

UPDATED – PAIRS CASE 2022-C-0311

MH-139A HELICOPTER

PROGRAM

CLEARED
For Open Publication

Apr 12, 2022

Department of Defense

OFFICE OF PREPUBLICATION AND SECURITY REVIEW

Selected Acquisition Report (SAR)



AS OF THE FY 2023 PRESIDENT'S BUDGET

U.S. AIR FORCE

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Mission and Description

The MH-139A Program Air Vehicle (AV) fleet supports vertical-lift needs of three Major Commands and the Air Force District of Washington. Air Force Global Strike Command assumes Lead Command responsibility for the MH-139A Program.

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

The three primary missions are Intercontinental Ballistic Missile (ICBM) convoy escort, ICBM Emergency Security Response, and Continuity of Operations/Transport. 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 United States Air Force (USAF) 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 USAF MH-139A Program addresses the need to replace the USAF's aging UH-1N fleet. The MH-139A leverages an existing, airworthiness-certified baseline Air Vehicle (AV) and associated Training System(s) through Non-Developmental Item integration to meet operational requirements.

Due to mission capability gaps with the UH-1N, expedited fielding of MH-139A AVs is highly desired. Filling the capability gaps of the UH-1N is 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-139A (s) field, the current UH-1N(s) will be deactivated or realigned to support other DoD missions.

Executive Summary

Program Highlights Since Last Report

Boeing continues to work through challenges related to Federal Aviation Administration (FAA) certification activities. While the Program Office will hold Boeing contractually responsible for delays, the program team is collaborating with Boeing, the FAA, Air Force Global Strike Command (AFGSC), and the Integrated Test Team to reduce the impact of Boeing's certification challenges. The FAA understands the MH-139A importance and priority to the Air Force and is responding accordingly. The issue with FAA certification activities led to delays with Supplemental Type Certification (STC) 2 and DD250, and ultimately caused a breach to the Acquisition Program Baseline (APB) schedule. The breach is against entrance into Milestone C (MS C) and also impacts Full Rate Production (FRP) and Required Assets Available (RAA).

In response to the associated schedule challenges, the MH-139A Program is obtaining approval from the Milestone Decision Authority (MDA) for an updated APB, Acquisition Strategy, and MS C entrance criteria.

Due to Boeing's delayed completion of critical program milestones, the MH-139A Program successfully completed a contract negotiation to lock in near term option year prices of future Low Rate Initial Production and Full Rate Production lot buys. This significant negotiation ensures that AFGSC can obtain the crucial air vehicle quantities, provides the ability to pursue additional critical program level requirements, alleviates future re-negotiation of lot pricing, and extends Boeing's support of the MH-139A test program at no cost, saving the Government \$20M.

Funding Status: FAA certification delays led to a rescission in the amount of \$194.016M for FY 2021 production funds. Additionally, the FY 2022 Appropriations Act re-appropriated \$141.360M from FY 2021 production funding for 8 production aircraft. The Air Force is assessing program readiness to determine the ability to meet statutory requirements in order to purchase production aircraft in FY 2022.

On January 23, 2020, the MH-139A Program Office and 413th Flight Test Squadron (FLTS) conducted a meeting with Boeing and Federal Aviation Administration (FAA) to resolve concerns on initiating Combined (Contractor and AF) Development Test (DT) under Civil Air Operations (CAO). The Program Office and Boeing worked a plan to structure a Combined Test Team (CTT) approach to initiate Air Force Developmental Test. The CTT consists of joint aircrews flying test points on Boeing-owned aircraft. The CTT approach allows the AF to gain familiarity with the platform and burn down AF DT test points while Boeing completes its civil certification work with the FAA. This meeting provided clarification on CAO operating boundaries in order to maximize use of the AVs.

On February 11, 2020, the MH-139A CTT conducted its first-ever flight with a mixed Boeing/AF crew utilizing AV 41802 at Duke Field, FL.

On March 3, 2020, the MH-139A team, including the Air Force Life Cycle Management Center (AFLCMC)/Engineering home office (manufacturing) representative, executed a successful Manufacturing Readiness Assessment (MRA) of Boeing's St. Louis, MO, plant in accordance with Training System requirements. This MRA was graded at a Level 7, which confirmed Boeing has the onsite manufacturing maturity and capability to produce their components in a production-representative environment once the design is baselined.

On March 30, 2020, the MH-139A Program Office executed a contract mod to award two SDTAs. These SDTAs are not additional aircraft to the program total; however, they increased the number of RDT&E AVs from four to six. In accordance with the MDA's Acquisition Decision Memorandum (ADM) dated March 3, 2019, these AVs, once built, will be used to expedite Type-1 training for operational aircrew, mitigate Developmental Test and Evaluation (DT&E) schedule risk, and allow for concurrent fielding of operational capability while maintaining sufficient DT test assets to support any required follow-on testing.

On April 9, 2020, the MH-139A Training Systems Team successfully completed their Critical Design Review (CDR), which demonstrated the maturity of the aircrew training devices' designs, courseware, and Type-1 training to meet performance requirements within cost, schedule, and risk. Stakeholders from Boeing and their subcontractors from Italy, AFGSC, Air Education and Training Command, and Air Force District of Washington actively participated with the Program Office.

On April, 20, 2020, the 47th Cyber Test Squadron successfully completed the first of three Cyber Vulnerability Identifications on behalf of the MH-139A Program to assess the cyber resiliency of the platform.

On April 22 and 24, 2020, Boeing and the System Program Office's Production and Manufacturing Team successfully conducted the Leonardo Helicopter Division MRA (fuselage) virtually, with no follow-on Action Items.

On May 28, 2020, the MH-139A Production and Manufacturing Team successfully accomplished an MRA of Istec (gun mount manufacturer) and determined the entity had reached a manufacturing readiness level of 8. This MRA supported the MH-139A MS C decision process.

On June 19, 2020, the FAA's issuance of Type Inspection Authorization (TIA) allowed for FAA certification flights for Supplemental Type Certification (STC) 2 to begin. The FAA Flight Test Engineer traveled via MILAIR arranged by the MH-139A Program Office to allow STC 2 certification to begin on June 25, 2020. The team overcame a potential significant schedule delay due to FAA commercial travel restrictions due to COVID-19. FAA flight test witnessing occurred from June 25 through July 1, 2020. The testing covered flight control systems required for STC 2.

On July 1, 2020, the Product Support – Business Case Analysis contract was awarded. Contract award was followed by a kickoff and first workshop which were conducted virtually.

On July 31, 2020, a second MH-139A AV (41803) was ferried to Duke Field, FL. This doubled the available test assets to the combined Government/contractor test team as they conducted flight testing while STC work continued.

On August 20, 2020, Boeing obtained its second TIA for STC 2. This TIA allowed Boeing to commence FAA certification testing for Automatic Flight Control System malfunctions, Tactical Air Navigation, external infrared lights, Night Vision Goggles, and military Global Positioning System testing.

On October 20, 2020, the MH-139A Test Team completed the STC 3 flight test plan, including the required high velocity and low speed controllability test points. All testing was deemed successful and was expected to result in compliance, marking the first MH-139A STC for which flight testing is fully complete.

On November 9, 2020, a live-fire test asset (Boeing-provided AW-139 number 41237) was moved from Duke Field, FL to China Lake, California. The live-fire test asset will be used for "Main Gear Box Testing" and "Engine Nacelle Fire Extinguishing Testing". The use of the test asset is expected to yield better results than an incidental aircraft that was previously identified; the condition of instrumentation and controls will provide better realism for testing. Additionally, the live-fire test manager estimates a time savings of approximately six-seven weeks by not having to prep the incidental aircraft and a cost savings of approximately \$2.1M. The incidental aircraft will be shipped to Aberdeen Proving Ground, Maryland for armor panel testing.

On November 23, 2020, Type-1 training began for Air Force Operational Test and Evaluation Center and the 413th FLTS, focused on the type rating courses ground and simulator. These courses prepare pilots and Special Mission Aviators (SMA) for operations in the MH-139A. This training is the first step to familiarize both the pilot and SMA with practical aircraft operation and system knowledge.

On December 15, 2020, AV 41802 ferried back to Leonardo Helicopter Division in Philadelphia, PA from Duke Field, FL for retrofit and FAA conformity.

On December 17, 2020, the Operational Flight Trainer (OFT) Size Reduction & Modern Air Combat Environment (MACE) Undefined Contract Action (UCA) was awarded. The OFT is the primary training device for the MH-139A helicopter to ensure pilots and crew are trained and proficient to support vital AF missions.

On December 21, 2020, AV 41801 ferried to Duke Field, FL to support ongoing combined contractor and Government developmental testing.

On December 28, 2020, MH-139A Program closed Critical Design Review (CDR) associated with the Cockpit Procedural Trainer (CPT) following receipt and filing of Memorandum for Record (MFR) associated with CPT design.

On February 18, 2021, the Federal Aviation Administration issued STC 3 for the MH-139A. STC 3 demonstrates compliance with certification regulations for the Performance Envelope Expansion of the Leonardo Helicopter Model AW139. This accomplishment required the MH-139A Program to overcome significant hurdles, including the coordination of Secretary of the Air Force, Acquisition and the State Department to allow specially certified Leonardo pilots into the country during the COVID-19 lockdown to perform STC 3 flight testing.

On May 25, 2021, the MH-139A Program received initial SEEK EAGLE Limited Flight Clearance Recommendation (for aircraft-store compatibility in loading and unloading, carriage, release), which opens the way for the planned Military Flight Release and Developmental Test of the aircraft's weapon and countermeasure capabilities.

From August 18 – September 2, 2021, the Rotors-Static/Turning Gun Ground Test at Duke Field was completed. Testing demonstrated positive gun pintle stability and successful M240 gun operations at all azimuths on both sides of the aircraft. Data collected serves as build-up for future flight testing.

From August 12-31, 2021, a combined MH-139A team, including acquisition, operations, requirements, and test experts, completed an overseas engagement with AW-139 operators from the Italian Air Force, Swedish Maritime Authority, and Irish Air Corps. Each host unit brought 10-15 years of experience employing this platform. The operators and maintainers from each unit thoroughly, transparently, and eagerly shared their expertise and lessons learned. The team's direct, hands-on exchanges covered the full-range of user experiences, with specific focus in aircraft mission performance, maintenance intervals, training programs, and cabin configurations. These interactions eased USAF concerns in multiple areas, such as cold weather and night operations, and resulted in new discoveries, such as repeated corrosion issues at coastal locations.

On September 13, 2021, the MH-139A Product Support Business Case Analysis team completed Product Support Steering Board briefing. Each analyzed course of action for long-term sustainment was briefed along with the supporting data and process that formed the best recommended solution, organic repair of the weapon system to the full extent possible. Approval was granted to proceed to the final report phase from the tri-chair Commanders of Air Force Life Cycle Management Center, Air Force Sustainment Center and Air Force Nuclear Weapons Center.

On September 13, 2021, the MH-139A closed all Training Systems CDR Action Items. All MH-139A Advanced Training Devices CDRs are closed.

On October 2021, Boeing conducted STC 4 High/Hot/Heavy Hover Over Ground Effects Company testing and completed approximately 98% of planned testing. Additional company testing and FAA certification testing are planned for the spring and summer of 2022.

Software Status: There are no issues with the function of the MH-139A software or software development. However, Boeing has communicated that the MH-139A program will not receive the software/source code that was placed on contract. The software deliverables are required for cost-effective, flexible sustainment of the platform as global conditions change over the platform lifecycle. The Air Force is engaged with legal counsel to resolve the issue.

History of Significant Developments Since Program Initiation

Date	Significant Development Description
September 2018	The UH-1N Replacement Program awarded a contract to The Boeing Company on September 24, 2018.
January 2019	The Air Vehicle (AV) Configuration Review was conducted by the UH-1N Replacement team January 15-17, 2019 to successfully validate the team's progress towards Critical Design Review (CDR).
June 2019	The AV CDR was executed by the UH-1N Replacement team on June 25-27, 2019 to demonstrate that the maturity of the AV's design meets performance requirements within cost, schedule and risk.
October 2019	The Developmental Test and Evaluation Test Readiness Review was conducted by the UH-1N Replacement team on October 17, 2019 to assess test objectives, methods and procedures, scope and safety.
December 2019	Boeing completed delivery of the first MH-139A to Duke Field, FL on December 16, 2019.
February 2020	The MH-139A Combined Test Team conducted its first flight with mixed Boeing/Air Force crew at Duke Field, FL on February 11, 2020.
March 2020	The MH-139A Program Office executed a contract mod to award two System Demonstration Text Article AVs on March 30, 2020.
April 2020	The MH-139A team executed a Training Systems CDR on April 7-9, 2020 to demonstrate the maturity of the aircrew training devices' designs, courseware and Type-1 training.
December 2020	The Operational Flight Trainer Size Reduction & Modern Air Combat Environment Unfinalized Contract Action was awarded December 17, 2020.
April 2021	The MH-139A Program provided notification to the Milestone Decision Authority (MDA) of an Acquisition Program Baseline (APB) schedule breach. The breach is against entrance into Milestone C (MS C) and also impacts Full Rate Production (FRP) and Required Assets Available. This APB breach relates to Boeing under-scoping and understaffing the Federal Aviation Administration certification process as a result of not fully understanding the FAA certification requirements for rotary aircraft. Delays and issues involving the FAA airworthiness certification effort have been further complicated by unanticipated integration testing efforts of Non-Development Items. The Program Office is working with Boeing, Air Force Global Strike Command, and the Integrated Test Team to identify mitigations regarding the issues driving this breach.
September 2021	The MH-139A closed all Training Systems CDR Action Items. All MH-139A Advance Training Devices CDRs are closed.

Schedule

Schedule Events

Schedule Events					
Events	Initial Development APB	Current APB Development Category/Objective/Threshold			Current Estimate Or Actual
Pre-Milestone C	Sep 2018	MS C	Sep 2018	Sep 2018	September 11, 2018
AV CDR	Nov 2019	CDR	Nov 2019	May 2020	June 27, 2019
TRR	Feb 2020	DT&E	Feb 2020	Aug 2020	October 17, 2019
TS CDR	Jan 2020	CDR	Jan 2020	Jul 2020	April 9, 2020
Milestone C	Sep 2021	MS C	Sep 2021	Mar 2022	TBD ^A
FRP	Mar 2023	FRP	Mar 2023	Sep 2023	TBD ^A
RAA	Sep 2023	IOC	Sep 2023	Mar 2024	TBD ^A

^A APB Breach

Schedule Notes

1/ A successful Test Readiness Review allows Developmental Test to begin; signaling program maturity and ability to meet further schedule milestones.

2/ The RAA is being used as the surrogate for Initial Operational Capability (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.

3/ MS C, FRP, and RAA are being evaluated and will be updated with a revised APB.

Schedule Deviation Explanations:

The MH-139A Program provided notification to the MDA of an APB schedule breach. The breach is against entrance into MS C and also impacts FRP and RAA. This APB breach relates to Boeing under-scoping and understaffing the FAA certification process as a result of not fully understanding the FAA certification requirements for rotary aircraft. Delays and issues involving the FAA airworthiness certification effort have been further complicated by unanticipated integration testing efforts of Non-Development Items (NDIs).

In response to the associated schedule challenges, the MH-139A Program is obtaining approval from the MDA for an updated APB, Acquisition Strategy, and MS C entrance criteria.

Performance

Performance Characteristics				
Initial Development APB Objective	Current APB Development Objective/Threshold	Demonstrated Performance	Current Estimate/Actual	
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 (719lbs) (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	Current estimate 136.9 KTAS.
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 flight for 20 minutes. IAW convoy escort mission profile. Additional flight time provides enough gas for return flight home if necessary for additional security compliment.	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 flight for 20 minutes. IAW convoy escort mission profile. Additional flight time provides enough gas for return flight home if necessary for additional security compliment.	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 flight for 20 minutes IAW convoy escort mission profile.	TBD	Current estimate 3.2 hours.

Mission Range (KPP-4)				
<p>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.</p>	<p>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.</p>	<p>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.</p>	<p>TBD</p>	<p>Current estimate 336 nm.</p>
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 M33ball 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 M33ball 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 M1943 BZ API projectile at 50-meter slant range and 12.7x108mm B32 API projectile at 250-meters slant range.	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.	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) projectile at 100-meter slant range and 12.7x108mm B32 API projectile at 500- meters slant angle. IAW DoDI 8510.01, The	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

		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.		B32 API projectile at 250-meters slant range.
Sustainment (KPP-8)				
Operational Availability (Mission Capability) rate of 83% (Mission Capable hours / Possessed hours). Materiel Availabilityrate of 76% (MC hours / TAI hours)	Operational Availability (Mission Capability) rate of 83% (Mission Capable hours / Possessed hours). Materiel Availabilityrate 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 88.1% (Mission Capable hours / Possessed hours). Materiel Availability rate of 82.1% (MC hours / TAI hours)
Training (KPP-10)				

<p>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.</p>	<p>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.</p>	<p>(T=O) 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.</p>	TBD	<p>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.</p>
Energy (KPP-11)				
<p>Average burn rate across both SCL profiles will not exceed 150 GPH.</p>	<p>Average burn rate across both SCL profiles will not exceed 150 GPH.</p>	<p>Average burn rate across both SCL profiles will not exceed 185 GPH.</p>	TBD	<p>Average burn rate across both SCL profiles will not exceed 150 GPH.</p>

Requirements Reference:

UH-1N Replacement CPD approved by JROCM June 22, 2016

Acquisition Budget Estimate

Category (\$M) Base Year: 2018	Current APB Objective	Current APB Threshold	Current Estimate Base Year	Current Estimate Then Year
RDT&E	569.4	626.3	592.5	618.1
Procurement	2,422.5	2,664.8	2,275.0	2,854.6
MILCON	316.9	348.6	247.06	287.1
O&M	0.0	0.0	0.0	0.0
RMF	-	-	-	-
Total Acquisition	3,308.8	3,639.7	3,114.56	3,759.78
Program Acquisition Unit Cost	39.4	43.3	38.9	47.0
Average Procurement Unit Cost	30.3	33.3	30.7	38.6
Program End-Item Quantity				
Development	4	-	6	-
Production	80	-	74	-

Budget Notes:

A delay in milestone C resulted in a rescission of \$194.016M in FY 2021 production funds for eight aircraft. \$141.360M of the FY 2021 production funds were re-appropriated in FY 2022. Due to delays, \$12.400M in FY 2021 Development funds were identified as early to need and reprogrammed for higher funding priorities.

Quantity Notes:

The current program of record is a total of 80 aircraft; six development and 74 production aircraft. The total production quantity was re-phased and decreased from 78 to 74 as a result of the removal of PACAF requirements for four production aircraft.

The FY 2023 PB quantity profile is:

FY 2021 – 0
 FY 2022 - 8
 FY 2023 – 5
 FY 2024 - 10
 FY 2025 – 12
 FY 2026 – 15
 FY2027 – 9
 FY 2028 – 8
 FY 2029 – 7

Production Total: 74 aircraft.

Unit Costs

Current Baseline Compared with Current Estimate

Category (\$M) Base Year: 2018	Current Baseline 09/11/2018	Current Estimate FY 2023 PB	% Change
Program Acquisition Unit Cost			
Acquisition Cost	3,308.8	3,114.6	
Program Quantity	84	80	
PAUC	39.4	38.9	-1.16%
Average Procurement Unit Cost			
Procurement Cost	2,422.5	2,275.0	
Procurement Quantity	80	74	
APUC	30.3	30.7	1.52%

Original Baseline Compared with Current Estimate

Category (\$M) Base Year: 2018	Original Baseline 09/11/2018	Current Estimate FY 2023 PB	% Change
Program Acquisition Unit Cost			
Acquisition Cost	3,308.8	3,208.7	
Program Quantity	84	80	
PAUC	39.4	38.9	-1.16%
Average Procurement Unit Cost			
Procurement Cost	2,422.5	2,275.0	
Procurement Quantity	80	74	
APUC	30.3	30.7	1.52%

Contracts

Contract Data (\$TYM)		
Contract Number	FA8739-18-C-5030/-1	
Effort Number	-1	
Modification Number	P00053	
Contract Type	FFP	
Award Date	September 24, 2018	
Definitization Date	September 24, 2018	
Order Number		
CAGE Code/CAGE Legal Name	77272/The Boeing Company	
Contract Title	UH-1N Replacement	
Contract Address	Ridley Park, Pennsylvania	
Contracts/Effort Price, Quantity, and Performance (\$M)		
Initial Target Price	Current Target Price	
375.5	474.3	
Initial Ceiling Price	Current Ceiling Price	
N/A	N/A	
Contract's EAC	PM's EAC	
473.3	474.3	
Initial Quantity	Current Quantity	Delivered Quantity
4	6	0
BAC	BCWP	ACWP
N/A	N/A	N/A
BCWS	Cost Variance	Schedule Variance
N/A	N/A	N/A

The difference between the Initial Target Price and the Current Target Price is due to additional Air Vehicles being procured. The original contract was to deliver four Air Vehicles, a modification was later issued to procure an additional two Air Vehicles for the developmental test.

Technologies and Systems Engineering

Significant Technical Risks

Significant Technical Risks	
Current Estimate (January 2022)	
1.	<p>Air Vehicle (AV) Weight: IF actual Non-Developmental Item and associated non-recurring engineering weight exceeds estimates, THEN required AV Maximum Gross Weight may exceed the cert weight (15,520lbs) MITIGATION: Boeing and USAF established formal technical performance measures and assessment events to determine weight impacts of non-developmental mods. As a result, all mods were able to maintain within the weight budget with the exception of a potential AV modification due to the fuel tank ballistic performance issue. This active risk shaped the fuel tank ballistic performance issue resolution plan in order to mitigate impacts to AV weight.</p>
2.	<p>Source Data for Technical Orders Verification: IF Boeing does not provide access to source data required to verify O-level Technical Orders by the start of Government Developmental Test, THEN Technical Order verification will not be complete to support the start of Initial Operational Test. MITIGATION: Boeing and USAF executed a closely coordinated plan for subcontractor to provide data in increments to evaluate data ahead of final delivery via technical interchanges and incremental in-progress reviews. As a result, additional gaps in flight manual and maintenance manual data were identified earlier than standard process which drove Boeing and USAF to proactively coordinate and prioritize future incremental deliveries synchronized with upcoming government verification and testing activities.</p>
3.	<p>ISSUE: Airspeed Anomaly Impact to Supplemental Type Certificate (STC) 2 Schedule: Airspeed anomaly detected during flight test auto-rotations in Fall 2020. Defensive Aide Suite (DAS) fairing is disrupting airflow to the pitot static system. STC 2 Project Specific Certification Plan (PSCP) must now be revised to address issue. RESOLUTION: Boeing determined a new fairing design is required. Simultaneously, Boeing, USAF and Federal Aviation Administration (FAA) agreed on a new strategy to continue STC 2 activities and move required certification activities for the new fairing design to a separate amendment; STC 2A. Though STC 2 was delayed, this new strategy reduced impact to the STC 2 schedule.</p>
4.	<p>ISSUE: Fuel Tank Ballistic Performance: Fuel Cell Qualification Testing was performed on the original MH-139 Self-Sealing Fuel Cell Solution in 2020 and did not meet specifications; follow-on self-sealing improvements in 2021 did not pass either. RESOLUTION: Considering existing weight risk and schedule impacts, USAF agreed to update self-sealing requirements with prevention of sustained dry-bay fire requirements. Future resolution efforts will include: fully characterizing dry-bay fire vulnerability, potential minor dry-bay fire mitigation modifications, follow-up dry-bay fire testing and final design approval.</p>
5.	<p>ISSUE: STC 4 Full Envelope Expansion Schedule: Delays in PSCP approval caused the program to miss the 2020 and 2021 flight test high-hot weather window. FAA certification flight testing has slipped into 2022. RESOLUTION: FAA approved updated PSCP and most company testing has been complete. Remaining steps include: completing remaining company testing, FAA approval of issue papers and approving the Type Inspection Authorization, FAA approval of required test reports, and lastly, STC 4 issuance.</p>
6.	<p>ISSUE: Development Test (DT) Flight Maneuverability Restrictions: Boeing's pre-DD250 flight maneuverability restrictions are now being considered by the FAA in the Supplemental Type Certification (STC) process; not originally part of process. RESOLUTION: Following conversations with Leonardo, Boeing, USAF, and the FAA, it was determined that the restrictions were unnecessary. Boeing has removed the maneuverability restrictions and the FAA considers the issue closed. Additional flight data gathering efforts are planned as a risk reduction activity to inform potential maintenance activities that may be required based on intended Air Force operations.</p>

Deliveries and Expenditures

Deliveries

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	6	0.00%
Production	0	0	74	0.00%
Total Program Quantity Delivered	0	0	80	0.00%

Expended and Appropriated (TY \$M)

Total Acquisition Cost: 3,643.0

Expended to Date: 785.5

Percent Expended: 22%

Total Funding Years: 14

Years Appropriated: 6

Percent Years Appropriated: 43%

Appropriated to Date: 907.337

Percent Appropriated: 25%

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	9/11/2018	9/11/2018
Approved Quantity	16	16
Reference	Milestone C ADM	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. The current LRIP data will be updated upon approval from the MDA for an updated APB Acquisition Strategy.

Operating and Support Cost (O&S Cost)

Cost Estimate Sources

Type: Program Office Estimate

Approved by: AFLCMC/FZC – Cost and Economics Division, August 13, 2021

Total Program O&S Cost Compared with Baseline

Development APB (Current)			Current Estimate	
Category (\$M) Base Year: 2018	Base Year Objective	Base Year Threshold	Base Year	Then Year
Total O&S	15,250.1	16,775.1	10,814.8	17,900.0

Operating and Support Cost Estimate Breakdown

Category	Base Year: 2018	New Element Cost Estimate
Unit-Level Manpower		3904.3
Unit Operations		1004.6
Maintenance		4324.9
Sustaining Support		1110.6
Continued System Improvements		470.4
Other		-
Total O&S		10,814.8