changes, profit, and fee.

An administrative change to Initial contract quantity has been changed from the previous SAR to reflect zero quantities associated with the initial award for critical parts, systems engineering, and program Management.

Additional scope and quantity have been added to the contract that increased the total contract value by \$22.6M.

Contract Identification

Appropriation: Procurement
Contract Name: LRIP Lot 1 Aircraft
Contractor: Sikorsky Aircraft Corporation
Contractor Location: 6900 Main Street
 Stratford, CT 06615-9129
Contract Number: N00019-16-C-0048/4
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: April 18, 2016
Definitization Date: April 18, 2016

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
297.3	286.3	2	297.3	286.3	2		

Cost and Schedule Variance Explanations

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

Notes

This is the first time this contract is being reported.

Lot 1 AAC awarded for \$31.25M on April 18 2016, and was incorporated into the Lot 1 total contract cost.

Contract Identification

Appropriation: Procurement
Contract Name: LRIP Lot 1 and Lot 2 Engines
Contractor: General Electric Aviation
Contractor Location: 1000 Western Avenue
 Lynn, MA 01905
Contract Number: N00019-18-C-1007
Contract Type: Firm Fixed Price (FFP)
Award Date: November 16, 2017
Definitization Date: November 16, 2017

Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
143.4	N/A	22	143.4	N/A	22		

Cost and Schedule Variance Explanations

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

Notes

This is the first time this contract is being reported.

Contract Identification

Appropriation: Procurement
Contract Name: AAC Lot 2
Contractor: Sikorsky Aircraft Corporation
Contractor Location: 6900 Main Street
 Stratford, CT 06615
Contract Number: N00019-16-C-0048
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: May 22, 2017
Definitization Date:

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
55.0	55.0	4	55.0	55.0	4		

Cost and Schedule Variance Explanations

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

Notes

This is the first time this contract is being reported.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	6	0.00%
Production	0	0	194	0.00%
Total Program Quantity Delivered	0	0	200	0.00%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	31165.2	Years Appropriated	17
Expended to Date	5367.0	Percent Years Appropriated	58.62%
Percent Expended	17.22%	Appropriated to Date	7351.2
Total Funding Years	29	Percent Appropriated	23.59%

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

Operating and Support Cost

Cost Estimate Details

Date of Estimate: February 01, 2018
Source of Estimate: POE
Quantity to Sustain: 200
Unit of Measure: Aircraft
Service Life per Unit: 30.00 Years
Fiscal Years in Service: FY 2019 - FY 2060

- Aircraft Attrition Rate: 0.5% of Total Aircraft Inventory (TAI) per year
- Aircraft Pipeline Factor: 15.5% of TAI
- Squadrons: 10 Marine Heavy Helicopter (HMH) squadrons (8 active / 2 reserve) / 1 Marine Training (HMHT) squadron
- Helicopters per HMH (active) squadron: 16
- Helicopters per HMH (reserve) squadron: 8
- Helicopters per HMHT squadron: 21
- Monthly Flight Hours per Helicopter (Primary Aircraft Authorized (PAA)): 17.9
- PB 2019 budgeted flight hours applied in the FYDP
- Aircraft reliability projections per NAVAIR-4.1.10 input
- Total Operating Helicopter Years: 5,038 (Phase-in of PAA required, 30 years operating life per aircraft, phase-out of PAA)

Sustainment Strategy

The CH-53K will be sustained utilizing Organizational, Intermediate, and Depot levels of maintenance. Repair and Overhaul capability establishment will be phased in over five years and will be based on component maturity, operational readiness and affordability factors. For components determined to require organic repair capability, a time-phased entry approach will be utilized to enable optimization of capacity as well as stabilization of repair processes and ensure repair capability will be established no later than IOC +4 years. Product Support analyses are being matured and will be compared to data obtained during flight test and initial operations to establish sustainment baselines at the component level. A Fleet Common Operation Environment (FCOE) has been established to fuse information from operations and sustainment activities across the Naval Aviation Enterprise and provide near real-time comparisons of actual environmental, reliability, cost and sustainment infrastructure performance against the established baselines. Current sustainment planning activities are facilitating engagement with both public and private industrial support services in the development of performance-based product support arrangements as well as utilizing the FCOE to enable more agile and effective product support packages during CH-53K sustainment operations.

Antecedent Information

- The antecedent system is CH-53E
- Antecedent CH-53E data representative of FY 2014 to FY 2016 average of Naval Visibility And Management of Operating and Support Cost (VAMOSOC) reported cost data
- CH-53E is not capable of meeting Joint Requirements Oversight Council Key Performance Parameter requirements established for the CH-53K (CH-53K provides three times the lift capability compared to CH-53E)
- CH-53E Total O&S Cost (BY 2017\$) = CH-53E Annual O&S Cost per Helicopter * CH-53K Total Operating Helicopter Years
- Historical data is unavailable for all years of the Antecedent System's life cycle and the calculation is supplemented with CH-53K data

Annual O&S Costs BY2017 \$M			
Cost Element	CH-53K		CH-53E (Antecedent)
	Average Annual Cost Per Aircraft		Average Annual Cost Per Aircraft
Unit-Level Manpower		1.289	1.586
Unit Operations		0.361	0.343
Maintenance		5.234	3.542
Sustaining Support		0.306	0.126
Continuing System Improvements		0.893	0.395
Indirect Support		0.781	0.972
Other		0.000	0.000
Total		8.864	6.964

Item	Total O&S Cost \$M			
	CH-53K			CH-53E (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	46188.9	50807.8	44660.0	35082.6
Then Year	77882.8	N/A	75233.2	N/A

Equation to Translate Annual Cost to Total Cost

- CH-53K Average Annual Cost per Helicopter = Total O&S Cost (BY) / Total Operating Helicopter Years
- \$44,660.0 / 5,038 Total Operating Helicopter Years = \$8.864M per Year per Helicopter

O&S Cost Variance		
Category	BY 2017 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2016 SAR	46188.2	
Programmatic/Planning Factors	-3452.9	Utilization rate decreased to 17.9 flight hours per month, PB 2019 aircraft quantity profile
Cost Estimating Methodology	-15.3	Revised cost estimating methodology in Support Equipment (SE) Replacement and Transportation elements
Cost Data Update	2005.9	Cost data update to Government Furnished Equipment (GFE) and like-similar repair cost estimates, VAMOS history to Cost Estimating Relationships (CER) in multiple elements, PB 2019 inflation and budget data
Labor Rate	86.5	2018 Military Composite Pay Rates
Energy Rate	-152.4	Fuel cost per gallon change
Technical Input	0.0	
Other	0.0	
Total Changes	-1528.2	
Current Estimate	44660.0	

Disposal Estimate Details

Date of Estimate:	February 01, 2018
Source of Estimate:	POE
Disposal/Demilitarization Total Cost (BY 2017 \$M):	Total costs for disposal of all Aircraft are 52.3