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Selected Acquisition Report (SAR)

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



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

As of FY 2020 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Sensitivity Originator

No originator information is available at this time.

Common Acronyms and Abbreviations for MDAP Programs

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

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

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, Weapons, 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. Other characteristics include autonomous waypoint navigation with command override capability, a fuel engine, and the ability to incorporate future mission packages. 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

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 16,500 operational flight hours while deployed aboard Littoral Combat Ships (LCS), Guided Missile Frigates supporting Africa 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 1,100 flight hours of developmental testing. All developmental testing (DT) is complete. Operational Testing (OT) is completing the MQ-8C Initial Operations Test & Evaluation (IOT&E) report for the MQ-8C air vehicle to support the IOC timeline which are both scheduled for 2nd Quarter of FY 2019. The MQ-8C AN/ZPY-8 radar testing is on track for 3rd Quarter of FY 2019.

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 aircrafts in FY 2017 and FY 2018. Congress also has authorized the procurement of additional Mobile Mission Control Stations (MMCS). These Congressional adds resulted in a breach to the Procurement Cost threshold. The Program Office is in the process of completing a Program Deviation Report (PDR) for the breach.

There have been 30 MQ-8B air vehicles delivered which meets 100% of the Navy requirements. Currently, 23 MQ-8C air vehicles have been delivered. The program received a Congressional add authorizing procurement of up to 6 MQ-8C aircraft in FY18. Based on current contract negotiations, this funding is sufficient for 5 aircraft with associated Government Furnished Equipment (GFE). The current MQ-8C program is 77% delivered. The Aircraft Transfer Order (ATO) Naval Message has been submitted approving 2 additional MQ-8C air vehicles to be delivered by the end of January 2019. With this delivery, the MQ-8 program will be over 80% delivered. MQ-8C program will reach 90% delivery by end of CY 2019.

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)

Threshold Breaches

APB Breaches			Explanation of Breach
Schedule		<input type="checkbox"/>	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 aircrafts in FY 2017 and FY 2018. Congress also has authorized the procurement of additional Mobile Mission Control Stations (MMCS). These Congressional adds resulted in a breach to the Procurement Cost threshold.
Performance		<input type="checkbox"/>	
Cost	RDT&E	<input type="checkbox"/>	
	Procurement	<input checked="" type="checkbox"/>	
	MILCON	<input type="checkbox"/>	
	Acq O&M	<input type="checkbox"/>	
O&S Cost		<input type="checkbox"/>	The Program Office is in the process of completing a Program Deviation Report (PDR) for the breach.
Unit Cost	PAUC	<input type="checkbox"/>	
	APUC	<input type="checkbox"/>	
Nunn-McCurdy Breaches			Current APB Threshold is \$1687.0 (Base Year)
Current UCR Baseline			Current Cost Estimate is \$1698.4 (Base Year)
	PAUC	None	
	APUC	None	
Original UCR Baseline			
	PAUC	None	
	APUC	None	

Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate
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 (Ch-1)
IOC	Dec 2018	Dec 2018	Jun 2019	Mar 2019 (Ch-2)

Change Explanations

(Ch-1) The current estimate for Milestone C changed from July 2017 to June 2017 to correct a mistake in the previous SAR. Milestone C approved June 29, 2017.

(Ch-2) The current estimate for IOC changed from December 2018 to March 2019 due to delays in IOT&E and test report delivery. IOC will not impact 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		
Navy	1319	07	0305231N	
	Project	Name		
	2768	MQ-8 Fire Scout		
	Notes:	PU2768, MQ-8 UAV		

Notes

In FY 2010, VTUAV was moved from PE 0305204N to PE 0305231N.

In FY 2014, the MQ-8 program was restructured as part of a Nunn-McCurdy certification. Separate efforts within the PE are now included in the program, so the PE is no longer shared.

In FY 2019, Program office received additional funding through a Congressional add to continue radar development and to conduct weapons integration assessment.

Procurement

Appn	BA	PE		
Navy	1506	04	0305204N	
	Line Item	Name		
	0443	Vertical Take-off UAV (VTUAV)		(Sunk)
Navy	1506	04	0305231N	
	Line Item	Name		
	0443	MQ-8 UAV		
Navy	1506	06	0305231N	
	Line Item	Name		
	0605	Spares and Repair Parts		(Shared)

Notes

In FY 2010, VTUAV was moved from PE 0305204N to PE 0305231N.

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 (6) MQ-8C aircraft. However, funding provided was sufficient to procure five (5) additional MQ-8C aircraft.

In FY 2019, Program Office received \$34.3M through Congressional add to procure three (3) Mobile Mission Control Stations (MMCS).

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	1468.1	1298.3	1298.3	1365.8
Procurement	1533.6	1533.6	1687.0	1698.4 ¹	1523.9	1523.9	1714.4
Flyaway	--	--	--	1027.2	--	--	1013.8
Recurring	--	--	--	999.6	--	--	985.9
Non Recurring	--	--	--	27.6	--	--	27.9
Support	--	--	--	671.2	--	--	700.6
Other Support	--	--	--	539.3	--	--	572.4
Initial Spares	--	--	--	131.9	--	--	128.2
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	3166.5	2822.2	2822.2	3080.2

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

Cost Notes

No cost estimate has been completed in the last year.

An additional 4 MQ-8C air vehicles were appropriated by Congress in FY 2017; however, the associated funding of \$41.2M was insufficient to purchase 4 air vehicles. The program purchased an additional 3 aircraft with this funding, for a total buy of 4 aircraft in FY 2017.

In FY 2018, Program Office was authorized through a Congressional add to procure 6 MQ-8C aircraft. However, funding provided was sufficient to procure 5 additional MQ-8C aircraft.

In FY 2019, Program Office received \$34.3M through Congressional add to procure 3 Mobile Mission Control Stations (MMCS).

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

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2020 President's Budget / December 2018 SAR (TY\$ M)									
Appropriation	Prior	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
RDT&E	1115.1	24.1	29.6	29.8	20.3	12.6	9.0	125.3	1365.8
Procurement	1325.2	89.1	45.1	40.4	59.2	40.5	41.3	73.6	1714.4
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 2020 Total	2440.3	113.2	74.7	70.2	79.5	53.1	50.3	198.9	3080.2
PB 2019 Total	2361.1	64.6	63.2	50.4	66.9	48.6	114.9	125.3	2895.0
Delta	79.2	48.6	11.5	19.8	12.6	4.5	-64.6	73.6	185.2

Quantity Summary										
FY 2020 President's Budget / December 2018 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	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 2020 Total	9	59	0	0	0	0	0	0	0	68
PB 2019 Total	9	54	0	0	0	0	0	0	0	63
Delta	0	5	0	0	0	0	0	0	0	5

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	--	--	--	--	--	--	24.1
2020	--	--	--	--	--	--	29.6
2021	--	--	--	--	--	--	29.8
2022	--	--	--	--	--	--	20.3
2023	--	--	--	--	--	--	12.6
2024	--	--	--	--	--	--	9.0
2025	--	--	--	--	--	--	24.8
2026	--	--	--	--	--	--	33.5
2027	--	--	--	--	--	--	29.5
2028	--	--	--	--	--	--	18.9
2029	--	--	--	--	--	--	9.2
2030	--	--	--	--	--	--	9.4
Subtotal	9	--	--	--	--	--	1365.8

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	--	--	--	--	--	--	25.9
2018	--	--	--	--	--	--	60.1
2019	--	--	--	--	--	--	22.7
2020	--	--	--	--	--	--	27.3
2021	--	--	--	--	--	--	26.9
2022	--	--	--	--	--	--	18.0
2023	--	--	--	--	--	--	10.9
2024	--	--	--	--	--	--	7.7
2025	--	--	--	--	--	--	20.7
2026	--	--	--	--	--	--	27.4
2027	--	--	--	--	--	--	23.7
2028	--	--	--	--	--	--	14.9
2029	--	--	--	--	--	--	7.1
2030	--	--	--	--	--	--	7.1
Subtotal	9	--	--	--	--	--	1468.1

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	87.1	--	--	87.1	42.3	129.4	
2016	5	95.9	--	3.4	99.3	59.4	158.7	
2017	4	79.0	--	1.8	80.8	35.9	116.7	
2018	5	96.8	--	1.2	98.0	31.1	129.1	
2019	--	50.0	--	6.6	56.6	32.5	89.1	
2020	--	12.0	--	--	12.0	33.1	45.1	
2021	--	12.3	--	--	12.3	28.1	40.4	
2022	--	16.6	--	3.5	20.1	39.1	59.2	
2023	--	--	--	--	--	40.5	40.5	
2024	--	--	--	--	--	41.3	41.3	
2025	--	--	--	--	--	73.6	73.6	
Subtotal	59	985.9	--	27.9	1013.8	700.6	1714.4	

Annual Funding								
1506 Procurement Aircraft Procurement, Navy								
Fiscal Year	Quantity	BY 2017 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
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	87.3	--	--	87.3	42.4	129.7	
2016	5	94.1	--	3.3	97.4	58.4	155.8	
2017	4	76.0	--	1.7	77.7	34.6	112.3	
2018	5	91.3	--	1.1	92.4	29.4	121.8	
2019	--	46.2	--	6.1	52.3	30.1	82.4	
2020	--	10.9	--	--	10.9	30.0	40.9	
2021	--	10.9	--	--	10.9	25.0	35.9	
2022	--	14.5	--	3.0	17.5	34.1	51.6	
2023	--	--	--	--	--	34.6	34.6	
2024	--	--	--	--	--	34.6	34.6	
2025	--	--	--	--	--	60.4	60.4	
Subtotal	59	999.6	--	27.6	1027.2	671.2	1698.4	

This note is related to the Cost Quantity Information Table: The procurement funding in FY 2019 - FY 2022 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	116.9
2011	3	49.1
2012	12	168.4
2013	3	90.8
2014	2	35.9
2015	5	87.3
2016	5	123.3
2017	4	99.7
2018	5	120.8
2019	--	--
2020	--	--
2021	--	--
2022	--	--
2023	--	--
2024	--	--
2025	--	--
Subtotal	59	999.6

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.

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

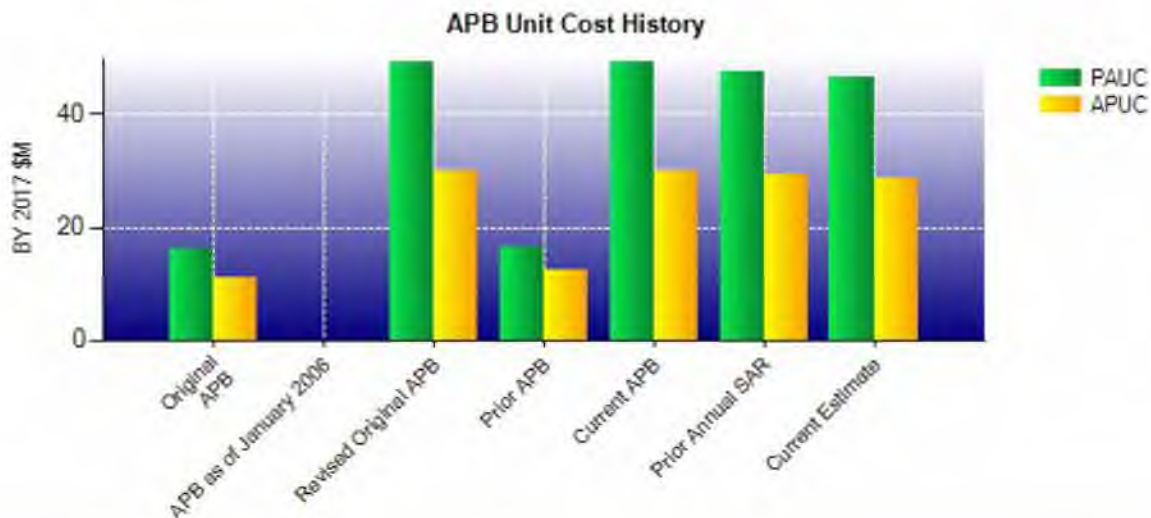
None

Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2017 \$M	BY 2017 \$M	% Change
	Current UCR Baseline (Apr 2017 APB)	Current Estimate (Dec 2018 SAR)	
Program Acquisition Unit Cost			
Cost	2949.1	3166.5	
Quantity	60	68	
Unit Cost	49.152	46.566	-5.26
Average Procurement Unit Cost			
Cost	1533.6	1698.4	
Quantity	51	59	
Unit Cost	30.071	28.786	-4.27
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2017 \$M	BY 2017 \$M	% Change
	Revised Original UCR Baseline (Apr 2017 APB)	Current Estimate (Dec 2018 SAR)	
Program Acquisition Unit Cost			
Cost	2949.1	3166.5	
Quantity	60	68	
Unit Cost	49.152	46.566	-5.26
Average Procurement Unit Cost			
Cost	1533.6	1698.4	
Quantity	51	59	
Unit Cost	30.071	28.786	-4.27



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 2017	47.681	29.294	45.952	29.285
Current Estimate	Dec 2018	46.566	28.786	45.297	29.058

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	0.122	-2.945	0.000	1.616	-0.804	0.000	0.271	-1.740	45.297

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	0.098	-1.066	0.000	0.629	-0.795	0.000	0.312	-0.822	29.058

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

Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1298.3	1523.9	--	2822.2
Previous Changes				
Economic	+0.5	+0.2	--	+0.7
Quantity	--	+90.7	--	+90.7
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+14.8	-38.9	--	-24.1
Other	--	--	--	--
Support	--	+5.5	--	+5.5
Subtotal	+15.3	+57.5	--	+72.8
Current Changes				
Economic	+2.0	+5.6	--	+7.6
Quantity	--	+85.4	--	+85.4
Schedule	--	--	--	--
Engineering	+72.8	+37.1	--	+109.9
Estimating	-22.6	-8.0	--	-30.6
Other	--	--	--	--
Support	--	+12.9	--	+12.9
Subtotal	+52.2	+133.0	--	+185.2
Total Changes	+67.5	+190.5	--	+258.0
CE - Cost Variance	1365.8	1714.4	--	3080.2
CE - Cost & Funding	1365.8	1714.4	--	3080.2

Summary BY 2017 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1415.5	1533.6	--	2949.1
Previous Changes				
Economic	--	--	--	--
Quantity	--	+87.7	--	+87.7
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+6.5	-37.1	--	-30.6
Other	--	--	--	--
Support	--	-2.3	--	-2.3
Subtotal	+6.5	+48.3	--	+54.8
Current Changes				
Economic	--	--	--	--
Quantity	--	+80.2	--	+80.2
Schedule	--	--	--	--
Engineering	+63.7	+34.5	--	+98.2
Estimating	-17.6	-7.4	--	-25.0
Other	--	--	--	--
Support	--	+9.2	--	+9.2
Subtotal	+46.1	+116.5	--	+162.6
Total Changes	+52.6	+164.8	--	+217.4
CE - Cost Variance	1468.1	1698.4	--	3166.5
CE - Cost & Funding	1468.1	1698.4	--	3166.5

Previous Estimate: December 2017

RDT&E	\$M	
	Base Year	Then Year
Current Change Explanations		
Revised escalation indices. (Economic)	N/A	+2.0
Adjustment for current and prior escalation. (Estimating)	-0.9	-0.9
Additional funding allocated for RADAR capability integration in MQ-8C. (Engineering)	+5.2	+5.5
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)	+50.2	+58.5
Decrease in development costs resulting from correction of deficiencies. (Estimating)	-16.7	-21.7
RDT&E Subtotal	+46.1	+52.2

Procurement	\$M	
	Base Year	Then Year
Current Change Explanations		
Revised escalation indices. (Economic)	N/A	+5.6
Adjustment for current and prior escalation. (Estimating)	-1.8	-1.3
Total Quantity variance resulting from an increase of 5 aircraft from 54 to 59. (Subtotal)	+102.7	+108.9
Quantity variance resulting from an increase of 5 aircraft from 54 to 59. (Quantity)	(+112.8)	(+119.6)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(-10.1)	(-10.7)
Additional Quantity variance resulting from an increase of 5 aircraft from 54 to 59. (Quantity)	-32.6	-34.2
Decrease due to the procurement efficiency for the purchase of 5 aircraft in FY2018. (Schedule)	0.0	-0.4
Additional schedule variance due to the procurement of 5 aircraft in FY2018. (Schedule)	0.0	+0.4
Additional funding for procurement of mobile mission control stations. (Engineering)	+34.5	+37.1
Realignment of funds to Other Support to fully fund depot repair capabilities. (Estimating)	+4.5	+4.0
Adjustment for current and prior escalation. (Support)	-0.8	-1.3
Increase in Other Support due to realignment of funds to fully fund depot repair capabilities. (Support)	+14.1	+18.4
Decrease in Initial Spares due to rephasing. (Support)	-4.1	-4.2
Procurement Subtotal	+116.5	+133.0

(QR) Quantity Related

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	207.8	217.3	19	151.5	124.9

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 (1/25/2019)	+9.9	+0.1
Previous Cumulative Variances	+5.9	-0.7
Net Change	+4.0	+0.8

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to the November Forward Pricing Rate Proposed (FPRP) table adjustment to Actual Cost of Work Performed (ACWP) and Estimate to Completion (ETC) across all control accounts.

The favorable net change in the schedule variance is due to the early delivery of cable assemblies, antennas and receivers, and the increased work efficiencies in the sub-assembly builds.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	9	9	9	100.00%
Production	43	43	59	72.88%
Total Program Quantity Delivered	52	52	68	76.47%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	3080.2	Years Appropriated	20
Expended to Date	2128.3	Percent Years Appropriated	64.52%
Percent Expended	69.10%	Appropriated to Date	2553.5
Total Funding Years	31	Percent Appropriated	82.90%

The above data is current as of March 11, 2019.

Notes

All MQ-8B deliveries are complete.

19 MQ-8C Fire Scout aircraft were contracted under the Navy's Rapid Deployment Capability authority and are now included in the Program of Record as part of the Nunn-McCurdy restructure in FY 2014. This includes 2 RDT&E aircraft and 17 procurement aircraft.

An additional 4 MQ-8C air vehicles were appropriated by Congress in FY 2017; however, the associated funding of \$41.2M was insufficient to purchase 4 air vehicles. The program was able to purchase 3 air vehicles with this funding, so the total quantity of aircraft is 63.

In FY 2018, Program Office was authorized through a Congressional add to procure 6 MQ-8C aircraft. However, funding provided was sufficient to procure 5 additional MQ-8C aircraft.

In FY 2019, Program Office received \$34.3M through Congressional add to procure 3 Mobile Mission Control Stations (MMCS).

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	December 31, 2018
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 2018. 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 58 aircraft, which excludes seven stricken aircraft and three test assets from a total production quantity of 68. This estimate is based on 571 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 (NBVC) under the administrative control of Commander, Helicopter Sea Combat Wing Pacific (CHSCWP). D-level maintenance is performed at organic Fleet Readiness Centers (FRCs) 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	0.088		--
Unit Operations	0.048		--
Maintenance	1.269		--
Sustaining Support	2.329		--
Continuing System Improvements	1.593		--
Indirect Support	0.099		--
Other	0.000		--
Total	5.426		--

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	3095.5	N/A
Then Year	4029.1	N/A	3901.7	N/A

Equation to Translate Annual Cost to Total Cost

The Average Cost per Air Vehicle of \$5.426M is calculated by dividing Total O&S of \$3,095.5M by the total number of operational aircraft years of 571.

O&S Cost Variance		
Category	BY 2017 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2017 SAR	3067.5	
Programmatic/Planning Factors	56.4	cost increase for additional 5 air vehicles
Cost Estimating Methodology	0.0	
Cost Data Update	-28.4	decrease for incorporation of updated actual aircraft parts demand and budget data
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	28.0	
Current Estimate	3095.5	

Disposal Estimate Details

Date of Estimate: December 31, 2018
Source of Estimate: POE

MQ-8 Fire Scout

December 2018 SAR

Disposal/Demilitarization Total Cost (BY 2017 \$M): 16.2

Total costs for disposal of all Aircraft are 16.2