RCS: DD-A&T(Q&A)823-253

MQ-8 Fire Scout Unmanned Aircraft System (MQ-8 Fire Scout)

As of FY 2021 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

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
MQ-8 Fire Scout Unmanned Aircraft System (MQ-8 Fire Scout)

DoD Component
Navy

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References

SAR Baseline (Production Estimate)

Assistant Secretary of the Navy (Research, Development & Acquisition) (ASN(RDA)) Approved Acquisition Program Baseline (APB) dated April 13, 2017

Approved APB

Assistant Secretary of the Navy (Research, Development & Acquisition) (ASN(RDA)) Approved Acquisition Program Baseline (APB) dated April 13, 2017

Mission and Description

As the Navy and Marine Corps Multi-Mission Tactical unmanned aircraft systems (UAS) program office, our mission is to provide critical, expeditionary capabilities and support to the Fleet incorporating state-of-the-art technology and UAS expertise. Through rapid development, integration, deployment and sustainment, we offer “cradle-to-grave" support of our unmanned systems. We are fully committed to the Navy and Marine Corps' success by providing the Fleet with an unfair advantage at a fair price.

The MQ-8 Fire Scout Unmanned Aircraft System (MQ-8 Fire Scout) program supports the Close Range Reconnaissance, Surveillance and Target Acquisition Capability Mission Need Statement, the CPD for the Vertical Take-off and Landing Tactical Unmanned Aerial Vehicle System, as amended May 15, 2009, and the CPD for the MQ-8C Fire Scout System, approved November 18, 2016. Additionally, the performance attributes of the MQ-8 Fire Scout support the Initial Capabilities Documents for Littoral Combat Ship, Vertical Unmanned Air Vehicle (UAV), Assured Maritime Access in the Littorals, Joint Strike Enable, and Penetrating Intelligence, Surveillance, and Reconnaissance for Area Denial Threat Environments.

A deployed MQ-8 system includes air vehicle(s), payloads (i.e. Electro Optic/Infrared/Laser Designator Range Finder, Automated Identification System, voice communications relay, Radar, and other specialty payloads), Mission Control Systems (MCS) (with Tactical Control System software and Tactical Common Data Link integrations for interoperability), a UAV Common Automatic Recovery System for automatic take-offs and landings, and associated spares and support equipment. The MQ-8 Fire Scout air vehicle launches and recovers vertically, and can operate from suitably-equipped air-capable ships as well as confined area land bases. There are two MQ-8 air vehicle variants: the MQ-8B and the MQ-8C. The MQ-8C uses the majority of the components and software developed for the MQ-8B but is based on a larger airframe, expanding the range, endurance, and payload capacity of the air vehicle and the system. The MCS performs mission planning, air vehicle and mission payload control, receives incoming payload data and distributes the data to existing shipboard Command, Control, Communication, and Computer Information systems.

Executive Summary

Program Highlights Since Last Report

This is the final SAR submission for the MQ-8 Fire Scout ACAT IC program.

Pursuant to section 2432 of title 10, United States Code, this is the final SAR submission for MQ-8 Fire Scout, because the program is 90% or more delivered.

The MQ-8 Fire Scout program went through a section 2433 title 10, U.S. Code (Nunn-McCurdy Breach) review in FY 2014 due to a unit cost breach in the FY 2015 PB. The USD(AT&L) certified a restructured program to Congress on June 16, 2014. The certified restructured program includes both the MQ-8B and MQ-8C air vehicle variants. A new Acquisition Strategy and a revised original APB have been approved for the program, and a Milestone C was completed June 29, 2017.

The MQ-8B variant has completed over 17,000 operational flight hours while deployed aboard Littoral Combat Ships (LCS), Guided Missile Frigates supporting African Command Joint Emergent Operational Need Statement, AF-0002, and supporting the Intelligence, Surveillance, and Reconnaissance Task Force in Afghanistan. IOC for this variant was declared on March 31, 2014.

The MQ-8C variant has completed more than 1,350 flight hours of developmental testing (DT). All DT is complete. Sufficient Operational Testing has been executed to complete the MQ-8C Initial Operations Test & Evaluation report for the MQ-8C air vehicle to support the IOC timeline. MQ-8C achieved IOC on June 28, 2019. The MQ-8C AN/ZPY-8 radar testing commenced in 1Q FY 2020.

The MQ-8 Fire Scout program currently has a Procurement APB breach due to the funding received from Congress authorizing the Program Office to procure additional MQ-8C air vehicles in FY 2017 and FY 2018. Congress also has authorized the procurement of additional Mobile Mission Control Stations. These Congressional adds resulted in a breach to the Procurement Cost threshold. The Program Office completed a Program Deviation Report for the breach April 10, 2019.

There have been 30 MQ-8B air vehicles delivered which meets 100% of the Navy requirements. Currently, 31 out of 38 MQ-8C air vehicles have been delivered. The program received a Congressional funding increase, which procured an additional four MQ-8C air vehicles in FY 2017 and five in FY 2018.

The MQ-8C program has reached 90% delivery as of the end of January 2020.

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

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	**Significant Development Description**
March 2018	Successfully completed Operational Test Readiness Review (OTRR)
April 2018	Began Initial Operational Test and Evaluation (IOT&E)
December 2018	Initial Operational Capability Supportability Review (IOCSR) approved and signed by AIR-6.6
February 2019	IOCSR concurrence from Commander, Naval Air Forces (CNAF)
June 2019	Initial Operational Capability (IOC) approved and signed June 28, 2019

Threshold Breaches

APB Breaches		
Schedule		☐
Performance		☐
Cost	RDT&E	☐
	Procurement	☑
	MILCON	☐
	Acq O&M	☐
O&S Cost		☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Explanation of Breach

The schedule breach was previously reported in the December 2018 SAR.

Schedule

Schedule Events					
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	
PDR	Oct 2012	Oct 2012	Oct 2012	Oct 2012	
CDR	Jan 2013	Jan 2013	Jan 2013	Jan 2013	
Milestone C	Mar 2017	Mar 2017	Sep 2017	Jun 2017	
IOC	Dec 2018	Dec 2018	Jun 2019	Jun 2019	(Ch-1)

Change Explanations

(Ch-1) The current estimate for IOC changed from March 2019 to June 2019 and met the APB requirement

Acronyms and Abbreviations

CDR - Critical Design Review
PDR - Preliminary Design Review

Performance

Performance Characteristics				
SAR Baseline Production Estimate	**Current APB Production Objective/Threshold**		**Demonstrated Performance**	**Current Estimate**
Automatic Launch and Recovery (aboard Littoral Combat Ship or Suitably Equipped Air Capable Ship)				
Deck Pitch				
+/- 2 degrees pitch displacement from ship 0 degree centerline	+/- 2 degrees pitch displacement from ship 0 degree centerline	(T=O) +/- 2 degrees pitch displacement from ship 0 degree centerline	+/- 2 degrees pitch displacement from ship 0 degree centerline	+/- 2 degrees pitch displacement from ship 0 degree centerline
Deck Roll				
+/- 5 degrees roll displacement from ship 0 degree centerline	+/- 5 degrees roll displacement from ship 0 degree centerline	(T=O) +/- 5 degrees roll displacement from ship 0 degree centerline	+/- 4 degrees roll displacement from ship 0 degree centerline	+/- 5 degrees roll displacement from ship 0 degree centerline
Target Identification				
6 kilometers	6 kilometers	(T=O) 6 kilometers	Electro Optical: 8.5 kilometers; Infrared: 6.3 kilometers	6 kilometers
Operational Availability for the MQ-8C System (Ao)				
>/= 0.60	>/= 0.60	(T=O) >/= 0.60	0.86	>/= 0.60
Net Ready				
All critical Information Exchange Requirements, MQ-8C System Information Support Plan and hyperlink	All critical Information Exchange Requirements, MQ-8C System Information Support Plan and hyperlink	(T=O) All critical Information Exchange Requirements, MQ-8C System Information Support Plan and hyperlink	All critical Information Exchange Requirements, MQ-8C System Information Support Plan and hyperlink	All critical Information Exchange Requirements, MQ-8C System Information Support Plan and hyperlink
Size, Weight and Power - Cooling (SWaP-C)				
Volume				
2 cubic feet	2 cubic feet	(T=O) 2 cubic feet	30.6 cubic feet	2 cubic feet
Weight				
100 pounds	100 pounds	(T=O) 100 pounds	250 pounds	100 pounds
Power				

1,860 watts	1,860 watts	(T=O) 1,860 watts	3200 watts	1,860 watts
Training				
End state sustainment training systems will qualify operators/maintainers on 90% of critical tasks and 80% of non-critical tasks derived from a Type Commander approved Job Duty Task Analysis and Media Analysis. Initial training provided by the Original Equipment Manufacturer shall be adequate for operator/maintainer qualification to support Initial Operational Test and Evaluation. End state sustainment training will be delivered via training systems and facilities that enable accession/apprentice, journeyman and master level qualification and/or fleet synthetic training events.	End state sustainment training systems will qualify operators/maintainers on 90% of critical tasks and 80% of non-critical tasks derived from a Type Commander approved Job Duty Task Analysis and Media Analysis. Initial training provided by the Original Equipment Manufacturer shall be adequate for operator/maintainer qualification to support Initial Operational Test and Evaluation. End state sustainment training will be delivered via training systems and facilities that enable accession/apprentice, journeyman and master level qualification and/or fleet synthetic training events.	(T=O) End state sustainment training systems will qualify operators/maintainers on 90% of critical tasks and 80% of non-critical tasks derived from a Type Commander approved Job Duty Task Analysis and Media Analysis. Initial training provided by the Original Equipment Manufacturer shall be adequate for operator/maintainer qualification to support Initial Operational Test and Evaluation. End state sustainment training will be delivered via training systems and facilities that enable accession/apprentice, journeyman and master level qualification and/or fleet synthetic training events.	TBD	End state sustainment training systems will qualify operators/maintainers on 90% of critical tasks and 80% of non-critical tasks derived from a Type Commander approved Job Duty Task Analysis and Media Analysis. Initial training provided by the Original Equipment Manufacturer shall be adequate for operator/maintainer qualification to support Initial Operational Test and Evaluation. End state sustainment training will be delivered via training systems and facilities that enable accession/apprentice, journeyman and master level qualification and/or fleet synthetic training events.
APKWS II/Air Vehicle Weapon Carriage Capacity				
6 missiles	6 missiles	14 missiles	TBD	6 missiles
Radar/Operational Availability for the MQ-8C Radar (Ao)				
>/= 0.85	>/= 0.85	(T=O) >/= 0.85	TBD	>/= 0.85

Requirements Reference

JROC Memorandum (JROCM 140-16) approved CPD for Endurance Baseline of the MQ-8C Fire Scout Unmanned Aerial System, dated November 18, 2016

Change Explanations

None

Acronyms and Abbreviations

Ao - Operational Availability
APKWS - Advanced Precision Kill Weapons System
O - Objective
SWaP-C - Size, Weight and Power - Cooling
T - Threshold

Track to Budget

RDT&E

Appn	BA	PE
Navy	1319 07	0305204N

Project	Name	
2768	Tactical Unmanned Aerial Vehicles/VTUAV	(Shared) (Sunk)
Notes:	PU2768, VTUAV	

Appn	BA	PE
Navy	1319 07	0305231N

Project	Name
2768	MQ-8 Fire Scout
Notes:	PU2768, MQ-8 UAV

Procurement

Appn	BA	PE
Navy	1506 04	0305204N

Line Item	Name	
0443	Vertical Take-off UAV (VTUAV)	(Sunk)

Appn	BA	PE
Navy	1506 04	0305231N

Line Item	Name
0443	MQ-8 UAV

Appn	BA	PE
Navy	1506 06	0305231N

Line Item	Name	
0605	Spares and Repair Parts	(Shared)

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2017 $M			BY 2017 $M	TY $M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	1415.5	1415.5	1557.1	1400.9	1298.3	1298.3	1283.3
Procurement	1533.6	1533.6	1687.0	1740.6[1]	1523.9	1523.9	1765.9
Flyaway	--	--	--	1168.4	--	--	1181.5
Recurring	--	--	--	1126.4	--	--	1136.6
Non Recurring	--	--	--	42.0	--	--	44.9
Support	--	--	--	572.2	--	--	584.4
Other Support	--	--	--	439.2	--	--	454.7
Initial Spares	--	--	--	133.0	--	--	129.7
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	2949.1	2949.1	N/A	3141.5	2822.2	2822.2	3049.2

[1] *APB Breach*

Current APB Cost Estimate Reference

Department of the Navy Component Cost Position for the for MQ-8 Fire Scout dated February 17, 2017

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	9	9	9
Procurement	51	51	59
Total	60	60	68

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	1138.2	29.6	29.0	20.0	13.7	9.0	9.1	34.7	1283.3
Procurement	1414.3	45.1	42.0	58.8	40.1	40.9	41.6	83.1	1765.9
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2021 Total	2552.5	74.7	71.0	78.8	53.8	49.9	50.7	117.8	3049.2
PB 2020 Total	2553.5	74.7	70.2	79.5	53.1	50.3	98.4	100.5	3080.2
Delta	-1.0	0.0	0.8	-0.7	0.7	-0.4	-47.7	17.3	-31.0

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	9	0	0	0	0	0	0	0	0	9
Production	0	59	0	0	0	0	0	0	0	59
PB 2021 Total	9	59	0	0	0	0	0	0	0	68
PB 2020 Total	9	59	0	0	0	0	0	0	0	68
Delta	0	0	0	0	0	0	0	0	0	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2000	--	--	--	--	--	--	34.8
2001	--	--	--	--	--	--	66.2
2002	--	--	--	--	--	--	47.8
2003	--	--	--	--	--	--	39.3
2004	--	--	--	--	--	--	36.0
2005	--	--	--	--	--	--	59.1
2006	--	--	--	--	--	--	93.2
2007	--	--	--	--	--	--	100.1
2008	--	--	--	--	--	--	62.8
2009	--	--	--	--	--	--	22.5
2010	--	--	--	--	--	--	56.3
2011	--	--	--	--	--	--	72.3
2012	--	--	--	--	--	--	113.9
2013	--	--	--	--	--	--	83.8
2014	--	--	--	--	--	--	41.7
2015	--	--	--	--	--	--	43.3
2016	--	--	--	--	--	--	52.8
2017	--	--	--	--	--	--	26.5
2018	--	--	--	--	--	--	62.7
2019	--	--	--	--	--	--	23.1
2020	--	--	--	--	--	--	29.6
2021	--	--	--	--	--	--	29.0
2022	--	--	--	--	--	--	20.0
2023	--	--	--	--	--	--	13.7
2024	--	--	--	--	--	--	9.0
2025	--	--	--	--	--	--	9.1
2026	--	--	--	--	--	--	8.5
2027	--	--	--	--	--	--	8.0
2028	--	--	--	--	--	--	7.0
2029	--	--	--	--	--	--	6.7
2030	--	--	--	--	--	--	4.5
Subtotal	9	--	--	--	--	--	1283.3

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2017 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2000	--	--	--	--	--	--	46.2
2001	--	--	--	--	--	--	86.8
2002	--	--	--	--	--	--	62.0
2003	--	--	--	--	--	--	50.3
2004	--	--	--	--	--	--	44.8
2005	--	--	--	--	--	--	71.6
2006	--	--	--	--	--	--	109.6
2007	--	--	--	--	--	--	114.9
2008	--	--	--	--	--	--	70.8
2009	--	--	--	--	--	--	25.0
2010	--	--	--	--	--	--	61.7
2011	--	--	--	--	--	--	77.4
2012	--	--	--	--	--	--	120.0
2013	--	--	--	--	--	--	87.3
2014	--	--	--	--	--	--	42.8
2015	--	--	--	--	--	--	43.9
2016	--	--	--	--	--	--	52.6
2017	--	--	--	--	--	--	26.0
2018	--	--	--	--	--	--	60.0
2019	--	--	--	--	--	--	21.7
2020	--	--	--	--	--	--	27.2
2021	--	--	--	--	--	--	26.1
2022	--	--	--	--	--	--	17.7
2023	--	--	--	--	--	--	11.9
2024	--	--	--	--	--	--	7.6
2025	--	--	--	--	--	--	7.6
2026	--	--	--	--	--	--	6.9
2027	--	--	--	--	--	--	6.4
2028	--	--	--	--	--	--	5.5
2029	--	--	--	--	--	--	5.2
2030	--	--	--	--	--	--	3.4
Subtotal	9	--	--	--	--	--	1400.9

Annual Funding 1506 | Procurement | Aircraft Procurement, Navy							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2007	3	32.2	--	3.9	36.1	11.5	47.6
2008	3	32.4	--	1.4	33.8	11.6	45.4
2009	3	31.6	--	3.2	34.8	22.3	57.1
2010	11	108.4	--	--	108.4	47.5	155.9
2011	3	46.5	--	--	46.5	15.5	62.0
2012	12	161.7	--	--	161.7	60.9	222.6
2013	3	88.1	--	--	88.1	29.9	118.0
2014	2	35.3	--	2.9	38.2	44.5	82.7
2015	5	86.7	--	--	86.7	42.8	129.5
2016	5	96.8	--	3.6	100.4	58.2	158.6
2017	4	79.0	--	1.8	80.8	35.9	116.7
2018	5	102.2	--	--	102.2	26.9	129.1
2019	--	48.0	--	8.6	56.6	32.5	89.1
2020	--	21.1	--	1.2	22.3	22.8	45.1
2021	--	16.4	--	1.6	18.0	24.0	42.0
2022	--	30.7	--	5.3	36.0	22.8	58.8
2023	--	8.8	--	0.9	9.7	30.4	40.1
2024	--	30.4	--	0.5	30.9	10.0	40.9
2025	--	29.5	--	5.0	34.5	7.1	41.6
2026	--	50.8	--	5.0	55.8	27.3	83.1
Subtotal	59	1136.6	--	44.9	1181.5	584.4	1765.9

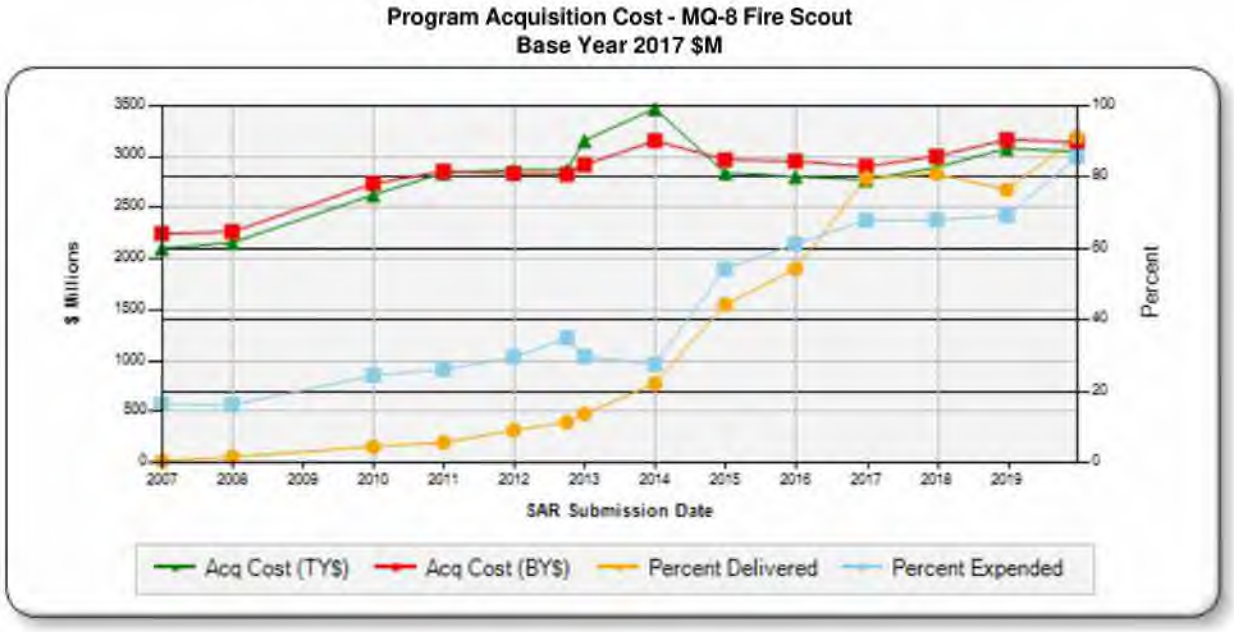
Annual Funding 1506 | Procurement | Aircraft Procurement, Navy							
Fiscal Year	Quantity	BY 2017 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2007	3	36.5	--	4.4	40.9	13.0	53.9
2008	3	36.1	--	1.6	37.7	12.9	50.6
2009	3	34.8	--	3.5	38.3	24.5	62.8
2010	11	116.8	--	--	116.8	51.2	168.0
2011	3	49.1	--	--	49.1	16.4	65.5
2012	12	168.4	--	--	168.4	63.5	231.9
2013	3	90.8	--	--	90.8	30.8	121.6
2014	2	35.9	--	2.9	38.8	45.3	84.1
2015	5	86.9	--	--	86.9	42.9	129.8
2016	5	95.0	--	3.5	98.5	57.2	155.7
2017	4	76.1	--	1.7	77.8	34.6	112.4
2018	5	96.6	--	--	96.6	25.4	122.0
2019	--	44.5	--	8.0	52.5	30.1	82.6
2020	--	19.2	--	1.1	20.3	20.7	41.0
2021	--	14.6	--	1.4	16.0	21.4	37.4
2022	--	26.8	--	4.6	31.4	20.0	51.4
2023	--	7.5	--	0.8	8.3	26.0	34.3
2024	--	25.5	--	0.4	25.9	8.4	34.3
2025	--	24.3	--	4.1	28.4	5.8	34.2
2026	--	41.0	--	4.0	45.0	22.1	67.1
Subtotal	59	1126.4	--	42.0	1168.4	572.2	1740.6

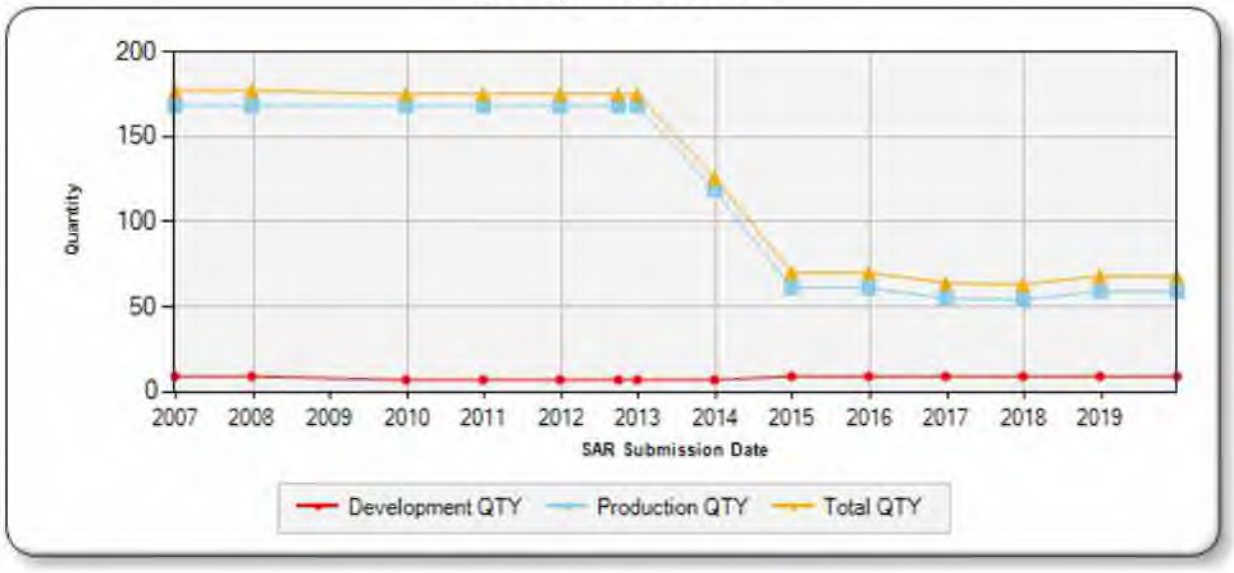
This note is related to the Cost Quantity Information Table: The procurement funding in FY 2019 - FY 2026 is associated with the purchase of Ground Control Systems, ship's ancillary equipment, and spares required to support ship installations and deployments in those years. It is accounted for with the aircraft quantity in FY 2016 - FY 2018, although other aircraft may be used to support those ships.

Cost Quantity Information 1506 | Procurement | Aircraft Procurement, Navy		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2017 $M**
2007	3	36.5
2008	3	36.1
2009	3	34.8
2010	11	116.8
2011	3	49.1
2012	12	168.4
2013	3	90.8
2014	2	35.9
2015	5	86.9
2016	5	166.7
2017	4	136.1
2018	5	168.3
2019	--	--
2020	--	--
2021	--	--
2022	--	--
2023	--	--
2024	--	--
2025	--	--
2026	--	--
Subtotal	59	1126.4

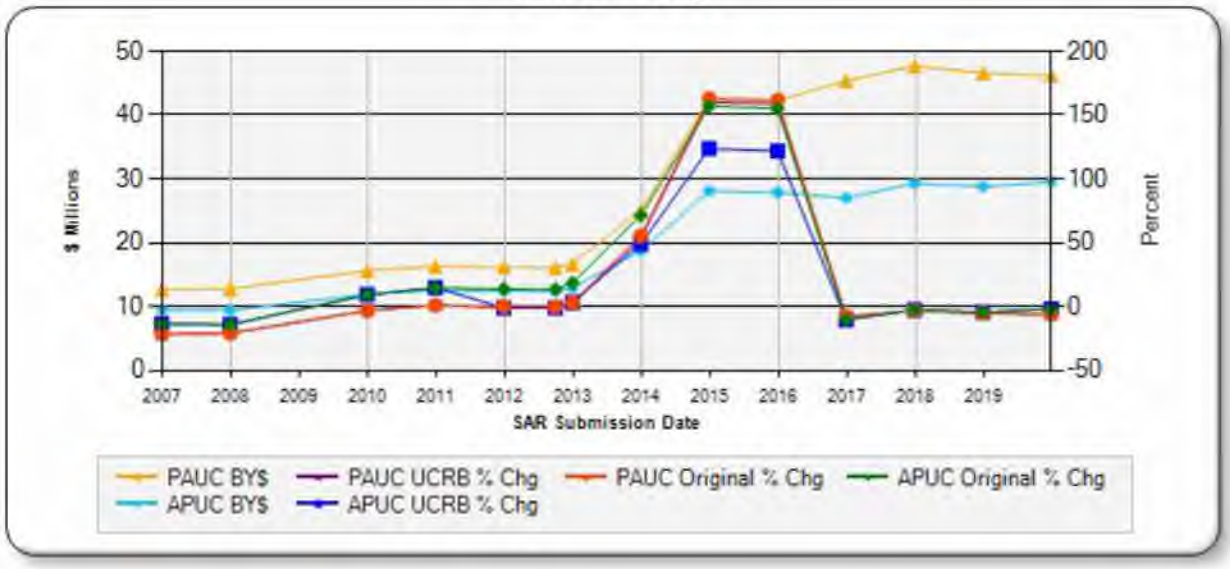
Charts

MQ-8 Fire Scout first began SAR reporting in December 2006





Unit Cost - MQ-8 Fire Scout
Base Year 2017 $M



Risks

Significant Schedule and Technical Risks

Significant Schedule and Technical Risks	
RADAR IOC (March 2021)	
1.	If RADAR Test experiences further delays, then the program will be unable to support a 2Q FY 2021 RADAR IOC. The RADAR Test Program has experienced significant delays due to a combination of factors. Test Squadron maintenance support experienced delays while transitioning contractors, unplanned aircraft maintenance prevented schedule execution, and the Mission Processor Unit (MPU) experienced initial qualification issues. These factors have eliminated any margin in test schedule execution to support a 3Q FY2021 MQ-8C with RADAR Fleet deployment.
Current Estimate (December 2019)	
1.	No Current Risk. Other lower-level risks are being managed within the PEO and PM teams, and not anticipated to effect cost, schedule and/or performance baseline requirements.

Risks

Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Baseline Estimate (April 2017)	
1.	Assistant Secretary of the Navy (Research, Development & Acquisition) (ASN(RD&A)) approved APB dated April 13, 2017. BY($M): Total Acquisition Cost: 2949.1 O&S: 3229.3 Total Life-Cycle Cost: 6178.4
Original Baseline Estimate (December 2006)	
1.	ASN(RD&A) approved original APB in December 2006. BY($M): Total Acquisition Cost: 2443.0 O&S: 2838.8 Total Life-Cycle Cost: 5281.8
Revised Original Estimate (April 2017)	
1.	Nothing to Report
Current Procurement Cost (December 2019)	
1.	An additional four MQ-8C air vehicles were appropriated by Congress in FY 2017; however, the associated funding of $41.2M was insufficient to purchase four air vehicles. The program purchased an additional three aircraft with this funding, for a total buy of four aircraft in FY 2017. In FY 2018, Program Office was authorized through a Congressional add to procure six MQ-8C aircraft. However, funding provided was sufficient to procure five additional MQ-8C aircraft. In FY 2019, Program Office received $34.3M through Congressional add to procure three Mobile Mission Control Stations.

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	5/29/2007	7/22/2010
Approved Quantity	4	23
Reference	Milestone C ADM	Congressional Emergency Supplemental Appropriation HR-4899
Start Year	2007	2007
End Year	2007	2012

The Current Total LRIP Quantity is more than 10% of the total production quantity due to August 4, 2010, Congressional Emergency Supplemental Appropriation HR-4899 which funded Overseas Contingency Operations to convert eight Army airframes bought under the Army's Future Combat System program into Navy Fire Scouts.

Notes

The initial ADM for the 2007 Milestone C approved the program to purchase up to four aircraft, and to buy-to-budget. This guidance resulted in a purchase of three aircraft.

An LRIP decision on September 30, 2008 authorized purchase of three aircraft for LRIP 2 and three aircraft for LRIP 3.

An LRIP decision on July 22, 2010 authorized the purchase of up to five aircraft for LRIP 4 and three aircraft for LRIP 5. Only three new aircraft were purchased under LRIP 4 and three new aircraft were purchased under LRIP 5.

Foreign Military Sales

None

Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2017 $M Current UCR Baseline (Apr 2017 APB)	BY 2017 $M Current Estimate (Dec 2019 SAR)	% Change
Program Acquisition Unit Cost			
Cost	2949.1	3141.5	
Quantity	60	68	
Unit Cost	49.152	46.199	-6.01
Average Procurement Unit Cost			
Cost	1533.6	1740.6	
Quantity	51	59	
Unit Cost	30.071	29.502	-1.89

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2017 $M Revised Original UCR Baseline (Apr 2017 APB)	BY 2017 $M Current Estimate (Dec 2019 SAR)	% Change
Program Acquisition Unit Cost			
Cost	2949.1	3141.5	
Quantity	60	68	
Unit Cost	49.152	46.199	-6.01
Average Procurement Unit Cost			
Cost	1533.6	1740.6	
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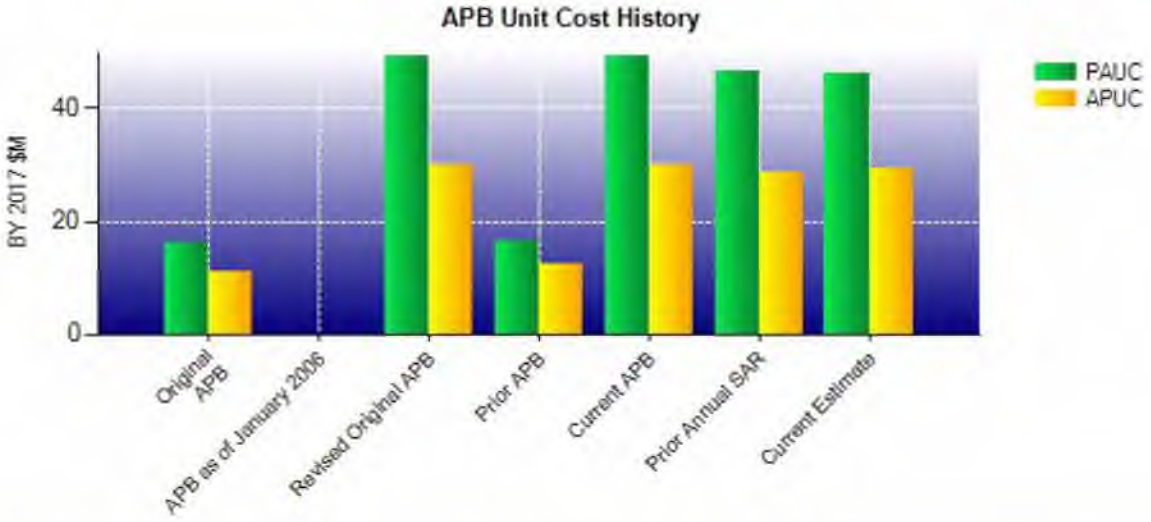

APB Unit Cost History					
Item	Date	BY 2017 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	Dec 2006	16.140	10.939	15.746	10.842
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	Apr 2017	49.152	30.071	47.037	29.880
Prior APB	Jun 2011	16.321	12.567	16.231	13.251
Current APB	Apr 2017	49.152	30.071	47.037	29.880
Prior Annual SAR	Dec 2018	46.566	28.786	45.297	29.058
Current Estimate	Dec 2019	46.199	29.502	44.841	29.931

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY $M)									
Initial PAUC Development Estimate	Changes								PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
15.746	-0.070	5.423	8.681	14.691	-4.644	0.000	4.192	28.273	47.037

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
47.037	0.113	-2.945	0.000	2.796	-0.731	0.000	-1.429	-2.196	44.841

Initial SAR Baseline to Current SAR Baseline (TY $M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
10.842	-0.135	-2.932	9.718	5.055	1.440	0.000	4.878	18.024	29.880

Current SAR Baseline to Current Estimate (TY $M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
29.880	0.078	-1.066	0.000	3.393	-0.707	0.000	-1.647	0.051	29.931

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	Jan 2000	N/A	N/A
Milestone C	N/A	Feb 2007	Mar 2017	Jun 2017
IOC	N/A	N/A	Dec 2018	Jun 2019
Total Cost (TY $M)	N/A	2787.1	2822.2	3049.2
Total Quantity	N/A	177	60	68
PAUC	N/A	15.746	47.037	44.841

Cost Variance

Summary TY $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1298.3	1523.9	--	2822.2
Previous Changes				
Economic	+2.5	+5.8	--	+8.3
Quantity	--	+176.1	--	+176.1
Schedule	--	--	--	--
Engineering	+72.8	+37.1	--	+109.9
Estimating	-7.8	-46.9	--	-54.7
Other	--	--	--	--
Support	--	+18.4	--	+18.4
Subtotal	+67.5	+190.5	--	+258.0
Current Changes				
Economic	+0.6	-1.2	--	-0.6
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	-82.9	+163.1	--	+80.2
Estimating	-0.2	+5.2	--	+5.0
Other	--	--	--	--
Support	--	-115.6	--	-115.6
Subtotal	-82.5	+51.5	--	-31.0
Total Changes	-15.0	+242.0	--	+227.0
Current Estimate	1283.3	1765.9	--	3049.2

Summary BY 2017 $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1415.5	1533.6	--	2949.1
Previous Changes				
Economic	--	--	--	--
Quantity	--	+167.9	--	+167.9
Schedule	--	--	--	--
Engineering	+63.7	+34.5	--	+98.2
Estimating	-11.1	-44.5	--	-55.6
Other	--	--	--	--
Support	--	+6.9	--	+6.9
Subtotal	+52.6	+164.8	--	+217.4
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	-67.0	+136.1	--	+69.1
Estimating	-0.2	+5.1	--	+4.9
Other	--	--	--	--
Support	--	-99.0	--	-99.0
Subtotal	-67.2	+42.2	--	-25.0
Total Changes	-14.6	+207.0	--	+192.4
Current Estimate	1400.9	1740.6	--	3141.5

Previous Estimate: December 2018

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+0.6
Adjustment for current and prior escalation. (Estimating)	-0.2	-0.2
Additional funding allocated for RADAR capability integration in MQ-8C. (Engineering)	+5.3	+5.6
Additional funding allocated for Weapons capability integration in MQ-8C. (Engineering)	+8.3	+8.8
Increase in scope to develop and transition Link-16 capabilities to MQ-8 Program. (Engineering)	-80.6	-97.3
RDT&E Subtotal	-67.2	-82.5

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-1.2
Adjustment for current and prior escalation. (Estimating)	+0.5	+0.2
Additional funding for procurement of mission control stations for Future Frigates. (Engineering)	+136.1	+163.1
Realignment of funds to Other Support to fully fund depot repair capabilities. (Estimating)	+4.6	+5.0
Adjustment for current and prior escalation. (Support)	+0.1	+0.4
Decrease in Other Support. (Support)	-100.2	-117.5
Increase in Initial Spares. (Support)	+1.1	+1.5
Procurement Subtotal	+42.2	+51.5

Contracts

General Notes

Lot 6 Option was awarded on January 31, 2019.

Contract Identification

Appropriation: Procurement
Contract Name: MQ-8C Production
Contractor: Northrop Grumman Corporation
Contractor Location: San Diego, CA 92150
Contract Number: N00019-16-C-0055/0
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: September 09, 2016
Definitization Date: September 09, 2016

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
108.1	113.9	10	208.0	217.3	19	205.3	173.7

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the increase in total quantity purchased on the contract, and the integration of an updated Bell 407 baseline airframe into the program.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (11/22/2019)	+9.3	+0.6
Previous Cumulative Variances	+9.9	+0.1
Net Change	-0.6	+0.5

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to the increased cost for the repair of Air vehicle C23.

The favorable net change in the schedule variance is due to the Contractor performing better than planned indicated by the Contract under run.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	9	9	9	100.00%
Production	58	53	59	89.83%
Total Program Quantity Delivered	67	62	68	91.18%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	3049.2	Years Appropriated	21
Expended to Date	2611.6	Percent Years Appropriated	67.74%
Percent Expended	85.65%	Appropriated to Date	2627.2
Total Funding Years	31	Percent Appropriated	86.16%

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

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	December 31, 2019
Source of Estimate:	POE
Quantity to Sustain:	58
Unit of Measure:	Aircraft
Service Life per Unit:	20.00 Years
Fiscal Years in Service:	FY 2014 - FY 2045

The O&S costs are based on the Program Office Life Cycle cost estimate dated December 31, 2019. The cost estimate was updated to reflect the most recently defined programmatic and sustainment strategy to include both the MQ-8B and MQ-8C. The MQ-8 Sustainment strategy supports 60 aircraft, which excludes seven stricken aircraft and four test assets from a total production quantity of 68. This estimate is based on 465 total operational aircraft years. This estimate includes MQ-8B attrition of one aircraft for every 14,500 flight hours and anticipated MQ-8C attrition of one aircraft loss per each of first four years (FY 2021 - FY 2024) based on current actual attrition rates on ship deployments, and learning curve; after FY 2024, this includes attrition of one aircraft for every 14,500 flight hours. The MQ-8 will be deployed with the MH-60. The MQ-8 will be operated and maintained by MH-60 Aviation Detachment (AVDET) personnel while in deployed status. The addition of the MQ-8 capability does not directly impact manpower requirements of the Helicopter Sea Combat Squadron expeditionary MH-60 AVDET and the manpower costs associated with the MH-60 AVDET is the responsibility of Office of the Chief of Naval Operations N98; there are no costs associated with that AVDET included in this estimate.

Sustainment Strategy

The MQ-8 maintenance concept is a two-level, Organizational level (O-Level) to Depot level (D-Level), concept. O-Level maintenance will be performed by military (organic) personnel shipboard and ashore and by civilian contractors at Naval Base Ventura County, CA under the administrative control of Commander, Helicopter Sea Combat Wing Pacific. D-level maintenance is performed at organic Fleet Readiness Centers and at Original Equipment Manufacturer (OEM) facilities. D-Level maintenance will be performed at a combination of organic and commercial facilities by military and civilian/contractor personnel.

Antecedent Information

No Antecedent. Fire Scout is a distinctly new platform that will operate with a significant increase in persistence over current Naval helicopters, and for this primary reason there is no appropriate analogous program for O&S cost comparisons.

Annual O&S Costs BY2017 $M		
Cost Element	**MQ-8 Fire Scout Average Annual Cost Per Aircraft**	**No Antecedent (Antecedent) N/A**
Unit-Level Manpower	0.108	--
Unit Operations	0.061	--
Maintenance	1.254	--
Sustaining Support	2.525	--
Continuing System Improvements	1.612	--
Indirect Support	0.121	--
Other	0.000	--
Total	5.681	--

Item	Total O&S Cost $M			
	MQ-8 Fire Scout			No Antecedent (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	3229.3	3552.2	2644.1	N/A
Then Year	4029.1	N/A	3355.3	N/A

Equation to Translate Annual Cost to Total Cost

The Average Cost per Air Vehicle of $5.681M is calculated by dividing Total O&S of $2,644.1M by the total number of operational aircraft years of 465.

O&S Cost Variance		
Category	**BY 2017 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2018 SAR	3095.5	
Programmatic/Planning Factors	-446.9	cost decrease due to reduction in flight hours, modifications and manpower per sundown plan.
Cost Estimating Methodology	0.0	
Cost Data Update	-7.7	Decreased due to repair price update.
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	3.2	Increased due to depot level repair cost and consumable cost for MCM cobra
Other	0.0	
Total Changes	-451.4	
Current Estimate	2644.1	

Disposal Estimate Details

Date of Estimate: December 31, 2019

Source of Estimate:	POE
Disposal/Demilitarization Total Cost (BY 2017 $M):	16.2

Total costs for disposal of all Aircraft are 16.2