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Combat Rescue Helicopter (CRH)

As of FY 2021 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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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)
USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)

Program Information

Program Name

Combat Rescue Helicopter (CRH)

DoD Component

Air Force

Responsible Office

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Date Assigned: March 1, 2018

References

SAR Baseline (Development Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated June 18, 2014

Approved APB

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated September 24, 2019

Mission and Description

The CRH will provide Personnel Recovery (PR) forces with a vertical takeoff and landing aircraft that is quickly deployable and capable of main base and austere location operations for worldwide PR missions. CRH system activities may be required during any phase of a service/joint/coalition operation, across the full range of military operations, in any land or sea location, within the areas covered by the relevant defense planning scenarios.

The United States Air Force (USAF) has 12 Core Functions that address its unique capabilities in support of the Joint Functional Capabilities (JFC) across the full spectrum of political and military operations in all environments. The USAF has demonstrated its commitment to the Joint Force by making PR one of the 12 USAF Core Functions. The Air Force recognizes the inherent interdependence of PR, although established as an individual Core Function, with the other Core Functions as well as with the JFCs.

The CRH shall be capable of employment day or night, in adverse weather, and in a variety of threat spectrums from terrorist attacks to chemical, biological, radiological, and nuclear threats. A single pilot must be able to fly and operate all electronic/sensor weapons systems including countermeasures, leaving the second pilot to navigate, communicate, and manage mission execution. Onboard defensive capabilities will permit the CRH system to operate in an increased threat environment. An in-flight air refueling capability will provide an airborne alert capability and extend its combat mission range. The CRH system may conduct combat search and rescue airborne mission commander duties. The aircraft will be self-supporting to the maximum extent practical.

The CRH system may also conduct other collateral missions inherent in their capabilities to conduct PR, such as non-conventional assisted recovery, national emergency operations, civil search and rescue, international aid, emergency aero medical evacuation, disaster and humanitarian relief, counter drug activities, support for National Aeronautics and Space Administration flight operations, and insertion/extraction of combat forces.

A single 15 year contract was awarded to Sikorsky Aircraft Corporation on June 26, 2014. CRH is on contract to buy 113 aircraft, designated as the CRH. In addition to purchasing the aircraft, the contract includes development and fielding of the aircrew and maintenance training systems along with product support. The product support strategy consists of a 2-level maintenance concept (organizational and depot). During pre-operational support, the contractor will provide all levels of maintenance and material support. Field Service representatives will assist the USAF in transitioning to organic organizational maintenance. Spares and support equipment will be delivered 60 days prior to CRH fielding. The training system consists of training devices, courseware, technical data, spares and support equipment necessary to meet aircrew and maintenance training system requirements. CRH will ensure combat capability we develop, acquire, and deliver to the warfighter is affordable and supportable throughout its life cycle.

Executive Summary

Program Highlights Since Last Report

The program has progressed significantly, successfully entering flight test and completing Milestone (MS) C, and is on track to meet all KPPs and Key System Attributes.

Program Highlights:

January 2019 - The Helicopter Program Office (HPO) and Sikorsky refined a moderate-risk schedule to first flight.

May 17, 2019 - EMD aircraft # 2 achieved first flight and the CRH program began flight test. EMD 1 achieved its first flight, May 23, 2019.

August 2019 - Development Flight Testing was ahead of planned schedule to collect data required to support MS C entrance criteria. This enabled a September 24, 2019 MS C and subsequent LRIP award.

September 24, 2019 - The MS C Air Force Review Board was held with the Milestone Decision Authority authorizing entry into the Production and Deployment phase and procurement of up to 61 LRIP aircraft over four production lots. Ten of the 61 aircraft had been procured with award of the first LRIP lot on September 24, 2019. Major Assembly is scheduled to begin March 2, 2020.

October 7, 2019 - A Roll-Out Ceremony, attended by the Congressman from Florida's 18th District, Air Combat Commander, and, the Assistant Secretary for AT&L, was held on at Lockheed Martin/Sikorsky Development Flight Center in Florida. Representatives from Mexico and Columbia also attended the event.

November 9, 2019 – The Air Force updated the MS C SCP due to OSD CAPE concerns regarding near term funding. The updated program schedule and cost estimate will be reflected in future program reporting.

December 2019 - Developmental Flight Test continued to progress. EMD aircraft 1-4 and System Demonstration Test Article 1 and 2 have accumulated 298+ flight hours to support Developmental Test completion. The flight test program was tracking as scheduled to meet Required Assets Available ahead of the MS C objective date per contractual commitments.

Program Risk:

The Air Force's independent assessment in support of the SCP identified risk in completing flight test by the MS B Required Assets Available (RAA) objective of September 2019. The schedule risk is reflected in the addition of 6 months to the MS C RAA objective and threshold dates. The program is currently on track to an October 2020 RAA with entry into initial Operational Test and Evaluation in early 2021.

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

History of Significant Developments Since Program Initiation	
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History of Significant Developments Since Program Initiation	
Date	Significant Development Description
March 2012	Program initiation was approved in the Material Development Decision ADM signed by the Acting USD (AT&L), USD (A&S) on March 2, 2012
October 2012	A Pre-EMD ADM was signed October 19, 2012, approving final Request For Proposal release
June 2014	A Milestone (MS) B ADM was signed on June 18, 2014, authorizing the CRH contract award and entrance into the EMD phase
June 2014	A Fixed-Price Incentive Firm at Firm Fixed Price contract for EMD was awarded to Sikorsky Aircraft Corporation on June 26, 2014
December 2014	Integrated Baseline Review conducted; action item completion and Performance Measurement Baseline established July 31, 2015
3rd Quarter FY 2015	Air Vehicle System and Training Systems Requirements Review / System Functional Review (SRR/SFR) was conducted
April 2016	Air Vehicle Preliminary Design Review was conducted
May 2016	USD(AT&L) ADM dated May 10, 2016, designated the HH-60W program an ACAT 1C
August 2016	Training Systems Preliminary Design Review was conducted
December 2016	The In-Process Review Air Force Review Board ADM was signed December 7, 2016 and approved purchase of five System Demonstration Test Article aircraft
May 2017	Air Vehicle Critical Design Review was conducted
September 2017	Training Systems Critical Design Review was conducted
October 2017	Product Support Business Case Analysis was approved
1st Quarter FY 2019	EMD 1 and 2 test aircraft shipped to the Sikorsky West Palm Beach facility
May 2019	EMD aircraft 2 achieved first flight and CRH began flight test
September 2019	MS C Air Force Review Board with the MS Decision Authority authorized entry into Production and Deployment phase and procurement of up to 61 LRIP aircraft over four production lots.
October 2019	Roll-Out Ceremony was held at the Lockheed Martin/Sikorsky Development Flight Center in Florida

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

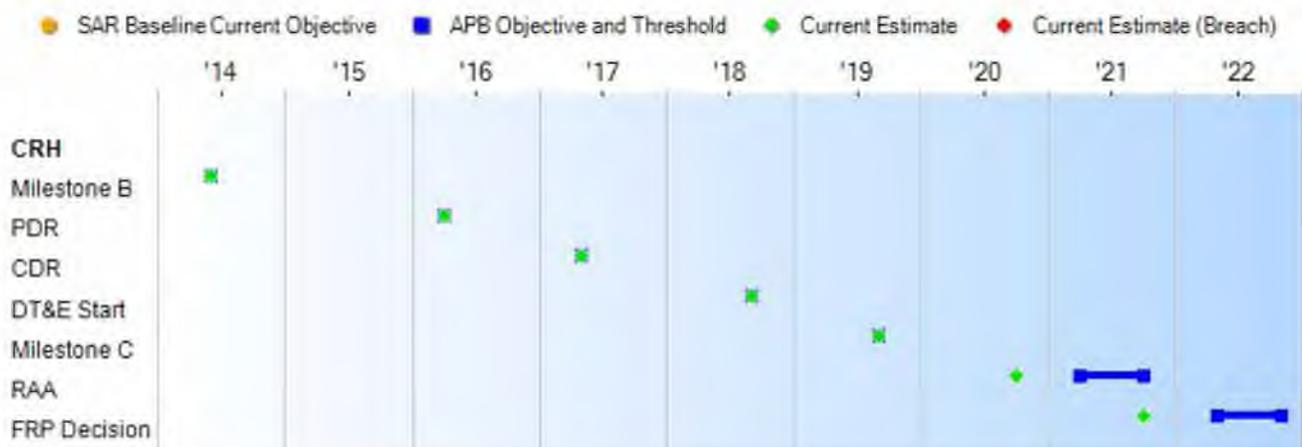
Current UCR Baseline

PAUC	None
APUC	None

Original UCR Baseline

PAUC	None
APUC	None

Schedule



Schedule Events				
Events	SAR Baseline Development Estimate	Current APB Production Objective/Threshold		Current Estimate
Milestone B	Jun 2014	Jun 2014	Jun 2014	Jun 2014
PDR	Apr 2016	Apr 2016	Apr 2016	Apr 2016
CDR	Jul 2017	May 2017	May 2017	May 2017
DT&E Start	Sep 2018	Sep 2018	Sep 2018	Sep 2018
Milestone C	Oct 2019	Sep 2019	Sep 2019	Sep 2019
RAA	Sep 2020	Apr 2021	Oct 2021	Oct 2020
FRP Decision	Oct 2021	May 2022	Nov 2022	Oct 2021

(Ch-1)

Change Explanations

(Ch-1) The current estimate for RAA changed from September 2020 to October 2020 due to current developmental test status.

Notes

RAA is defined as delivery of eight production configuration aircraft (four mission & four training) with all required training devices, spares, support equipment, technical manuals, and sustainment support in place to support IOC.

Acronyms and Abbreviations

CDR - Critical Design Review
DT&E - Development Test & Evaluation
PDR - Preliminary Design Review
RAA - Required Assets Available
SIL - System Integration Laboratory

Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Production Objective/Threshold	Demonstrated Performance	Current Estimate	
Hover Performance				
A combat configured HH-60 Recap with SCL shall have an OGE hover capability at mid-mission gross weights at 6,000' PA, 35°C.	A combat configured HH-60 Recap with SCL shall have an OGE hover capability at mid-mission gross weights at 6,000' PA, 35°C.	A combat configured HH-60 Recap with SCL shall have an OGE hover capability at mid-mission gross weights at 4,000' PA, 35°C.	TBD	A combat configured HH-60 Recap with SCL shall have an OGE hover capability at mid-mission gross weights at 4,000' PA, 35°C.
Survivability				
(Objective=Threshold) HH-60 Recap aircraft shall provide vulnerability reduction at least equal to existing HH-60G vulnerability reduction features - protection for the pilot, copilot and all flight critical components or subsystems against ground-fired 7.62 mm armor piercing projectiles at 100 meters.	(Objective=Threshold) HH-60 Recap aircraft shall provide vulnerability reduction at least equal to existing HH-60G vulnerability reduction features - protection for the pilot, copilot and all flight critical components or subsystems against ground-fired 7.62 mm armor piercing projectiles at 100 meters.	HH-60 Recap aircraft shall provide vulnerability reduction at least equal to existing HH-60G vulnerability reduction features - protection for the pilot, copilot and all flight critical components or subsystems against ground-fired 7.62 mm armor piercing projectiles at 100 meters.	TBD	HH-60 Recap aircraft shall provide vulnerability reduction at least equal to existing HH-60G vulnerability reduction features - protection for the pilot, copilot and all flight critical components or subsystems against ground-fired 7.62 mm armor piercing projectiles at 100 meters.
Force Protection				
Pilot and copilot seating to 14.5 mm AP projectiles at 500 meters. Walls around the primary cabin crew member positions and the entire cabin floor to 14.5 mm AP at 500 meters.	Pilot and copilot seating to 14.5 mm AP projectiles at 500 meters. Walls around the primary cabin crew member positions and the entire cabin floor to 14.5 mm AP at 500 meters.	Pilot and copilot seating will incorporate ballistic hardening to defeat 7.62 mm AP projectiles at 100 meters. The cabin walls around the primary cabin crew member positions and the entire cabin floor will have the capability to defeat 7.62 mm AP projectiles at 100 meters.	TBD	Pilot and copilot seating will incorporate ballistic hardening to defeat 7.62 mm AP projectiles at 100 meters. The cabin walls around the primary cabin crew member positions and the entire cabin floor will have the capability to defeat 7.62 mm AP projectiles at 100 meters.
Net Ready				

Execution of all operational activities and information exchanges identified and information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA.	Execution of all operational activities and information exchanges identified and information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA.	The capability, system, and/or service shall fully support execution of joint critical operational activities and information exchanges identified in the DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and shall satisfy the technical requirements for transition to Net-Centric military operations. Issuance of an IATO or ATO by the DAA.	TBD	The capability, system, and/or service shall fully support execution of joint critical operational activities and information exchanges identified in the DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and shall satisfy the technical requirements for transition to Net-Centric military operations. Issuance of an IATO or ATO by the DAA.
Sustainment (Material Availability)				
(Objective= Threshold) MC rate of 83 percent at IOC	(Objective= Threshold) MC rate of 83 percent at IOC	MC rate of 83 percent at IOC	TBD	MC rate of 85.8 percent at IOC
System Training Process				
(Objective= Threshold) HH-60 Recap shall provide operations and maintenance training systems	(Objective= Threshold) HH-60 Recap shall provide operations and maintenance training systems	HH-60 Recap shall provide operations and maintenance training systems	TBD	HH-60 Recap shall provide operations and maintenance training systems

Requirements Reference

CDD for HH-60 Recapitalization Aircraft dated July 6, 2010
 CDD Supplement for HH-60 Recapitalization Aircraft dated July 20, 2012

Change Explanations

None

Notes

CRH referred to as HH-60 Recap in CDD.

Acronyms and Abbreviations

AP - Armor Piercing
ATO - Authorization to Operate
C - Celsius
DAA - Designated Accrediting Authority
DoDAF - Department of Defense Air Force
IATO - Interim Authorization to Operate
MC - Mission Capable
mm - Millimeter
OGE - Out of Ground Effect
PA - Pressure Altitude
SCL - Standard Combat Load

Track to Budget

RDT&E

Appn	BA	PE
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Air Force 3600 05 0605229F

Project	Name
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654364 Combat Rescue Helicopter

Procurement

Appn	BA	PE
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Air Force 3010 06 0207229F

Line Item	Name
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000999 Initial Spares/Repair Parts

Air Force 3010 04 0207229F

Line Item	Name
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H060WH Combat Rescue Helicopter

MILCON

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

Air Force 3300 02 0207229F

Project	Name
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B57000 Combat Rescue Helicopter

Air Force 3300 01 0207229F

Project	Name
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VARIOUS Combat Rescue Helicopter

Notes

BA02 is minor construction in FY 2021 for \$4.049M.

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2019 \$M			BY 2019 \$M	TY \$M		
	SAR Baseline Development Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Production Objective	Current Estimate
RDT&E	2106.0	2211.9	2433.1	2097.5	2118.6	2235.3	2079.0
Procurement	6567.5	6974.7	7672.2	7101.5	7708.7	7804.9	7953.1
Flyaway	--	--	--	4686.7	--	--	5210.8
Recurring	--	--	--	4686.7	--	--	5210.8
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	2414.8	--	--	2742.3
Other Support	--	--	--	1871.4	--	--	2138.4
Initial Spares	--	--	--	543.4	--	--	603.9
MILCON	25.5	68.8	75.7	49.2	28.9	76.1	53.3
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	8699.0	9255.4	N/A	9248.2	9856.2	10116.3	10085.4

Current APB Cost Estimate Reference

Approved Milestone C SCP dated September 18, 2019

The Base Year for the program has been updated from FY 2014 to FY 2019 using the following deflators:

Appn Category	Deflation Factor
RDT&E	1.07515321
Procurement	1.07515321
MILCON	1.07515321

Cost Notes

CAPE Cost Risks: The Milestone (MS) C SCP was completed on September 18, 2019. The SCP is based on analogous systems to determine probable real weapon system costs. Risk is assessed and addressed throughout all cost elements of the SCP, to include both baseline aircraft and capability upgrades. Cost risk will be managed through implementation strategy.

The FY 2021 PB significantly adjusted the CRH aircraft buy profile. The Program of Records remains at 113 aircraft but the program is currently short funding for 5 aircraft in the FYDP (only funded at 108 aircraft). ACC and the Air Force remain committed to rectify the current buy profile in the FY 2022 POM to mitigate impacts on fielding plans.

However, CRH has a Fixed Price Incentive Firm contract with target and ceiling CLINs. Contract CLIN prices are capped at the CLIN ceiling prices for EMD through LRIP Lots 1 and 2. Production Lots 3-8 are firm fixed price options with not-to-exceeds. Lots 3-8 will be negotiated but will not exceed the stated contract not-to-exceed CLIN prices.

The Future Years Defense Program as reflected in the SAR, currently FY 2021-2025 funding, amends the MS C

SCP as the Program Office must execute the appropriated funding.

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Production	Current Estimate
RDT&E	9	10	10
Procurement	103	103	103
Total	112	113	113

Quantity Notes

The FY 2021 PB has changed the quantity phasing in FY 2021 (increase from 16 to 19), FY 2022 (increase from 13 to 20), FY 2023 (increase from 12 to 20), FY 2024 (increase from 12 to 17), and FY 2025 (decrease from 15 to zero).

The FY 2021 PB CRH quantity profile is FY 2019 - 10, FY 2020 - 12, FY 2021 - 19, FY 2022 - 20, FY 2023 - 20, FY 2024 - 17, FY 2025 - 0, and FY 2026 - 5 for the same total production quantity of 103. The increase of 3 aircraft in FY 2021 is funded by Overseas Contingency Operations (OCO).

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2021 President's Budget / December 2019 SAR (TY\$ M)									
Appropriation	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
RDT&E	1658.6	247.0	63.2	29.9	21.8	1.5	2.1	54.9	2079.0
Procurement	633.5	850.6	1223.2	1355.3	1548.4	1340.6	191.9	809.6	7953.1
MILCON	13.2	15.5	4.0	16.3	0.0	4.3	0.0	0.0	53.3
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2021 Total	2305.3	1113.1	1290.4	1401.5	1570.2	1346.4	194.0	864.5	10085.4
PB 2020 Total	2347.5	1146.7	1057.6	914.1	876.7	855.8	1015.3	938.8	9152.5
Delta	-42.2	-33.6	232.8	487.4	693.5	490.6	-821.3	-74.3	932.9

Quantity Summary										
FY 2021 President's Budget / December 2019 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Development	10	0	0	0	0	0	0	0	0	10
Production	0	10	12	19	20	20	17	0	5	103
PB 2021 Total	10	10	12	19	20	20	17	0	5	113
PB 2020 Total	10	10	12	16	13	12	12	15	13	113
Delta	0	0	0	3	7	8	5	-15	-8	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding							
3600 RDT&E Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2012	--	--	--	--	--	--	6.2
2013	--	--	--	--	--	--	32.8
2014	--	--	--	--	--	--	333.6
2015	--	--	--	--	--	--	100.0
2016	--	--	--	--	--	--	150.3
2017	--	--	--	--	--	--	263.3
2018	--	--	--	--	--	--	342.0
2019	--	--	--	--	--	--	430.4
2020	--	--	--	--	--	--	247.0
2021	--	--	--	--	--	--	63.2
2022	--	--	--	--	--	--	29.9
2023	--	--	--	--	--	--	21.8
2024	--	--	--	--	--	--	1.5
2025	--	--	--	--	--	--	2.1
2026	--	--	--	--	--	--	31.1
2027	--	--	--	--	--	--	23.8
Subtotal	10	--	--	--	--	--	2079.0

Annual Funding							
3600 RDT&E Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	BY 2019 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2012	--	--	--	--	--	--	6.9
2013	--	--	--	--	--	--	35.7
2014	--	--	--	--	--	--	357.8
2015	--	--	--	--	--	--	106.2
2016	--	--	--	--	--	--	157.3
2017	--	--	--	--	--	--	270.0
2018	--	--	--	--	--	--	343.6
2019	--	--	--	--	--	--	424.2
2020	--	--	--	--	--	--	238.6
2021	--	--	--	--	--	--	59.8
2022	--	--	--	--	--	--	27.8
2023	--	--	--	--	--	--	19.8
2024	--	--	--	--	--	--	1.3
2025	--	--	--	--	--	--	1.8
2026	--	--	--	--	--	--	26.7
2027	--	--	--	--	--	--	20.0
Subtotal	10	--	--	--	--	--	2097.5

Annual Funding								
3010 Procurement Aircraft Procurement, Air Force								
Fiscal Year	Quantity	TY \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2019	10	498.3	--	--	498.3	135.2	633.5	
2020	12	634.0	--	--	634.0	216.6	850.6	
2021	19	866.3	--	--	866.3	356.9	1223.2	
2022	20	910.7	--	--	910.7	444.6	1355.3	
2023	20	1039.5	--	--	1039.5	508.9	1548.4	
2024	17	921.9	--	--	921.9	418.7	1340.6	
2025	--	--	--	--	--	191.9	191.9	
2026	5	340.1	--	--	340.1	193.0	533.1	
2027	--	--	--	--	--	135.5	135.5	
2028	--	--	--	--	--	46.9	46.9	
2029	--	--	--	--	--	19.4	19.4	
2030	--	--	--	--	--	12.8	12.8	
2031	--	--	--	--	--	17.9	17.9	
2032	--	--	--	--	--	16.7	16.7	
2033	--	--	--	--	--	13.3	13.3	
2034	--	--	--	--	--	9.1	9.1	
2035	--	--	--	--	--	4.3	4.3	
2036	--	--	--	--	--	0.6	0.6	
Subtotal	103	5210.8	--	--	5210.8	2742.3	7953.1	

Annual Funding								
3010 Procurement Aircraft Procurement, Air Force								
Fiscal Year	Quantity	BY 2019 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2019	10	476.2	--	--	476.2	129.2	605.4	
2020	12	594.3	--	--	594.3	203.0	797.3	
2021	19	796.1	--	--	796.1	328.0	1124.1	
2022	20	820.5	--	--	820.5	400.6	1221.1	
2023	20	918.2	--	--	918.2	449.5	1367.7	
2024	17	798.3	--	--	798.3	362.6	1160.9	
2025	--	--	--	--	--	162.9	162.9	
2026	5	283.1	--	--	283.1	160.6	443.7	
2027	--	--	--	--	--	110.6	110.6	
2028	--	--	--	--	--	37.5	37.5	
2029	--	--	--	--	--	15.2	15.2	
2030	--	--	--	--	--	9.8	9.8	
2031	--	--	--	--	--	13.5	13.5	
2032	--	--	--	--	--	12.3	12.3	
2033	--	--	--	--	--	9.6	9.6	
2034	--	--	--	--	--	6.5	6.5	
2035	--	--	--	--	--	3.0	3.0	
2036	--	--	--	--	--	0.4	0.4	
Subtotal	103	4686.7	--	--	4686.7	2414.8	7101.5	

FY 2021 includes \$174M of Overseas Contingency Operations (OCO) funding to procure 3 aircraft of the total 19 aircraft.

Annual Funding 3300 MILCON Military Construction, Air Force		
Fiscal Year	TY \$M	
	Total Program	
2017	7.3	
2018	--	
2019	5.9	
2020	15.5	
2021	4.0	
2022	16.3	
2023	--	
2024	4.3	
Subtotal	53.3	

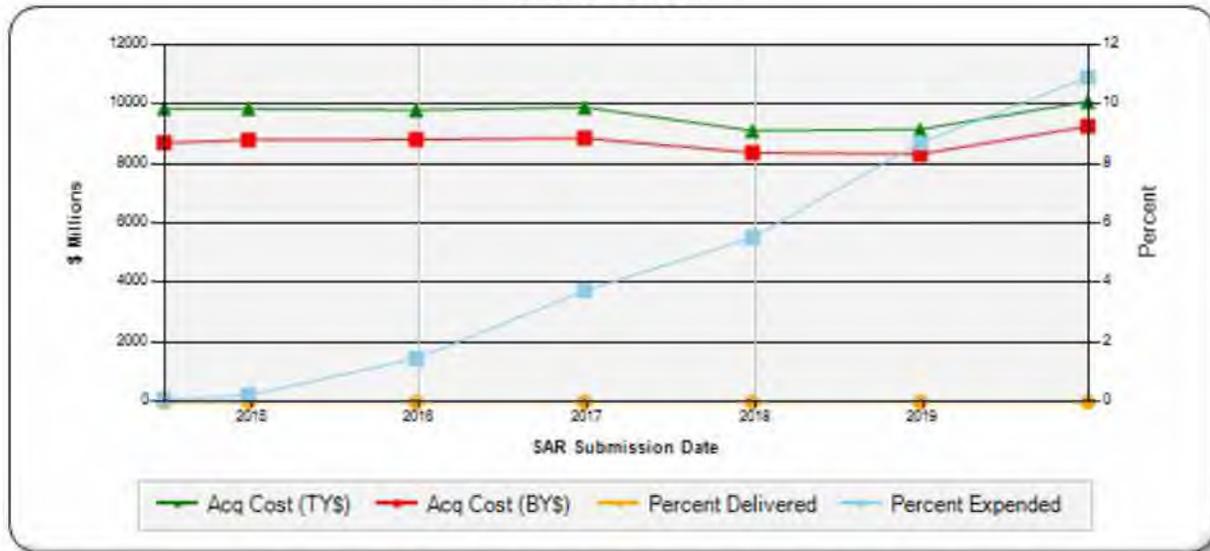
Annual Funding 3300 MILCON Military Construction, Air Force	
Fiscal Year	BY 2019 \$M
	Total Program
2017	7.2
2018	--
2019	5.6
2020	14.4
2021	3.7
2022	14.6
2023	--
2024	3.7
Subtotal	49.2

The MS C SCP MILCON baseline total is \$76.2M. However, the FY 2021 PB funding totals \$53.4M. There are MILCON unfundeds and rephasing that will need to be accomplished.

(U//FOUO) Charts

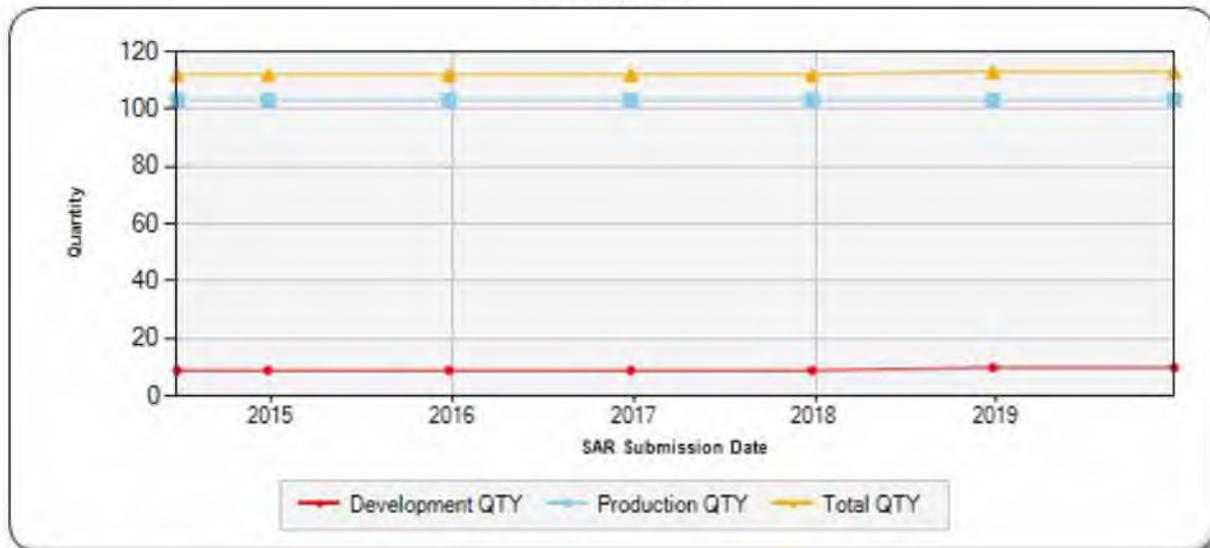
CRH first began SAR reporting in June 2014

Program Acquisition Cost - CRH
Base Year 2019 \$M



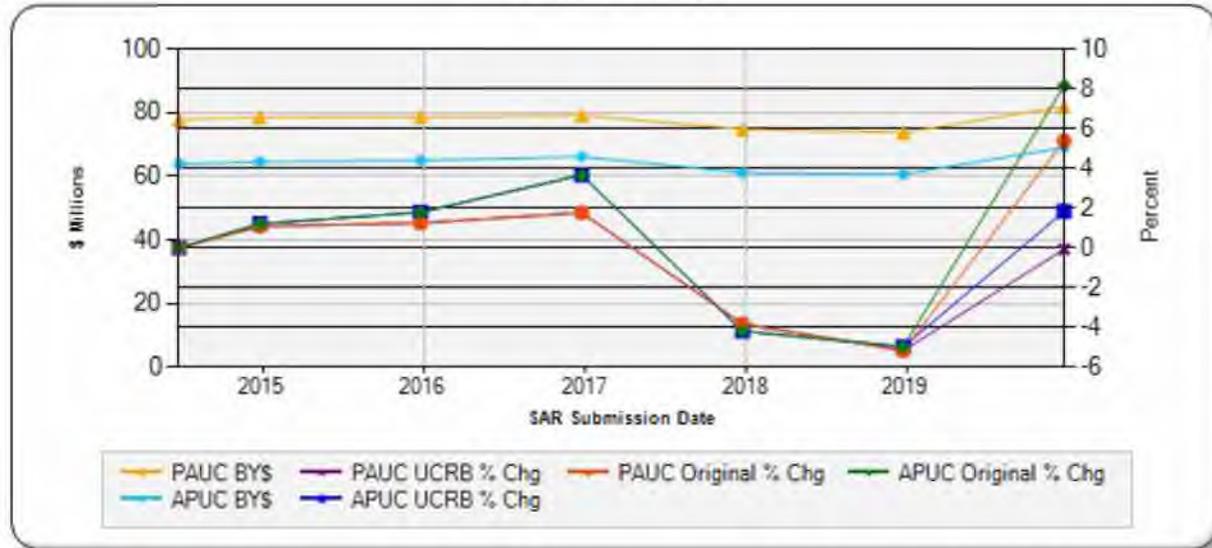
Based on Financial information and the Combat Rescue Helicopter Security Classification Guide

Quantity - CRH



Based on Combat Rescue Helicopter Security Classification Guide

Unit Cost - CRH
Base Year 2019 \$M



Based on Financial information and the Combat Rescue Helicopter Security Classification Guide

Risks

Significant Schedule and Technical Risks

Significant Schedule and Technical Risks	
Current Estimate (December 2019)	
1.	Hover Key Performance Parameter (dependent on aircraft weight / drag)

Risks

Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Baseline Estimate (September 2019)	
1.	Total Acquisition Cost (BY19 \$M) - \$9,246.4M (Qty 113); PAUC - \$81.827M (Qty 113); APUC - \$68.920M (Qty 103).
Original Baseline Estimate (June 2014)	
1.	The original baseline is the same as current baseline for the program. Total Acquisition Cost (BY14 \$M) - \$8,090.9M (Qty 112); PAUC - \$72.240M (Qty 112); APUC - \$56.305M (Qty 103).
Revised Original Estimate (N/A)	
None	
Current Procurement Cost (December 2019)	
1.	Total Acquisition Cost (BY19 \$M) - \$9,246.4M (Qty 113); PAUC - \$81.827M (Qty 113); APUC - \$68.920M (Qty 103).
2.	The program must continue to maintain enough obligation authority to cover contractor accrued expenditures and termination liability. Due to the contract being a Firm Fixed Price Incentive contract, cumulative funding liability continues to balloon for final contract payout, delaying expenditure rates. The Air Force continues to explore additional re-phased quantity buys for future lots. As a result, funding adjustments may be required to ensure appropriate training, MILCON, and fielding support is available to support revised fielding plans.

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	6/18/2014	9/18/2019
Approved Quantity	18	61
Reference	Milestone B ADM	Milestone C ADM
Start Year	2019	2019
End Year	2021	2022

The Current Total LRIP Quantity is more than 10% of the total production quantity as the MS C APB was approved based on three full-rate production lots.

Notes

The ADM for MS C and entry into Production and Deployment phase for CRH program was signed on September 24, 2019. The MS C ADM approved additional LRIP lots 3 and 4 for a total LRIP quantity of 61 aircraft (up to the full Variation in Quantity).

The current FY 2021 PB funding supports an LRIP quantity of up to 61 aircraft.

Foreign Military Sales

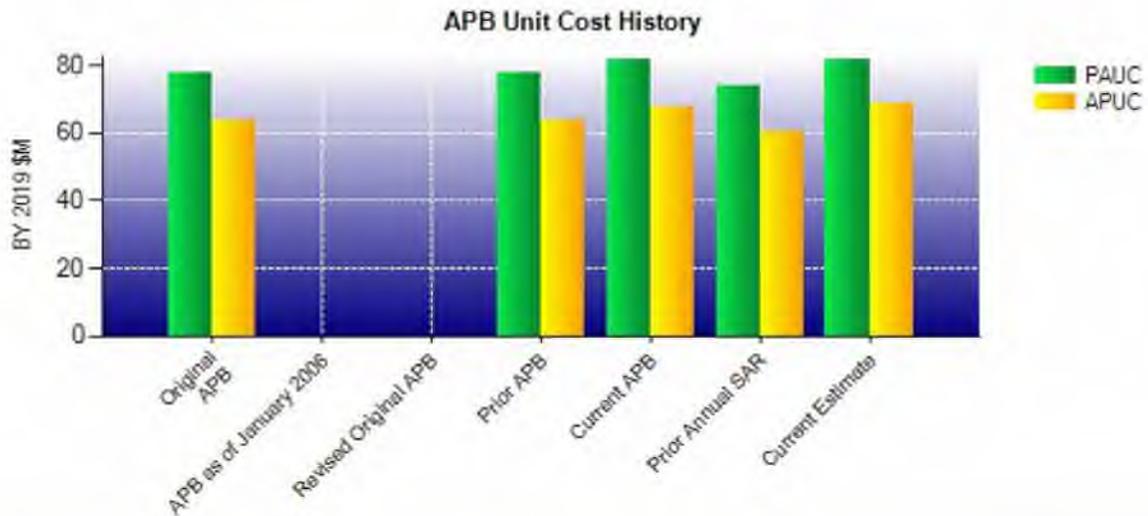
None

Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2019 \$M	BY 2019 \$M	% Change
	Current UCR Baseline (Sep 2019 APB)	Current Estimate (Dec 2019 SAR)	
Program Acquisition Unit Cost			
Cost	9255.4	9248.2	
Quantity	113	113	
Unit Cost	81.906	81.842	-0.08
Average Procurement Unit Cost			
Cost	6974.7	7101.5	
Quantity	103	103	
Unit Cost	67.716	68.947	+1.82
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2019 \$M	BY 2019 \$M	% Change
	Original UCR Baseline (Jun 2014 APB)	Current Estimate (Dec 2019 SAR)	
Program Acquisition Unit Cost			
Cost	8699.0	9248.2	
Quantity	112	113	
Unit Cost	77.670	81.842	+5.37
Average Procurement Unit Cost			
Cost	6567.5	7101.5	
Quantity	103	103	
Unit Cost	63.762	68.947	+8.13



APB Unit Cost History					
Item	Date	BY 2019 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Jun 2014	77.670	63.762	88.002	74.842
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	Jun 2014	77.670	63.762	88.002	74.842
Current APB	Sep 2019	81.906	67.716	89.525	75.776
Prior Annual SAR	Dec 2018	73.661	60.590	80.996	68.670
Current Estimate	Dec 2019	81.842	68.947	89.251	77.215

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY \$M)										
PAUC Development Estimate	Changes									PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
88.002	-2.035	-0.425	-2.064	3.769	-4.422	0.000	6.426	1.249		89.251

Current SAR Baseline to Current Estimate (TY \$M)										
Initial APUC Development Estimate	Changes									APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
74.842	-1.775	0.000	-1.888	3.233	-4.247	0.000	7.050	2.373		77.215

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	Jun 2014	N/A	Jun 2014
Milestone C	N/A	Oct 2019	N/A	Sep 2019
IOC	N/A	Sep 2020	N/A	Oct 2020
Total Cost (TY \$M)	N/A	9856.2	N/A	10085.4
Total Quantity	N/A	112	N/A	113
PAUC	N/A	88.002	N/A	89.251

Required Assets Available is used in lieu of IOC and is defined as delivery of eight production configuration aircraft (four mission & four training) with all required training devices, spares, support equipment, technical manuals, and sustainment support in place to support IOC.

Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	2118.6	7708.7	28.9	9856.2
Previous Changes				
Economic	-29.6	-118.2	-0.3	-148.1
Quantity	+40.0	--	--	+40.0
Schedule	-14.6	-137.8	--	-152.4
Engineering	--	+20.9	--	+20.9
Estimating	-112.4	-271.4	+48.9	-334.9
Other	--	--	--	--
Support	--	-129.2	--	-129.2
Subtotal	-116.6	-635.7	+48.6	-703.7
Current Changes				
Economic	-16.9	-64.6	-0.3	-81.8
Quantity	--	--	--	--
Schedule	--	-56.7	-24.1	-80.8
Engineering	+92.9	+312.1	--	+405.0
Estimating	+1.0	-166.0	+0.2	-164.8
Other	--	--	--	--
Support	--	+855.3	--	+855.3
Subtotal	+77.0	+880.1	-24.2	+932.9
Adjustments	--	--	--	--
Total Changes	-39.6	+244.4	+24.4	+229.2
Current Estimate	2079.0	7953.1	53.3	10085.4

Summary BY 2019 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	2106.0	6567.5	25.5	8699.0
Previous Changes				
Economic	--	--	--	--
Quantity	+41.3	--	--	+41.3
Schedule	-25.5	--	+0.1	-25.4
Engineering	--	+19.6	--	+19.6
Estimating	-115.0	-277.0	+46.7	-345.3
Other	--	--	--	--
Support	--	-93.8	--	-93.8
Subtotal	-99.2	-351.2	+46.8	-403.6
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	-20.2	-20.2
Engineering	+82.2	+269.8	--	+352.0
Estimating	+1.5	-141.8	+0.3	-140.0
Other	--	--	--	--
Support	--	+732.7	--	+732.7
Subtotal	+83.7	+860.7	-19.9	+924.5
Adjustments	+7.0	+24.5	-3.2	+28.3
Total Changes	-8.5	+534.0	+23.7	+549.2
Current Estimate	2097.5	7101.5	49.2	9248.2

Previous Estimate: December 2018

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-16.9
Adjustment for current and prior escalation. (Estimating)	+16.5	+16.3
Revised estimate to reflect actual for FY 2019 Budget Authority to pay Small Business Innovative Research. (Estimating)	-14.9	-15.2
Revised estimate to reflect actual for FY 2019 Budget Authority to pay MDAP for RDT&E cost overruns. (Estimating)	-0.1	-0.1
Additional FY 2021 PB funding for CRH capability upgrade nonrecurring engineering and integration. (Engineering)	+82.2	+92.9
RDT&E Subtotal	+83.7	+77.0

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-64.6
Adjustment for current and prior escalation. (Estimating)	+9.7	+10.2
Adjustment for current and prior escalation. (Estimating)	-4.9	-5.5
Revised estimate to reflect updated contract ceiling price in FY 2019 and FY 2020. (Estimating)	+57.6	+61.1
Revised estimate to reflect actual MDAP. (Estimating)	-0.4	-0.4
Revised estimate to reflect actual FY 2020 Congressional rescission for FY 2019. (Estimating)	-25.2	-26.4
Revised estimate due to FY 2020 Congressional Mark. (Estimating)	-31.6	-33.7
Acceleration of procurement buy profile from FY 2021 thru FY 2024. (Schedule)	0.0	-56.7
Revised estimate to align with FY 2021 PB which accelerated the procurement buy profile from FY 2021 to FY 2024. (Estimating)	-147.0	-171.3
Additional FY 2021 PB for aircraft procurement capability upgrade Cut-ins. (Engineering)	+168.8	+194.5
Additional FY 2021 PB funding for Mobile User Objective Systems (MUOS) capability. (Engineering)	+101.0	+117.6
Adjustment for current and prior escalation. (Support)	+3.4	+3.7
Increase in Other Support for procurement modification capability upgrade retrofit kits and realignment of flyaway and initial spares. (Support)	+785.7	+919.5
Decrease in Initial Spares to align with FY 2021 PB. (Support)	-56.4	-67.9
Procurement Subtotal	+860.7	+880.1

MILCON	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.3
Adjustment for current and prior escalation. (Estimating)	+0.1	+0.1
Revised estimate to align with FY 2021 PB. (Estimating)	+0.2	+0.1
Acceleration of procurement buy profile moved Elemendorf and Gabreski Air Force Base's requirements to FY 2023. (Schedule)	-14.6	-17.3

Acceleration of procurement buy profile moved Moffett Air Force Base requirement to FY 2023. (Schedule)	-5.6	-6.8
MILCON Subtotal	-19.9	-24.2

Contracts

General Notes

Estimated Price at Completion if all CLIN options over 15 years are executed is \$7.9B (at target).

Contract Identification

Appropriation: RDT&E
Contract Name: Combat Rescue Helicopter
Contractor: Sikorsky Aircraft Corp.
Contractor Location: 6900 Main Street
 Stratford, CT 06614
Contract Number: FA8629-14-C-2403
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Firm Fixed Price (FFP), Cost Plus Fixed Fee (CPFF)
Award Date: June 26, 2014
Definitization Date: June 26, 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
1277.6	1363.5	N/A	2220.6	2558.7	N/A	1993.3	2220.6

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to Contract price updates include the option exercise of LRIP 1 CLINs (30) and the Spares and Support Equipment Undefined Contract Action (UCA). Additional contract modifications to FA8629-14-C-2403 include funding modifications to CLINS 0002, 0006, 0102, 0235, and 0236 as well as the Type I training efforts, instrumentation Test Racks, and additional incremental funding modifications to CLIN 0001 for FY Funding. The price is also reflected to show incremental funding incorporated with CLIN 0052 and Technical Manual Contract Requirements (TCMR) funding.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/22/2019)	-173.7	-48.8
Previous Cumulative Variances	-99.8	-79.1
Net Change	-73.9	+30.3

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to General & Administration rates, Operations' Sustaining Engineering, and Operations' Aircraft Build.

The favorable net change in the schedule variance is due to Operations' System Demonstration Test Article Aircraft Build, Flight Safety International Weapons System Trainer Development, and Air Vehicle's External Mount Gun System Material.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	10	0	10	0.00%
Production	0	0	103	0.00%
Total Program Quantity Delivered	10	0	113	0.00%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	10085.4	Years Appropriated	9
Expended to Date	1098.9	Percent Years Appropriated	36.00%
Percent Expended	10.90%	Appropriated to Date	3418.4
Total Funding Years	25	Percent Appropriated	33.89%

The above data is current as of February 10, 2020.

Notes

Aircraft produced to date are being used in development test and to satisfy other contract requirements prior to formal Government delivery at RAA.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	September 18, 2019
Source of Estimate:	SCP
Quantity to Sustain:	113
Unit of Measure:	Aircraft
Service Life per Unit:	27.00 Years
Fiscal Years in Service:	FY 2020 - FY 2054

Sustainment Strategy

The Product Support Strategy consists of a 2-level maintenance concept (organizational and depot). During pre-operational support, the contractor will provide all levels of maintenance and material support. Field Service representatives will assist the USAF in transitioning to organic organizational maintenance. Spares and support equipment will be delivered 60 days prior to HH-60W fielding. The training system consists of training devices, courseware, technical data, spares and support equipment necessary to meet aircrew and maintenance training system requirements. HH-60W will ensure combat capability we develop, acquire and deliver to the warfighter is affordable and supportable throughout its life cycle.

- Primary Aerospace Vehicle Inventory (PAI): 91
- Mission Capability Goal: 83%
- Materiel Availability Goal: 67.4%
- Mean Time Between Critical Failure Goal: > 28.5 hours
- Mean Time Between Maintenance Goal: > 0.30 hours
- Mean Down Time Goal: > 20.8 hours
- Service Life: 8,000 hour life

Antecedent Information

(As of Dec 31, 2019)

- HH-60G
- Total Quantity: 105
- PAI: 88
 - The HH-60Us are not included
- Mission Capability Rate: 68.8%
- Materiel Availability Rate: 56.0%
- Mean Time Between Critical Failure Rate: 19.19 hrs
- Mean Time Between Maintenance Rate: 0.17 hrs
- Mean Down Time Rate: 33.28 hrs

HH-60W costs shown in comparison to the antecedent system, HH-60G, reflect estimated average annual cost per primary authorized aircraft (PAA). The HH-60G was normalized for comparison to the HH-60W to reflect programmatic differences and estimating methodologies. The cost per PAA of the HH-60G was projected using Air Force Total Ownership Cost (AFTOC) system historical data. Costs for the HH-60G are an average from FY 1999 to FY 2018 (19 year time span). This cost comparison excludes Indirect Support costs for the HH-60G antecedent system because the costs captured in the AFTOC database are incomplete and do not provide a meaningful comparison to those estimated for HH-60W.

Annual O&S Costs BY2019 \$M		
Cost Element	CRH	
	Average Annual Cost Per Aircraft	HH-60G (Antecedent) Average Annual Cost Per Aircraft
Unit-Level Manpower	3.578	3.314
Unit Operations	0.766	0.857
Maintenance	2.766	1.804
Sustaining Support	0.776	0.078
Continuing System Improvements	0.589	0.958
Indirect Support	1.793	0.365
Other	--	--
Total	10.268	7.376

CRH average annual cost per aircraft assumes full funding of program requirements (unconstrained), whereas the HH-60G reflects projected actual costs reported in the AFTOC system (constrained). Also, the cost of extending the life of the HH-60G is not reflected. The comparison is not adjusted for any capability differences, costs savings or efficiencies that may exist between the two systems.

Item	Total O&S Cost \$M			
	CRH			HH-60G (Antecedent)
	Current Production APB Objective/Threshold	Current Estimate		
Base Year	26512.7	29164.0	26512.7	N/A
Then Year	39684.9	N/A	39684.9	N/A

Equation to Translate Annual Cost to Total Cost

The CRH O&S annual unitized cost of \$10.268M (BY 19\$) is calculated based on a steady state total cost of \$17.754B beginning in FY 2029 and ending in FY 2047 divided by the steady state Primary Aircraft Available fleet of 91 aircraft per year totaling 1729 aircraft.

Total O&S cost includes ramp up (FY 2019-2028), steady state (FY 2029-FY 2047), and ramp down (FY 2048-2054) years.

O&S Cost Variance		
Category	BY 2019 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2018 SAR	27210.8	
Programmatic/Planning Factors	1752.0	Increase in manpower requirements for using MAJCOMs' maintainers and the program office as documented in Manpower Estimate Report (MER).
Cost Estimating Methodology	-795.2	Using the full 20 years of AFTOC cost data for averages vice flat rates and inclusion of most recent year's cost data.
Cost Data Update	-1693.6	Removal of Overseas Contingency Operations

	(OCO) ESP coded cost data.
Labor Rate	60.7 Higher composite labor rates (AFI 65-503 tables), and increased Advisory and Assistance Services (A&AS) contractor rates.
Energy Rate	-22.0 Incorporation of 2019 DLA Fuel rate.
Technical Input	0.0
Other	0.0
<u>Total Changes</u>	<u>-698.1</u>
Current Estimate	26512.7

Disposal Estimate Details

Date of Estimate:	September 18, 2019
Source of Estimate:	SCP
Disposal/Demilitarization Total Cost (BY 2019 \$M):	15.5

TY\$M: \$33.29M (Total Cost)