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RCS: DD-A&T(Q&A)823-562



Utility Helicopter Replacement Program (UH-1N Replacement)

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

Utility Helicopter Replacement Program (UH-1N Replacement)

DoD Component

Air Force

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Date Assigned: October 13, 2015

References

SAR Baseline (Development Estimate)

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated September 11, 2018

Approved APB

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated September 11, 2018

Mission and Description

The Utility Helicopter Replacement Program (UH-1N Replacement) Air Vehicle (AV) fleet supports vertical-lift needs of four Major Commands and the Air Force District of Washington. Air Force Global Strike Command assumes Lead Command responsibility for the UH-1N Replacement program.

The selected MH-139A will address vertical lift support mission requirements for Air Force Global Strike Command, Air Force District of Washington, Pacific Air Force, Air Force Materiel Command, and Air Education and Training Command.

The three primary missions will be Intercontinental Ballistic Missile (ICBM) convoy escort, ICBM Emergency Security Response, and Continuity of Operations/Government. The MH-139A will aid in deterrence of adversaries and allow for a rapid response to mitigate threats and deny hostile aims. The MH-139A will afford the commander one of the most agile capabilities available to them for defense and security of nuclear assets as well as transportation for senior Government officials and key personnel in the event of a national emergency or disaster. The MH-139A will provide effective 21st-century deterrence by providing an overwhelming and timely security response force to deny unauthorized access to nuclear facilities. This enables positive control and security of ICBM assets and facilities, strengthening the Air Force's strategic nuclear deterrence capabilities.

The United States Air Force (USAF) UH-1N Replacement Program addresses the need to replace the USAF's aging UH-1N Huey helicopters AVs and the training system with a new AV. The UH-1N Replacement Program will leverage an existing, airworthiness-certified baseline AV and associated Training System(s) through Non-Developmental Item integration to meet System Requirements Document requirements.

Due to capability gaps with the current system, expedited fielding of MH-139A AVs is highly desired. Filling these capability gaps of the UH-1N are especially critical to the nuclear security and passenger transport missions. The various USAF vertical lift missions will be met with tailored mission equipment that preserves a common helicopter system. As MH-139As field, the current UH-1N will be deactivated or realigned to support other DoD missions.

Executive Summary

Program Highlights Since Last Report

The program has significantly progressed over the last 12 months completing an Air Vehicle (AV) Critical Design Review (CDR) and Test Readiness Review (TRR); and beginning combined contractor/Government flight test. The program is on track to meet all Key Performance Parameters and Key System Attributes.

Program Highlights:

January 15-17, 2019, the team executed a successful AV Configuration Review (CR) validating progress towards CDR and delivering helicopters meeting user's operational requirements.

March 8, 2019, the Air Force Senior Acquisition Executive signed an ADM approving the UH-1N Replacement Program to purchase and additional two UH-1N System Demonstration Test Articles (SDTA). The program of record remains 84 aircraft. The SDTAs will expedite operational aircrew training, mitigate OT&E schedule risk, and concurrently field operational capability.

April, 2019, the program successfully briefed Congressional Staffers supporting the Senate Appropriations Committee, defending the program's FY 2020 President's Budget Request.

May 23, 2019, the Federal Aviation Administration (FAA) issued AV 1 its Standard Airworthiness Certificate for the baseline aircraft. The certificate confirms AV 1 was inspected and found to conform to its type certificate. In addition, the certificate validates AV 1 is safe for air operation.

June 25-27, 2019, the team executed a successful AV Critical Design Review (CDR). The CDR demonstrated maturity of the AV's design meets performance requirements (within cost, schedule and risk) and validated progress in delivering helicopters meeting user's operational requirements.

July 29, 2019, the 413th Flight Test Squadron pilots became first Air Force pilots to receive type rating on AW-139 helicopter.

August 28, 2019, Boeing conducted functional check flights on the first production UH-1N to assess airborne functionality of unique mission equipment specific to the UH-1N configuration.

October 17, 2019, the team conducted a successful Developmental Test and Evaluation TRR. The TRR confirmed required test resources were properly identified and coordinated to support planned tests.

December 19, 2019, a Roll-Out Ceremony, attended by the Commander, Air Force Global Strike Command was held at Duke Field, Florida.

Program Risk:

The AF Independent Technical Review in support of CDR identified Airworthiness Certification for a commercial derivative aircraft as a risk. At the time of the review, the FAA certification plan needed to meet mission requirements and AF Certification Basis for Military Type Certificate were not approved. Since CDR, the AF, Boeing and FAA Military Certification Office have had several engagements to finalize the FAA and USAF certification plans. Subsequently, the FAA and AF have approved the civil and military certification plans, respectively. Airworthiness certification activities needed to complete Development Testing and subsequent operations are progressing.

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 2018	UH-1N Replacement Contract Awarded
October 2018	Post Award Conference
January 2019	Air Vehicle (AV) Configuration Review (CR)
June 2019	AV Critical Design Review (CDR)
October 2019	Test Readiness Review (TRR)
December 2019	Delivered 1st UH-1N to Duke Field, Florida

Threshold Breaches

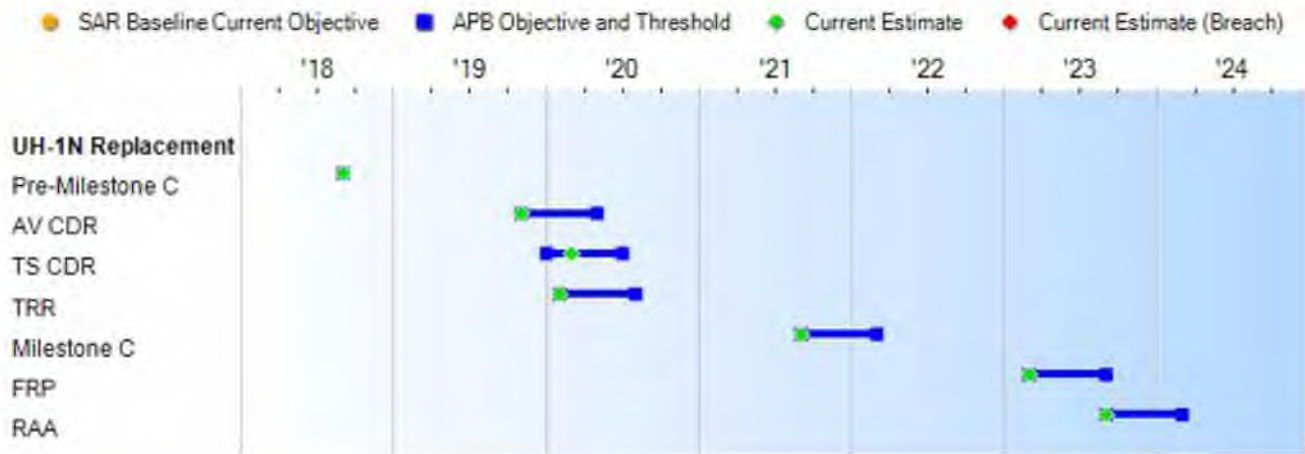
APB Breaches

			Explanation of Breach
Schedule		<input type="checkbox"/>	The O&S Cost breach is driven by an increase to Unit-Level Manpower in the 2019 POE update. The increase captures additional manpower requirements to sustain the higher number of UH-1N Replacement Aircraft compared to the antecedent UH-1N fleet, 84 and 62 respectively. The increase was not captured in the 2017 Manpower Estimate Report which the Service Cost Position (previous cost estimate) was based on. The breach will be corrected in the program's APB update at Milestone C scheduled for November, FY 2021.
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 checked="" 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 Development Objective/Threshold		Current Estimate
Pre-Milestone C	Sep 2018	Sep 2018	Sep 2018	Sep 2018
AV CDR	Nov 2019	Nov 2019	May 2020	Nov 2019
TS CDR	Jan 2020	Jan 2020	Jul 2020	Mar 2020
TRR	Feb 2020	Feb 2020	Aug 2020	Feb 2020
Milestone C	Sep 2021	Sep 2021	Mar 2022	Sep 2021
FRP	Mar 2023	Mar 2023	Sep 2023	Mar 2023
RAA	Sep 2023	Sep 2023	Mar 2024	Sep 2023

(Ch-1)

Change Explanations

(Ch-1) Current estimate for TS CDR changed from January 2020 to March 2020 to ensure all required CDRLs are submitted to support assessment of design maturity.

Notes

1/ TS CDR is contingent upon successful AV CDR.

2/ A successful TRR allows DT to begin; signaling program maturity and ability to meet further schedule milestones.

3/ The RAA is being used as the surrogate for IOC. A summary of requirements for RAA include: 7 mission aircraft, trained crews and maintainers, facilities, one Operational Flight Trainer at operational base, Interim Contract Support and support equipment, and validated technical orders.

Acronyms and Abbreviations

AV - Air Vehicle

CDR - Critical Design Review

DT - Developmental Test

RAA - Required Assets Available

TRR - Test Readiness Review

TS - Training System

Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Development Objective/Threshold	Demonstrated Performance	Current Estimate	
Carrying Capacity (KPP-1)				
Capable of carrying nine combat equipped troops (2475 lbs) and equipment (719 lbs) (3194 lbs of the total ICBM, ESR, SCL) IAW ICBM ESR mission profile.	Capable of carrying nine combat equipped troops (2475 lbs) and equipment (719 lbs) (3194 lbs of the total ICBM, ESR, SCL) IAW ICBM ESR mission profile.	(T=O) Capable of carrying nine combat equipped troops (2475 lbs) and equipment (719 lbs) (3194 lbs of the total ICBM, ESR, SCL) IAW ICBM ESR mission profile.	TBD	Capable of carrying nine combat equipped troops (2475 lbs) and equipment (719 lbs) (3194 lbs of the total ICBM, ESR, SCL) IAW ICBM ESR mission profile.
Airspeed (KPP-2)				
Using no more than maximum continuous power, the UH-1N Replacement must be capable of maintaining 135 KTAS for the en-route portion of the ICBM ESR mission profile with 3194 lbs of the ICBM ESR SCL on a High Hot Day IAW ICBM ESR mission profile	Using no more than maximum continuous power, the UH-1N Replacement must be capable of maintaining 135 KTAS for the en-route portion of the ICBM ESR mission profile with 3194 lbs of the ICBM ESR SCL on a High Hot Day IAW ICBM ESR mission profile	(T=O) Using no more than maximum continuous power, the UH-1N Replacement must be capable of maintaining 135 KTAS for the en-route portion of the ICBM ESR mission profile with 3194 lbs of the ICBM ESR SCL on a High Hot Day IAW ICBM ESR mission profile	TBD	Using no more than maximum continuous power, the UH-1N Replacement must be capable of maintaining 135 KTAS for the en-route portion of the ICBM ESR mission profile with 3194 lbs of the ICBM ESR SCL on a High Hot Day IAW ICBM ESR mission profile
Unrefueled Endurance (KPP-3)				
4.0 hours unrefueled flight performing in the ICBM convoy escort mission profile with SCL plus an additional 45 nm flight to the refueling location with sufficient usable fuel reserves to continue fight for 20 minutes. IAW convoy escort mission profile. Additional flight time provides enough gas for return flight home	4.0 hours unrefueled flight performing in the ICBM convoy escort mission profile with SCL plus an additional 45 nm flight to the refueling location with sufficient usable fuel reserves to continue fight for 20 minutes. IAW convoy escort mission profile. Additional flight time provides enough gas for return flight home	3.0 hours unrefueled flight performing in the ICBM convoy escort mission profile with SCL plus an additional 45 nm flight to the refueling location with sufficient usable fuel reserves to continue fight for 20 minutes IAW convoy escort mission profile.	TBD	4.0 hours unrefueled flight performing in the ICBM convoy escort mission profile with SCL plus an additional 45 nm flight to the refueling location with sufficient usable fuel reserves to continue fight for 20 minutes. IAW convoy escort mission profile. Additional flight time provides enough gas for return flight home

if necessary for additional security compliment.	if necessary for additional security compliment.			if necessary for additional security compliment.
Mission Range (KPP-4)				
Un-refueled range of 515 nm at cruise airspeed with sufficient useable fuel reserves to continue flight for 20 minutes under Hot Day conditions performing the COOP/Transport SCL IAW NCR 3A mission profile. Additional range provides increased distance capability desired for alternate locations for the NCR mission.	Un-refueled range of 515 nm at cruise airspeed with sufficient useable fuel reserves to continue flight for 20 minutes under Hot Day conditions performing the COOP/Transport SCL IAW NCR 3A mission profile. Additional range provides increased distance capability desired for alternate locations for the NCR mission.	Un-refueled range of 225 nm at cruise airspeed with sufficient useable fuel reserves to continue flight for 20 minutes under Hot Day conditions performing the COOP/Transport SCL IAW NCR 3A mission profile.	TBD	Un-refueled range of 515 nm at cruise airspeed with sufficient useable fuel reserves to continue flight for 20 minutes under Hot Day conditions performing the COOP/Transport SCL IAW NCR 3A mission profile. Additional range provides increased distance capability desired for alternate locations for the NCR mission.
Force Protection - Floor (KPP-5)				
Cockpit and cabin floor shall be able to provide ballistic protection at zero degrees obliquity against small arms fire up to 12.7x99 M33 ball at 500 meter range at V50 probability of penetration. If armor is used, it must be removable and accounted for in basic aircraft weight.	Cockpit and cabin floor shall be able to provide ballistic protection at zero degrees obliquity against small arms fire up to 12.7x99 M33 ball at 500 meter range at V50 probability of penetration. If armor is used, it must be removable and accounted for in basic aircraft weight.	Cockpit and cabin floor shall be able to provide ballistic protection at zero degrees obliquity against small arms fire up to 7.62x39mm M43 Type PS ball at 100-meter range at V50 probability of penetration. If armor is used, it must be removable and accounted for in basic aircraft weight.	TBD	Cockpit and cabin floor shall be able to provide ballistic protection at zero degrees obliquity against small arms fire up to 12.7x99 M33 ball at 500 meter range at V50 probability of penetration. If armor is used, it must be removable and accounted for in basic aircraft weight.
System Survivability - Flight Damage (KPP-7)				
95 percent probability to withstand flight critical damage for 30 minutes imposed by a single hit at all azimuths and elevation angles within the bottom hemisphere while the aircraft is in a level flight attitude from a 7.62x39mm	95 percent probability to withstand flight critical damage for 30 minutes imposed by a single hit at all azimuths and elevation angles within the bottom hemisphere while the aircraft is in a level flight attitude from a 7.62x39mm	95 percent probability to withstand flight critical damage for 30 minutes imposed by a single hit at all azimuths and elevation angles within the bottom hemisphere while the aircraft is in a level flight attitude from a 7.62x39mm M1943 BZ Armor Piercing Incendiary (API)	TBD	95 percent probability to withstand flight critical damage for 30 minutes imposed by a single hit at all azimuths and elevation angles within the bottom hemisphere while the aircraft is in a level flight attitude from a 7.62x39mm

M1943 BZ API projectile at 50-meter slant range and 12.7x108mm B32 API projectile at 250-meters slant range.	M1943 BZ API projectile at 50-meter slant range and 12.7x108mm B32 API projectile at 250-meters slant range.	projectile at 100-meter slant range and 12.7x108mm B32 API projectile at 500-meters slant angle. IAW DoDI 8510.01, The airframe shall be capable of cybersecurity evaluation for MX equipment, flight planning equipment and ground based computer hardware and software with physical access control to systems and data ports. The system monitors and controls for system data exchanges at external boundaries with mechanics for preventing the deployment of malicious code being installed to prevent airframe system compromise. If a cyber system is compromised, the aircraft should be able to perform its primary mission IAW profiles list in Appendix A of the CPD.		M1943 BZ API projectile at 50-meter slant range and 12.7x108mm B32 API projectile at 250-meters slant range.
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Sustainment (KPP-8)

Operational Availability (Mission Capability) rate of 83% (Mission Capable hours / Possessed hours). Materiel Availability rate of 76% (MC hours / TAI hours)	Operational Availability (Mission Capability) rate of 83% (Mission Capable hours / Possessed hours). Materiel Availability rate of 76% (MC hours / TAI hours)	(T=O) Operational Availability (Mission Capability) rate of 83% (Mission Capable hours / Possessed hours). Materiel Availability rate of 76% (MC hours / TAI hours)	TBD	Operational Availability (Mission Capability) rate of 87.7% (Mission Capable hours / Possessed hours). Materiel Availability rate of 86.1% (MC hours / TAI hours)
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(Ch-1)

Training (KPP-10)

The goal of UH-1N replacement Training System is to efficiently train aircrews to enable	The goal of UH-1N replacement Training System is to efficiently train aircrews to enable	(T=O) The goal of UH-1N replacement Training System is to efficiently train aircrews to enable the	TBD	The goal of UH-1N replacement Training System is to efficiently train aircrews to enable
--	--	--	-----	--

the aircraft to function as designed to support assigned missions throughout its life cycle. The airframe itself will not require any specific operational performance characteristics; aircrew will operate and train on aircraft as it normally performs. The full training system compliment should include an ATS consisting of training devices, courseware, Type 1 Training, spare parts, support equipment and technical data. These devices must replicate the performance of the airframe and provide full spectrum training capability.	the aircraft to function as designed to support assigned missions throughout its life cycle. The airframe itself will not require any specific operational performance characteristics; aircrew will operate and train on aircraft as it normally performs. The full training system compliment should include an ATS consisting of training devices, courseware, Type 1 Training, spare parts, support equipment and technical data. These devices must replicate the performance of the airframe and provide full spectrum training capability.	aircraft to function as designed to support assigned missions throughout its life cycle. The airframe itself will not require any specific operational performance characteristics; aircrew will operate and train on aircraft as it normally performs. The full training system compliment should include an ATS consisting of training devices, courseware, Type 1 Training, spare parts, support equipment and technical data. These devices must replicate the performance of the airframe and provide full spectrum training capability.		the aircraft to function as designed to support assigned missions throughout its life cycle. The airframe itself will not require any specific operational performance characteristics; aircrew will operate and train on aircraft as it normally performs. The full training system compliment should include an ATS consisting of training devices, courseware, Type 1 Training, spare parts, support equipment and technical data. These devices must replicate the performance of the airframe and provide full spectrum training capability.
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Energy (KPP-11)

Average burn rate across both SCL profiles will not exceed 150 GPH.	Average burn rate across both SCL profiles will not exceed 150 GPH.	Average burn rate across both SCL profiles will not exceed 185 GPH.	TBD	Average burn rate across both SCL profiles will not exceed 150 GPH.
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Requirements Reference

UH-1N Replacement CDD dated June 22, 2016

Change Explanations

(Ch-1) Current rates for sustainment went from 83% to 87.7% for Operational Availability and from 76% to 86.1% for Materiel Availability, based upon program updates provided by Boeing at the AV CDR. The previous rates were estimates provided by the program office.

Notes

The J-6 determined the NR KPP was not applicable as documented in the UH-1N Replacement CPD dated June 22, 2016.

Acronyms and Abbreviations

API - Armor Piercing Incendiary
ATS - Aircrew Training System
COOP - Continuation of Operations
DoDI - Department of Defense Instruction
ESR - Emergency Security Response
GPH - Gallons Per Hour
IAW - In Accordance With
ICBM - Inter-Continental Ballistic Missile
KTAS - Knots True Airspeed
lbs - Pounds
MC - Mission Capability
mm - Millimeter
MX - Maintenance
NCR - National Capital Region
nm - Nautical Miles
NR - Net Ready
O - Objective
OV - Operational View
SCL - Standard Configuration Load
SV - Standard View
T - Threshold
TAI - Total Aircraft Inventory
V50 - Velocity - 50%

Track to Budget

RDT&E

Appn	BA	PE
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Air Force 3600 07 0102110F

Project	Name
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672021 UH-1N Replacement

Procurement

Appn	BA	PE
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Air Force 3010 04 0102110F

Line Item	Name
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H0106O UH-1N Replacement

Air Force 3010 06 0102110F

Line Item	Name
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H0106O UH-1N Replacement

MILCON

Appn	BA	PE
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Air Force 3300 01 0102110F

Project	Name
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CRN000 UH-1N Recap

Cost and Funding

Cost Summary

Total Acquisition Cost						
Appropriation	BY 2018 \$M			BY 2018 \$M	TY \$M	
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective
RDT&E	569.4	569.4	626.3	595.8	589.9	589.9
Procurement	2422.5	2422.5	2664.8	2439.5	2923.9	2923.9
Flyaway	--	--	--	1590.2	--	--
Recurring	--	--	--	1590.2	--	--
Non Recurring	--	--	--	0.0	--	--
Support	--	--	--	849.3	--	--
Other Support	--	--	--	723.7	--	--
Initial Spares	--	--	--	125.6	--	--
MILCON	316.9	316.9	348.6	234.4	355.7	355.7
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0
Total	3308.8	3308.8	N/A	3269.7	3869.5	3869.5

Current APB Cost Estimate Reference

SCP dated September 04, 2018

Cost Notes

The Program Office Estimate (POE), dated October 17, 2019, is the official cost position. The POE's construct was based on the 2018 SCP, analogous systems, and negotiated CLIN pricing for determining the real weapon system costs. Schedule and associated cost risk was added to the POE to cover the aggressive integration, test, and production schedule.

The actual UH-1N Replacement weapon system price is based on a firm fixed Priced (FFP) contract; therefore, cost risk is considered low. FFP Contract Line Item Numbers (CLINs) include Integration/test, Low Rate Initial Production (LRIP) (Lots 1 and 2), and Full Rate Production (FRP) Lot 1. FRP Lots 2 through 8 are FFP not-to-exceed CLINs.

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	4	4	6
Procurement	80	80	78
Total	84	84	84

Quantity Notes

Two additional System Demonstration Test Article aircraft will be purchased with FY 2020 Research, Development, Test & Evaluation funding.

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	382.2	171.0	44.5	16.4	4.3	0.4	0.0	0.0	618.8
Procurement	1.6	0.0	212.4	297.6	347.2	543.8	545.8	955.9	2904.3
MILCON	128.0	46.0	0.0	38.0	0.0	0.0	0.0	49.3	261.3
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2021 Total	511.8	217.0	256.9	352.0	351.5	544.2	545.8	1005.2	3784.4
PB 2020 Total	579.3	217.0	296.5	304.0	329.8	425.0	351.8	1321.6	3825.0
Delta	-67.5	0.0	-39.6	48.0	21.7	119.2	194.0	-316.4	-40.6

Funding Notes

The prior year delta reflects \$59M in above threshold reprogramming actions and \$8.5M in Small Business Innovation and Research/MDAP taxes. The FY 2021 and FY 2022 deltas reflect the one year movement and revision to the Kirtland Operations and Maintenance Facility requirement, while the remaining FYDP positive deltas support the 11 accelerated aircraft in the FY 2021 PB in FY 2024 and FY 2025.

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	6	0	0	0	0	0	0	0	0	6
Production	0	0	0	8	8	8	15	15	24	78
PB 2021 Total	6	0	0	8	8	8	15	15	24	84
PB 2020 Total	6	0	0	8	8	8	11	8	35	84
Delta	0	0	0	0	0	0	4	7	-11	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
2017	--	--	--	--	--	--	3.4
2018	--	--	--	--	--	--	188.3
2019	--	--	--	--	--	--	190.5
2020	--	--	--	--	--	--	171.0
2021	--	--	--	--	--	--	44.5
2022	--	--	--	--	--	--	16.4
2023	--	--	--	--	--	--	4.3
2024	--	--	--	--	--	--	0.4
Subtotal	6	--	--	--	--	--	618.8

Annual Funding							
3600 RDT&E Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	BY 2018 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2017	--	--	--	--	--	--	3.4
2018	--	--	--	--	--	--	185.6
2019	--	--	--	--	--	--	184.2
2020	--	--	--	--	--	--	162.1
2021	--	--	--	--	--	--	41.4
2022	--	--	--	--	--	--	14.9
2023	--	--	--	--	--	--	3.8
2024	--	--	--	--	--	--	0.4
Subtotal	6	--	--	--	--	--	595.8

The original UH-1N Replacement Helicopter program ADM, signed September 11, 2018, approved four EMD aircraft as part of the Non-Developmental Item (NDI) integration phase activities. A follow-on ADM was signed on March 9, 2019, to purchase two UH-1N Replacement System Demonstration Test Articles for use during the NDI integration phase. This brings the total RDT&E aircraft procured from four to six.

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
2016	--	--	--	--	--	1.6	1.6
2017	--	--	--	--	--	--	--
2018	--	--	--	--	--	--	--
2019	--	--	--	--	--	--	--
2020	--	--	--	--	--	--	--
2021	8	141.4	--	--	141.4	71.0	212.4
2022	8	163.6	--	--	163.6	134.0	297.6
2023	8	225.8	--	--	225.8	121.4	347.2
2024	15	375.7	--	--	375.7	168.1	543.8
2025	15	368.0	--	--	368.0	177.8	545.8
2026	8	211.2	--	--	211.2	126.5	337.7
2027	8	206.2	--	--	206.2	105.5	311.7
2028	8	202.4	--	--	202.4	81.4	283.8
2029	--	--	--	--	--	12.9	12.9
2030	--	--	--	--	--	9.8	9.8
Subtotal	78	1894.3	--	--	1894.3	1010.0	2904.3

Annual Funding 3010 Procurement Aircraft Procurement, Air Force							
Fiscal Year	Quantity	BY 2018 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2016	--	--	--	--	--	1.6	1.6
2017	--	--	--	--	--	--	--
2018	--	--	--	--	--	--	--
2019	--	--	--	--	--	--	--
2020	--	--	--	--	--	--	--
2021	8	127.5	--	--	127.5	64.0	191.5
2022	8	144.6	--	--	144.6	118.5	263.1
2023	8	195.7	--	--	195.7	105.3	301.0
2024	15	319.3	--	--	319.3	142.8	462.1
2025	15	306.6	--	--	306.6	148.1	454.7
2026	8	172.5	--	--	172.5	103.3	275.8
2027	8	165.1	--	--	165.1	84.5	249.6
2028	8	158.9	--	--	158.9	63.9	222.8
2029	--	--	--	--	--	9.9	9.9
2030	--	--	--	--	--	7.4	7.4
Subtotal	78	1590.2	--	--	1590.2	849.3	2439.5

FY 2021 PB accelerated aircraft buys, adding 4 aircraft in FY 2024 and 7 aircraft in FY 2025. Subsequently, 8 aircraft were taken from FY 2029 and 3 from FY 2030. With the FY 2021 PB acceleration the last funded production year is now FY 2028.

Additionally, an amended ADM was signed on March 9, 2019, authorizing two RDT&E System Demonstration Test Article aircraft which will be procured in FY 2020 in RDT&E. Therefore, to keep the program of record at 84, two production unit aircraft were removed in FY 2030.

Annual Funding 3300 MILCON Military Construction, Air Force		
Fiscal Year	TY \$M	
	Total Program	
2018	62.0	
2019	66.0	
2020	46.0	
2021	--	
2022	38.0	
2023	--	
2024	--	
2025	--	
2026	--	
2027	6.2	
2028	43.1	
Subtotal	261.3	

Annual Funding 3300 MILCON Military Construction, Air Force		
Fiscal Year	BY 2018 \$M	
	Total Program	
2018		59.0
2019		61.5
2020		42.0
2021		--
2022		33.4
2023		--
2024		--
2025		--
2026		--
2027		4.9
2028		33.6
Subtotal		234.4

Risks

Significant Schedule and Technical Risks

Significant Schedule and Technical Risks	
Current Estimate (December 2019)	
1.	Certification Methods of Compliance
2.	Aircraft Gross Weight Certification

Risks

Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Baseline Estimate (September 2018)	
1.	Total Acquisition Cost (BY18 \$M) - \$3,279.9M (Qty 84); PAUC - \$39.046M (Qty 84); APUC - \$30.546M (Qty 78).
Original Baseline Estimate (September 2018)	
1.	RDT&E and Production APB (BY18\$): Total Acquisition Cost - \$3,308.8M (Qty 84); PAUC - \$39.390M (Qty 84); APUC - \$30.281M (Qty 80).
2.	Due to the short timeline for stand up of the UH-1N Replacement Program Office (PO), the PO will pay for government civilians directly from 3600 UH-1N Replacement program funds. The PO plans to cover these 3600 civilian pay costs out of Program Management and Administration (PMA) from the SCP. The first opportunity to request civilian authorizations will be in the FY 2022 Program Objective Memorandum (POM). There is no guarantee that this civilian pay cost will move to the Central Civilian Pay fund in the FY 2022 POM or any subsequent POMs.
Revised Original Estimate (N/A)	
None	
Current Procurement Cost (December 2019)	
1.	Total Acquisition Cost (BY18 \$M) - \$3,279.9M (Qty 84); PAUC - \$39.046M (Qty 84); APUC - \$30.546M (Qty 78).

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	9/11/2018	9/11/2018
Approved Quantity	16	16
Reference	Pre-Milestone C ADM	Pre-Milestone C ADM
Start Year	2021	2021
End Year	2022	2022

The Current Total LRIP Quantity is more than 10% of the total production quantity based on the program's low technical risk and to enable rapid fielding of a critical capability.

Foreign Military Sales

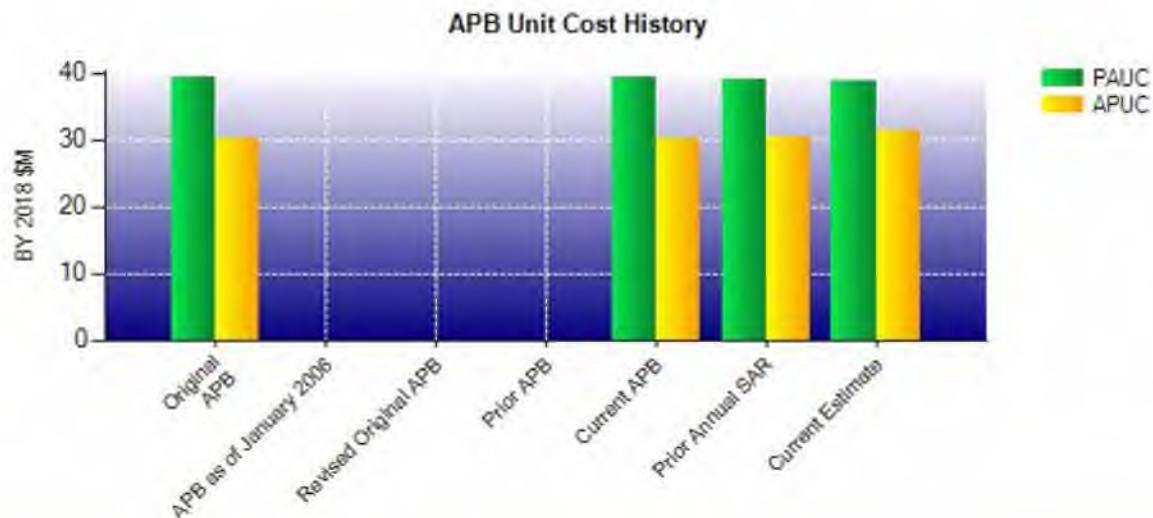
None

Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2018 \$M	BY 2018 \$M	% Change
	Current UCR Baseline (Sep 2018 APB)	Current Estimate (Dec 2019 SAR)	
Program Acquisition Unit Cost			
Cost	3308.8	3269.7	
Quantity	84	84	
Unit Cost	39.390	38.925	-1.18
Average Procurement Unit Cost			
Cost	2422.5	2439.5	
Quantity	80	78	
Unit Cost	30.281	31.276	+3.29
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2018 \$M	BY 2018 \$M	% Change
	Original UCR Baseline (Sep 2018 APB)	Current Estimate (Dec 2019 SAR)	
Program Acquisition Unit Cost			
Cost	3308.8	3269.7	
Quantity	84	84	
Unit Cost	39.390	38.925	-1.18
Average Procurement Unit Cost			
Cost	2422.5	2439.5	
Quantity	80	78	
Unit Cost	30.281	31.276	+3.29



APB Unit Cost History					
Item	Date	BY 2018 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Sep 2018	39.390	30.281	46.065	36.549
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	N/A	N/A	N/A	N/A	N/A
Current APB	Sep 2018	39.390	30.281	46.065	36.549
Prior Annual SAR	Dec 2018	39.046	30.546	45.536	36.864
Current Estimate	Dec 2019	38.925	31.276	45.052	37.235

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	
46.065	0.115	-0.326	-0.476	0.000	-0.805	0.000	0.479	-1.013	45.052

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
36.549	0.094	0.208	-0.487	0.000	0.356	0.000	0.515	0.686	37.235

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	N/A	N/A	N/A
Milestone C	N/A	Sep 2018	N/A	Sep 2018
IOC	N/A	Sep 2023	N/A	Sep 2023
Total Cost (TY \$M)	N/A	3869.5	N/A	3784.4
Total Quantity	N/A	84	N/A	84
PAUC	N/A	46.065	N/A	45.052

Sep 2018 Milestone C for SAR Development Estimate and Current Estimate actually reflects actual Pre-Milestone C date. Current APB Objective for Milestone C is Sep 2021, with a Current Estimate of Nov 2020.

Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	589.9	2923.9	355.7	3869.5
Previous Changes				
Economic	+1.8	+11.4	+1.2	+14.4
Quantity	+29.5	-56.9	--	-27.4
Schedule	--	-9.8	--	-9.8
Engineering	--	--	--	--
Estimating	+65.1	+15.5	-93.6	-13.0
Other	--	--	--	--
Support	--	-8.7	--	-8.7
Subtotal	+96.4	-48.5	-92.4	-44.5
Current Changes				
Economic	-0.5	-4.1	-0.1	-4.7
Quantity	--	--	--	--
Schedule	--	-28.2	-2.0	-30.2
Engineering	--	--	--	--
Estimating	-67.0	+12.3	+0.1	-54.6
Other	--	--	--	--
Support	--	+48.9	--	+48.9
Subtotal	-67.5	+28.9	-2.0	-40.6
Total Changes	+28.9	-19.6	-94.4	-85.1
Current Estimate	618.8	2904.3	261.3	3784.4

Summary BY 2018 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	569.4	2422.5	316.9	3308.8
Previous Changes				
Economic	--	--	--	--
Quantity	+27.9	-42.9	--	-15.0
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+63.3	+10.3	-80.2	-6.6
Other	--	--	--	--
Support	--	-7.3	--	-7.3
Subtotal	+91.2	-39.9	-80.2	-28.9
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	-2.4	-2.4
Engineering	--	--	--	--
Estimating	-64.8	+11.6	+0.1	-53.1
Other	--	--	--	--
Support	--	+45.3	--	+45.3
Subtotal	-64.8	+56.9	-2.3	-10.2
Total Changes	+26.4	+17.0	-82.5	-39.1
Current Estimate	595.8	2439.5	234.4	3269.7

Previous Estimate: December 2018

RDT&E		\$M	
Current Change Explanations		Base Year	Then Year
Revised estimate for execution year reduction for Omnibus Prior Approval Reprogramming Program action 19-04 in FY 2019. (Estimating)		-31.3	-32.3
Revised estimate for execution year reduction for Omnibus Prior Approval Reprogramming Program action 19-42 in FY 2019. (Estimating)		-25.8	-26.7
Revised estimate for execution year reductions for Small Business Innovation and Research/MDAP taxes. (Estimating)		-8.2	-8.5
Adjustment for current and prior escalation. (Estimating)		+0.1	+0.1
Adjustment for current and prior escalation. (Estimating)		+0.4	+0.4
Revised escalation indices. (Economic)		N/A	-0.5
RDT&E Subtotal		-64.8	-67.5

Procurement		\$M	
Current Change Explanations		Base Year	Then Year
Revised escalation indices. (Economic)		N/A	-4.1
Acceleration of procurement buy profile; previously last lot was FY 2030, now FY 2028. (Schedule)		0.0	-28.2
2019 POE adjusted risk and Engineering Change Proposal funding to align with updated buy profile. (Estimating)		+9.1	+9.3
Adjustment for current and prior escalation. (Estimating)		+2.5	+3.0
Increase in Other Support based on Advisory & Assistance Services and Program Management and Administration actuals and new cost estimating factors in the Air Force Cost Analysis Agency Depot Activation Model. (Support)		+85.0	+101.5
Decrease in Initial Spares based on updated estimating methodology using CLIN pricing. (Support)		-39.7	-52.6
Procurement Subtotal		+56.9	+28.9

MILCON		\$M	
Current Change Explanations		Base Year	Then Year
Revised escalation indices. (Economic)		N/A	-0.1
Kirtland Maintenance/Operations Facility funding aligned to project start in FY 2021 PB. (Schedule)		-2.4	-2.0
Adjustment for current and prior escalation. (Estimating)		+0.1	+0.1
MILCON Subtotal		-2.3	-2.0

Contracts

Contract Identification

Appropriation: RDT&E
Contract Name: UH-1N Replacement
Contractor: The Boeing Company
Contractor Location: Route 291 and Stewart Ave.
 Ridley Park, PA 19078-1099
Contract Number: FA8739-18-C-5030
Contract Type: Firm Fixed Price (FFP)
Award Date: September 24, 2018
Definitization Date: September 24, 2018

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
375.5	N/A	N/A	405.1	N/A	N/A	405.1	405.1

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the exercise of options for: Training Courseware (CLIN 0121), Full Up System Level Asset (CLIN 0113), and Type-1 Aircrew Training (CLIN 0122).

Cost and Schedule Variance Explanations

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

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	78	0.00%
Total Program Quantity Delivered	0	0	84	0.00%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	3784.4	Years Appropriated	5
Expended to Date	159.6	Percent Years Appropriated	33.33%
Percent Expended	4.22%	Appropriated to Date	728.8
Total Funding Years	15	Percent Appropriated	19.26%

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

Notes

The original UH-1N Replacement Helicopter program ADM, signed September 11, 2018, approved four EMD aircraft as part of the Non-Developmental Item (NDI) integration phase activities. A follow-on ADM was signed on March 9, 2019, to purchase two UH-1N Replacement System Demonstration Test Articles for use during the NDI integration phase. This brings the total RDT&E aircraft procured from four to six.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	October 17, 2019
Source of Estimate:	POE
Quantity to Sustain:	84
Unit of Measure:	Aircraft
Service Life per Unit:	30.00 Years
Fiscal Years in Service:	FY 2021 - FY 2062

On March 9, 2019, an amended ADM was signed to authorize two System Demonstration Test Article (SDTA) aircraft. The two SDTA will become part of the operational fleet. The production quantity has been adjusted from 80 to 78. Total Aircraft Inventory will remain 84 aircraft.

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 Contractor Logistics Support organizational maintenance. Spares and support equipment will be delivered 60 days prior to UH-1N Replacement fielding. The training system consists of training devices, courseware, technical data, spares, and support equipment necessary to meet aircrew and maintenance training systems requirements. UH-1N Replacement 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): 66
- Mission Capability Goal: 83%
- Materiel Availability Goal: 76%
- Mean Time Between Failure – Mission Impacting: > 20 hours
- Service Life: 8,000 hour life

Antecedent Information

The antecedent is the UH-1N

(As of October 1, 2018)

- PAI: 51
- Mission Capability Rate: 84%
- Materiel Availability Rate: 75%
- Mean Time Between Failure – Mission Impacting: 28 hours

Annual O&S Costs BY2018 \$M			
Cost Element	UH-1N Replacement Average Annual Cost Per Aircraft		UH-1N (Antecedent) Aircraft
Unit-Level Manpower	2.750		1.220
Unit Operations	0.389		0.290
Maintenance	1.709		1.710
Sustaining Support	0.474		0.100
Continuing System Improvements	0.495		0.280
Indirect Support	0.673		0.160
Other	--		--
Total	6.490		3.760

UH-1N Replacement assumes full funding of program requirements (unconstrained); whereas the UH-1N reflects a 9 year (2009-2017) average annual actual cost per 63 Total Aircraft Inventory (TAI) reported in the Air Force Total Ownership Cost system (constrained). The comparison is not adjusted for any capability differences, cost savings, or efficiencies that may exist between the two systems.

Item	Total O&S Cost \$M			
	UH-1N Replacement			UH-1N (Antecedent)
	Current Development APB Objective/Threshold	Current Estimate		
Base Year	15250.1	16775.1	17411.1'	N/A
Then Year	25481.0	N/A	29579.5	N/A

¹ APB O&S Cost Breach

Cost driver for the 2019 POE O&S increase is 1.0, Unit Level Manpower. The Program Cost Estimate, based on the 2017 Monthly Execution Review, did not capture the FTE increase associated with the UH-1N Replacement programs higher PAI (66 vs 51 antecedent) and additional system workload.

Equation to Translate Annual Cost to Total Cost

The UH-1N Replacement O&S annual unitized cost of \$6.49M (BY 2018 \$) is calculated based on a steady state total O&S costs beginning in FY 2033 and ending in FY 2050 totaling \$9,822.9M divided by steady state TAI fleet of 84 aircraft per year beginning in FY 2033 and ending in FY 2050 totaling 1512. $\$9,822.9M/1512 = \$6.49M$ per an aircraft per year.

Total O&S costs includes ramp up (FY 2020-2032), steady state (FY 2033-FY2050), and ramp down (FY 2051-2062) years.

O&S Cost Variance

Category	BY 2018 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2018 SAR	15250.1	
Programmatic/Planning Factors	2038.0	Increase in manpower from 2017 MER
Cost Estimating Methodology	-1115.0	Refined maintenance and continuing system improvements cost estimating relationships
Cost Data Update	466.0	AFCAA model update for Indirect Support
Labor Rate	772.0	AFI 65-503 rate updates
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	2161.0	
Current Estimate	17411.1	

Disposal Estimate Details

Date of Estimate: August 28, 2018
Source of Estimate: SCP
Disposal/Demilitarization Total Cost (BY 2018 \$M): 18.6

TY\$M: \$49.5 (Total Cost)