Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-373

MQ-4C Triton Unmanned Aircraft System (MQ-4C Triton)

As of FY 2018 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Common Acronyms and Abbreviations for MDAP Programs

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

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

Program Information

Program Name

MQ-4C Triton Unmanned Aircraft System (MQ-4C Triton)

DoD Component

Navy

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Date Assigned: December 18, 2014

References

SAR Baseline (Development Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated February 7, 2009

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated December 20, 2016

Mission and Description

The MQ-4C Triton Unmanned Aircraft System (MQ-4C Triton) is an integrated System of Systems and a force multiplier for the Joint Force and Fleet Commander, enhancing battlespace awareness and shortening the sensor-to-shooter kill chain. The system provides multiple-sensor, persistent maritime and littoral Intelligence, Surveillance and Reconnaissance data collection and dissemination as well as an airborne communications relay capability to Combatant Commanders, Expeditionary Strike Group Commanders, Carrier Strike Group Commanders, and other designated U.S. and Joint Commanders. The addition of a de-icing capability over the baseline Global Hawk provides operators with the capability to transition through icing conditions. The mission sensors installed on the MQ-4C Triton provide 360 degree radar and Electro-Optical/Infrared coverage. Additional functionality that optimizes the system for maritime search operations includes an Automatic Identification System and an Electronic Support Measures system. The MQ-4C Triton is a tactical, land-based, forward deployed platform that will operate from five operational sites (orbits) worldwide. It will provide surveillance when no other naval forces are present and will support operations in the littorals. Furthermore, the asset will respond to theater level operational or national strategic taskings.

Executive Summary

During this reporting period the MQ-4C Triton achieved Milestone C on September 22, 2016 and awarded the first LRIP contract on September 26, 2016. The Milestone C also approved the following programmatic changes: a re-prioritization of capability that provides an Early Operational Capability (EOC) of the baseline configuration, movement of Initial Operational Test & Evaluation to later in the program to align with development of the Multiple Intelligence configuration, and an increase in the quantity of LRIP systems. The Milestone C APB was approved on December 20, 2016.

The program continues to experience success with execution of the flight test program. The program completed flight test for Integrated Functional Capability (IFC) 2 software build demonstrating air vehicle performance, sensor and communication/network functionality. IFC 3 software build brings the final capabilities required for Triton EOC to include sensor enhancements, Link-16, and interoperability functionality. IFC 3 first flight was conducted March 24, 2017.

MQ-4C Triton System Demonstration Test Article asset deliveries are on track to support the next operational test period (OT-C1) in first quarter FY 2018.

A Memorandum of Understanding with Australia for the procurement of up to seven MQ-4C Triton aircraft via cooperative program is expected to be signed in March 2018. On March 6, 2017, Germany announced their intent to procure three to four Triton Unmanned Aircraft System as a replacement for the Euro Hawk, pending elections later this year. Letter of Offer and Acceptance signature is expected in late 2018.

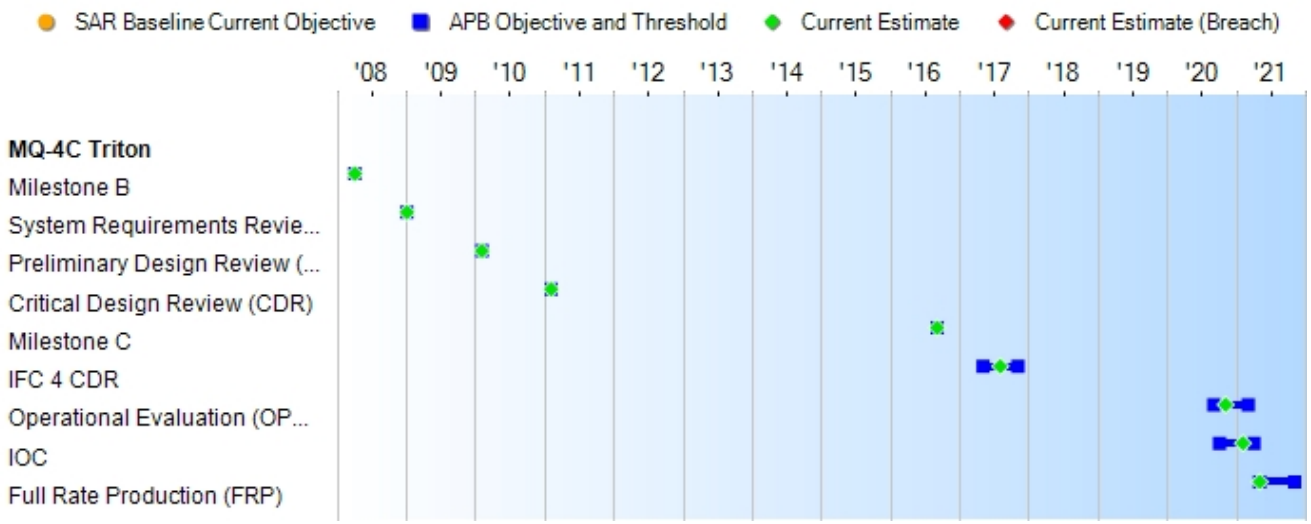
There are no significant software-related issues with this program at this time.

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

Schedule



Schedule Events					
Events	**SAR Baseline Development Estimate**	**Current APB Production Objective/Threshold**		**Current Estimate**	
Milestone B	Apr 2008	Apr 2008	Apr 2008	Apr 2008	
System Requirements Review (SRR)	Jan 2009	Jan 2009	Jan 2009	Jan 2009	
Preliminary Design Review (PDR)	Jan 2010	Feb 2010	Feb 2010	Feb 2010	
Critical Design Review (CDR)	Jan 2011	Feb 2011	Feb 2011	Feb 2011	
Milestone C	May 2013	Sep 2016	Sep 2016	Sep 2016	(Ch-1)
IFC 4 CDR	N/A	May 2017	Nov 2017	Aug 2017	(Ch-2)
Operational Evaluation (OPEVAL) Start	Jan 2015	Sep 2020	Mar 2021	Nov 2020	(Ch-2)
IOC	Dec 2015	Oct 2020	Apr 2021	Feb 2021	(Ch-2)
Full Rate Production (FRP)	Dec 2015	May 2021	Nov 2021	May 2021	(Ch-2)

Change Explanations

(Ch-1) The current estimate for Milestone C changed from May 2016 to September 2016 to reflect the actual approved Milestone date.
(Ch-2) The current estimate updates for IFC 4 CDR, OPEVAL, IOC, and FRP are a reflection of adjustments made to align with the latest program profile: IFC 4 CDR added as a new schedule event, OPEVAL updated from January 2018 to November 2020, IOC updated from September 2018 to February 2021, and FRP updated from September 2018 to May 2021.

Acronyms and Abbreviations

IFC - Integrated Functional Capability

Performance

Performance Characteristics				
SAR Baseline Development Estimate	**Current APB Production Objective/Threshold**	**Demonstrated Performance**	**Current Estimate**	
Persistent multi-sensor maritime ISR at mission radius				
On station 24 hrs a day / 7 days a week for 30 consecutive days with an ETOS of >=95%	On station 24 hrs a day / 7 days a week for 30 consecutive days with an ETOS of >=95%	On station 24 hrs a day for 7 consecutive days with ETOS of >=80%	ETOS of ~.89 (Estimated)	On station 24 hrs a day / 7 days a week for 7 consecutive days with an ETOS of >=88% at a mission radius of 2,000 nm
Level of Interoperability 1-5				
BLOS and LOS from MOB/ FOB (Land Based) MCS	BLOS and LOS from MOB/ FOB (Land Based) MCS	BLOS and LOS from the MOB (Land Based) MCS	BLOS and LOS from MOB (Land Based) MCS (LOI 1-5)	BLOS and LOS from MOB (Land Based) MCS
UA Mission Radius				
>=3,000 nm	>=3,000 nm	>=2,000 nm	2,400 nm	>=2,000 nm
Level Of Interoperability 2 Capability				
LOS/BLOS multi-ISR payload reception to Maritime Forces	LOS/BLOS multi-ISR payload reception to Maritime Forces	LOS, ISR payload sensor data reception to Maritime Forces afloat (CVN, LHA/LHD)	LOS/BLOS multi-ISR payload reception to Maritime Forces	LOS, ISR payload sensor data reception to Maritime Forces afloat (CVN, LHA/LHD)
Net Ready				
IAW CJCSI 6212.01D	IAW CJCSI 6212.01D	IAW CJCSI 6212.01D	IAW CJCSI 5123-01G, CJCSI 3170.01I and the JCIDS Manual (Estimated)	IAW CJCSI 5123-01G, CJCSI 3170.01I and the JCIDS Manual (Ch-1)
Operational Availability				
>=0.9	>=0.9	>=0.7 at IOT&E >=0.8 at IOC plus two years	0.89 (Estimated)	>=0.86

Classified Performance information is provided in the classified annex to this submission.

Requirements Reference

CDD in lieu of CPD dated August 2, 2016

Change Explanations

(Ch-1) The Net Ready KPP current estimate changed from IAW CJCSI 6212.01D to IAW CJCSI 5123-01G, CJCSI 3170.01I and the JCIDS Manual to reflect cancellation of the CJCSI 6212.01D in February 2015 and replacement by the CJCSI 5123-01G, CJCSI 3170.01I and the JCIDS Manual.

Acronyms and Abbreviations

BLOS - Beyond Line of Sight
CJCSI - Chairman of the Joint Chiefs of Staff Instruction
CVN - Aircraft Carrier Nuclear
ETOS - Effective Time On Station
FOB - Forward Operating Base
hrs - hours
IAW - In Accordance With
IOT&E - Initial Operational Test & Evaluation
ISR - Intelligence, Surveillance, and Reconnaissance
JCIDS - Joint Capabilities Integration Development System
LHA - Amphibious Assault Ship (General Purpose)
LHD - Amphibious Assault Ship (Multi Purpose)
LOI - Level of Interoperability
LOS - Line of Sight
MCS - Mission Control System
MOB - Main Operating Base
nm - nautical miles
UA - Unmanned Aircraft

Track to Budget

RDT&E

Appn	BA	PE
Navy	07	0305205N

Project	Name		
4020	MQ-4C Triton	(Shared)	(Sunk)

Appn	BA	PE
Navy	07	0305220N

Project	Name
4020	MQ-4C Triton

Appn	BA	PE
Navy	07	0305421N

Project	Name
2939	RQ-4 Modernization

Procurement

Appn	BA	PE
Navy	04	0305220N

Line Item	Name
0442	BAMS UAS

Appn	BA	PE
Navy	05	0305220N

Line Item	Name
0596	MQ-4 Series

Appn	BA	PE
Navy	06	0305220N

Line Item	Name	
0605	BAMS UAS	(Shared)

MILCON

Appn	BA	PE
Navy	01	0203176N

Project	Name	
00207655	BAMS Mission Control Complex	(Sunk)

Appn	BA	PE
Navy	01	0212176N

Project	Name	
00207662	BAMS Mission Control System	(Sunk)

Appn	BA	PE
Navy	02	0212176N

Project	Name
00620240	BAMS Facility

Appn	BA	PE
Navy	01	0212176N

Project	Name	
62995407	BAMS Aircraft and Maintenance Hangar	(Sunk)
69232577	BAMS Forward Operating Base 3rd Fleet	

	69232593	BAMS Consolidated Maintenance Hangar		(Sunk)
	C1002960	BAMS Operational Facilities		(Sunk)
Navy	1205	01	0712876N	
	Project	**Name**		
	62995407	BAMS Triton Hangar and Operations Facility		(Sunk)
Navy	1205	01	0805976N	
	Project	**Name**		
	69232607	Triton Avionics and Fuel Systems Trainer		(Sunk)
Navy	1205	01	0815976N	
	Project	**Name**		
	00207153	BAMS UAS Operator Training Facility		(Sunk)
	41557625	BAMS Forward Operational and Maintenance Hangar		(Sunk)
	63042900	BAMS Maintenance Training Facility		(Sunk)
	C1002154	BAMS UAS Operator Training Facility		
Navy	1205	01	0816376N	
	Project	**Name**		
	0428A263	BAMS Test and Evaluation Facility		(Sunk)

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2016 $M			BY 2016 $M	TY $M		
	SAR Baseline Development Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Production Objective	Current Estimate
RDT&E	3370.5	5383.5	5921.9	5252.3	3223.6	5341.0	5207.5
Procurement	10002.5	9357.5	10293.3	9363.7	11525.6	11348.6	11337.3
Flyaway	--	--	--	7078.2	--	--	8695.6
Recurring	--	--	--	6581.2	--	--	8140.8
Non Recurring	--	--	--	497.0	--	--	554.8
Support	--	--	--	2285.5	--	--	2641.7
Other Support	--	--	--	1972.6	--	--	2309.8
Initial Spares	--	--	--	312.9	--	--	331.9
MILCON	410.4	323.3	355.6	321.6	423.1	337.5	337.6
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	13783.4	15064.3	N/A	14937.6	15172.3	17027.1	16882.4

Current APB Cost Estimate Reference

ICE dated September 21, 2016

The Base Year for the program has been updated from FY 2008 to FY 2016 using the following deflators:

Appn Category	Deflation Factor
RDT&E	1.12752283
Procurement	1.12752283
MILCON	1.12752283

Cost Notes

In accordance with Section 842 of the National Defense Authorization Act for FY 2017, which amended title 10 U.S.C. § 2334, the Director of Cost Assessment and Program Evaluation, and the Secretary of the military department concerned or the head of the Defense Agency concerned, must issue guidance requiring a discussion of risk, the potential impacts of risk on program costs, and approaches to mitigate risk in cost estimates for MDAPs and major subprograms. The information required by the guidance is to be reported in each SAR. This guidance is not yet available; therefore, the information on cost risk is not contained in this SAR.

Total Quantity			
Quantity	**SAR Baseline Development Estimate**	**Current APB Production**	**Current Estimate**
RDT&E	5	4	4
Procurement	65	66	66
Total	70	70	70

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2018 President's Budget / December 2016 SAR (TY$ M)									
Appropriation	Prior	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	To Complete	Total
RDT&E	3894.8	256.3	313.5	193.8	139.9	101.3	85.8	222.1	5207.5
Procurement	804.8	603.9	676.3	764.2	622.4	624.4	611.7	6629.6	11337.3
MILCON	209.9	71.9	0.0	0.0	0.0	55.8	0.0	0.0	337.6
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2018 Total	4909.5	932.1	989.8	958.0	762.3	781.5	697.5	6851.7	16882.4
PB 2017 Total	4736.4	762.7	646.2	681.5	670.5	702.9	546.5	5688.0	14434.7
Delta	173.1	169.4	343.6	276.5	91.8	78.6	151.0	1163.7	2447.7

Quantity Summary										
FY 2018 President's Budget / December 2016 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	To Complete	Total
Development	4	0	0	0	0	0	0	0	0	4
Production	0	4	3	3	3	3	3	3	44	66
PB 2018 Total	4	4	3	3	3	3	3	3	44	70
PB 2017 Total	4	4	2	3	3	5	6	4	39	70
Delta	0	0	1	0	0	-2	-3	-1	5	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
2004	--	--	--	--	--	--	17.9
2005	--	--	--	--	--	--	39.3
2006	--	--	--	--	--	--	--
2007	--	--	--	--	--	--	26.2
2008	--	--	--	--	--	--	83.1
2009	--	--	--	--	--	--	420.4
2010	--	--	--	--	--	--	438.1
2011	--	--	--	--	--	--	525.6
2012	--	--	--	--	--	--	550.1
2013	--	--	--	--	--	--	612.7
2014	--	--	--	--	--	--	375.2
2015	--	--	--	--	--	--	449.2
2016	--	--	--	--	--	--	357.0
2017	--	--	--	--	--	--	256.3
2018	--	--	--	--	--	--	313.5
2019	--	--	--	--	--	--	193.8
2020	--	--	--	--	--	--	139.9
2021	--	--	--	--	--	--	101.3
2022	--	--	--	--	--	--	85.8
2023	--	--	--	--	--	--	99.5
2024	--	--	--	--	--	--	77.1
2025	--	--	--	--	--	--	45.5
Subtotal	4	--	--	--	--	--	5207.5

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2016 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2004	--	--	--	--	--	--	21.9
2005	--	--	--	--	--	--	46.8
2006	--	--	--	--	--	--	--
2007	--	--	--	--	--	--	29.6
2008	--	--	--	--	--	--	92.1
2009	--	--	--	--	--	--	459.9
2010	--	--	--	--	--	--	472.2
2011	--	--	--	--	--	--	553.3
2012	--	--	--	--	--	--	569.6
2013	--	--	--	--	--	--	627.9
2014	--	--	--	--	--	--	379.1
2015	--	--	--	--	--	--	448.2
2016	--	--	--	--	--	--	350.5
2017	--	--	--	--	--	--	246.8
2018	--	--	--	--	--	--	296.0
2019	--	--	--	--	--	--	179.4
2020	--	--	--	--	--	--	127.0
2021	--	--	--	--	--	--	90.1
2022	--	--	--	--	--	--	74.8
2023	--	--	--	--	--	--	85.1
2024	--	--	--	--	--	--	64.6
2025	--	--	--	--	--	--	37.4
Subtotal	4	--	--	--	--	--	5252.3

FY 2016 does not reflect the 116.7 $M approved Above Threshold Reprogramming (ATR) from Procurement (APN 0442 MQ -4 Triton) to RDT&E (0305220N MQ-4C Triton).

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
2015	--	81.2	--	--	81.2	--	81.2
2016	4	336.9	--	99.6	436.5	287.1	723.6
2017	3	298.6	--	61.2	359.8	244.1	603.9
2018	3	331.2	--	108.6	439.8	236.5	676.3
2019	3	347.2	--	101.6	448.8	315.4	764.2
2020	3	356.9	--	22.8	379.7	242.7	622.4
2021	3	359.5	--	43.6	403.1	221.3	624.4
2022	3	391.7	--	7.8	399.5	212.2	611.7
2023	4	461.1	--	9.1	470.2	87.2	557.4
2024	4	471.0	--	9.1	480.1	79.9	560.0
2025	4	481.0	--	9.3	490.3	79.9	570.2
2026	4	491.5	--	9.5	501.0	81.5	582.5
2027	4	502.5	--	9.7	512.2	73.0	585.2
2028	4	513.8	--	9.9	523.7	74.5	598.2
2029	4	525.6	--	10.2	535.8	76.0	611.8
2030	4	537.8	--	10.4	548.2	77.5	625.7
2031	4	546.4	--	10.6	557.0	79.1	636.1
2032	4	559.2	--	10.8	570.0	80.7	650.7
2033	4	547.7	--	11.0	558.7	93.1	651.8
Subtotal	66	8140.8	--	554.8	8695.6	2641.7	11337.3

Annual Funding 1506 | Procurement | Aircraft Procurement, Navy							
Fiscal Year	Quantity	BY 2016 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2015	--	80.0	--	--	80.0	--	80.0
2016	4	326.1	--	96.4	422.5	277.8	700.3
2017	3	283.4	--	58.1	341.5	231.7	573.2
2018	3	308.2	--	101.1	409.3	220.0	629.3
2019	3	316.8	--	92.7	409.5	287.7	697.2
2020	3	319.2	--	20.4	339.6	217.1	556.7
2021	3	315.2	--	38.2	353.4	194.1	547.5
2022	3	336.7	--	6.7	343.4	182.5	525.9
2023	4	388.6	--	7.7	396.3	73.5	469.8
2024	4	389.2	--	7.5	396.7	66.0	462.7
2025	4	389.7	--	7.5	397.2	64.7	461.9
2026	4	390.4	--	7.5	397.9	64.7	462.6
2027	4	391.3	--	7.6	398.9	56.8	455.7
2028	4	392.2	--	7.6	399.8	56.9	456.7
2029	4	393.4	--	7.6	401.0	56.9	457.9
2030	4	394.6	--	7.6	402.2	56.9	459.1
2031	4	393.1	--	7.6	400.7	56.9	457.6
2032	4	394.4	--	7.6	402.0	56.9	458.9
2033	4	378.7	--	7.6	386.3	64.4	450.7
Subtotal	66	6581.2	--	497.0	7078.2	2285.5	9363.7

FY 2016 does not reflect the 116.7 $M approved Above Threshold Reprogramming (ATR) from Procurement (APN 0442 MQ -4 Triton) to RDT&E (0305220N MQ-4C Triton).

Cost Quantity Information 1506 | Procurement | Aircraft Procurement, Navy		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2016 $M**
2015	--	--
2016	4	351.8
2017	3	249.0
2018	3	306.7
2019	3	315.7
2020	3	318.1
2021	3	314.2
2022	3	317.9
2023	4	387.5
2024	4	387.8
2025	4	388.3
2026	4	389.0
2027	4	389.9
2028	4	390.9
2029	4	392.0
2030	4	393.2
2031	4	391.6
2032	4	393.0
2033	4	504.6
Subtotal	66	6581.2

Annual Funding 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	**TY $M**
	Total Program
2011	33.0
2012	4.5
2013	65.0
2014	55.5
2015	--
2016	51.9
2017	71.9
2018	--
2019	--
2020	--
2021	55.8
Subtotal	337.6

Annual Funding 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	**BY 2016 $M**
	Total Program
2011	34.0
2012	4.6
2013	65.1
2014	54.8
2015	--
2016	48.9
2017	66.5
2018	--
2019	--
2020	--
2021	47.7
Subtotal	321.6

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	4/18/2008	9/22/2016
Approved Quantity	10	15
Reference	Milestone B ADM	Milestone C ADM
Start Year	2013	2013
End Year	2015	2020

The Current Total LRIP Quantity is more than 10% of the total production quantity due to the establishment of an initial production base for the system and an orderly and efficient increase in the production rate. The increase to LRIP will also support Early Operational Capability.

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost $M	Description
Germany	4/2/2015		2.0	Agreement number: GY-P-GPT is an active technical services case which provides technical data on the MQ-4C Triton.
Australia	8/1/2013		5.0	Agreement number: AT-P-GTJ is an active technical services case which provides technical data on the MQ-4C Triton.

Notes

The program office is currently executing two FMS technical services cases for information on the MQ-4C Triton with both Australia and Germany to help them determine if the MQ-4C Triton will meet their needs for a platform. Other interested foreign governments include Canada, Japan, Norway and the United Kingdom.

A Memorandum of Understanding with Australia for the procurement of up to seven MQ-4C Triton aircraft via cooperative program is expected to be signed in March 2018. On March 6, 2017, Germany announced their intent to procure three to four Triton Unmanned Aircraft Systems as a replacement for the Euro Hawk, pending elections later this year. Letter of Offer and Acceptance signature is expected in late 2018.

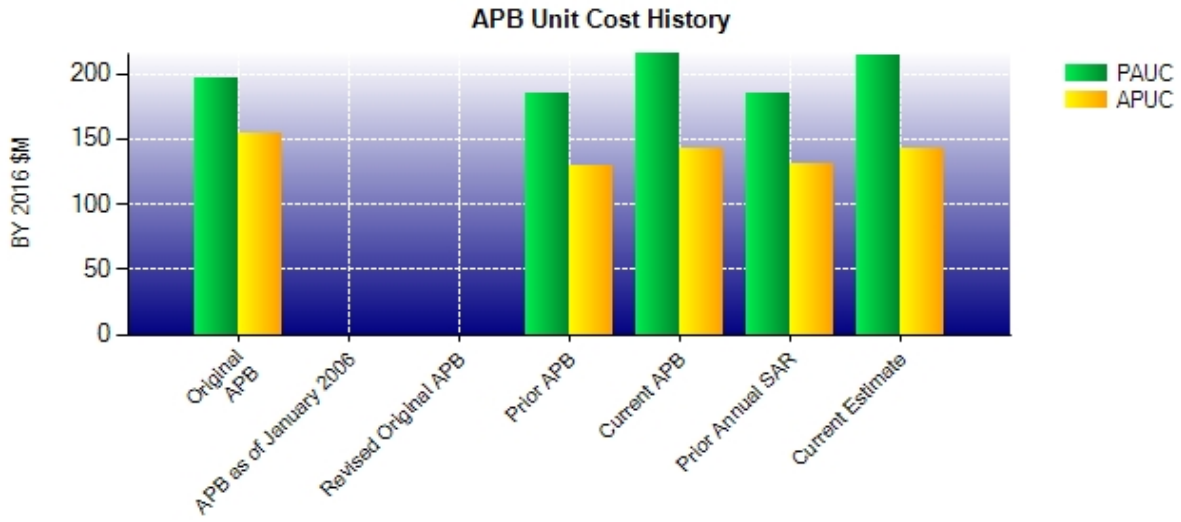
Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2016 $M Current UCR Baseline (Dec 2016 APB)	BY 2016 $M Current Estimate (Dec 2016 SAR)	% Change
Program Acquisition Unit Cost			
Cost	15064.3	14937.6	
Quantity	70	70	
Unit Cost	215.204	213.394	-0.84
Average Procurement Unit Cost			
Cost	9357.5	9363.7	
Quantity	66	66	
Unit Cost	141.780	141.874	+0.07

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2016 $M Original UCR Baseline (Feb 2009 APB)	BY 2016 $M Current Estimate (Dec 2016 SAR)	% Change
Program Acquisition Unit Cost			
Cost	13783.4	14937.6	
Quantity	70	70	
Unit Cost	196.906	213.394	+8.37
Average Procurement Unit Cost			
Cost	10002.5	9363.7	
Quantity	65	66	
Unit Cost	153.885	141.874	-7.81



APB Unit Cost History					
Item	Date	BY 2016 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	Feb 2009	196.906	153.885	216.747	177.317
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	Jul 2014	184.743	129.664	207.763	156.288
Current APB	Dec 2016	215.204	141.780	243.244	171.948
Prior Annual SAR	Dec 2015	185.423	130.876	206.210	155.564
Current Estimate	Dec 2016	213.394	141.874	241.177	171.777

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
216.747	-5.511	1.731	21.843	24.911	4.330	0.000	-22.874	24.430	241.177

Current SAR Baseline to Current Estimate (TY $M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
177.317	-5.255	-0.850	23.167	8.085	-5.917	0.000	-24.770	-5.540	171.777

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	Apr 2008	N/A	Apr 2008
Milestone C	N/A	May 2013	N/A	Sep 2016
IOC	N/A	Dec 2015	N/A	Feb 2021
Total Cost (TY $M)	N/A	15172.3	N/A	16882.4
Total Quantity	N/A	70	N/A	70
PAUC	N/A	216.747	N/A	241.177

Cost Variance

Summary TY $M				
Item	**RDT&E**	**Procurement**	**MILCON**	**Total**
SAR Baseline (Development Estimate)	3223.6	11525.6	423.1	15172.3
Previous Changes				
Economic	-64.9	-436.8	-4.6	-506.3
Quantity	--	+121.2	--	+121.2
Schedule	--	+1337.5	--	+1337.5
Engineering	-28.5	--	--	-28.5
Estimating	+694.2	-374.9	-109.0	+210.3
Other	--	--	--	--
Support	+33.6	-1905.4	--	-1871.8
Subtotal	+634.4	-1258.4	-113.6	-737.6
Current Changes				
Economic	+26.6	+90.0	+3.9	+120.5
Quantity	--	--	--	--
Schedule	--	+191.5	--	+191.5
Engineering	+1238.7	+533.6	--	+1772.3
Estimating	+84.2	-15.6	+24.2	+92.8
Other	--	--	--	--
Support	--	+270.6	--	+270.6
Subtotal	+1349.5	+1070.1	+28.1	+2447.7
Adjustments	--	--	--	--
Total Changes	+1983.9	-188.3	-85.5	+1710.1
CE - Cost Variance	5207.5	11337.3	337.6	16882.4
CE - Cost & Funding	5207.5	11337.3	337.6	16882.4

Summary BY 2016 $M				
Item	**RDT&E**	**Procurement**	**MILCON**	**Total**
SAR Baseline (Development Estimate)	3370.5	10002.5	410.4	13783.4
Previous Changes				
Economic	--	--	--	--
Quantity	--	+102.9	--	+102.9
Schedule	--	+750.5	--	+750.5
Engineering	-30.3	--	--	-30.3
Estimating	+745.5	-402.3	-122.2	+221.0
Other	--	--	--	--
Support	+39.5	-1989.8	--	-1950.3
Subtotal	+754.7	-1538.7	-122.2	-906.2
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	+71.6	--	+71.6
Engineering	+1139.1	+434.1	--	+1573.2
Estimating	+73.5	-26.5	+19.5	+66.5
Other	--	--	--	--
Support	--	+246.7	--	+246.7
Subtotal	+1212.6	+725.9	+19.5	+1958.0
Adjustments	-85.5	+174.0	+13.9	+102.4
Total Changes	+1881.8	-638.8	-88.8	+1154.2
CE - Cost Variance	5252.3	9363.7	321.6	14937.6
CE - Cost & Funding	5252.3	9363.7	321.6	14937.6

Previous Estimate: December 2015

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+26.6
Revised estimate to include work scope for Modernization. (Engineering)	+1139.1	+1238.7
Adjustment for current and prior escalation. (Estimating)	-27.5	-26.4
Revised estimate due to increases to baseline development in the Milestone C ICE. (Estimating)	+101.0	+110.6
RDT&E Subtotal	+1212.6	+1349.5

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+90.0
Stretch-out of procurement buy profile (added one Unmanned Aircraft (UA) in FY 2017 and moved UA from FY 2020, FY 2021, and FY 2022 to FY 2032 and FY 2033). (Schedule)	0.0	+119.0
Additional schedule variance due to an adjustment in the procurement buy profile for both aircraft and ground stations. (Schedule)	+71.6	+72.5
Revised estimate to include Multiple Intelligence (Multi-INT) engineering change proposals. (Engineering)	+349.7	+441.8
Revised estimate to include Multi-INT retrofits. (Engineering)	+84.4	+91.8
Adjustment for current and prior escalation. (Estimating)	-6.4	-6.7
Revised estimate due to various estimating updates to reflect Milestone C ICE. (Estimating)	-20.1	-8.9
Adjustment for current and prior escalation. (Support)	-4.4	-4.5
Increase in Other Support for Production Engineering Support for Multi-INT improvements. (Support)	+259.4	+282.3
Decrease in Initial Spares due to funding realignment. (Support)	-8.3	-7.2
Procurement Subtotal	+725.9	+1070.1

MILCON	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+3.9
Adjustment for current and prior escalation. (Estimating)	-3.1	-3.3
Revised estimate to reflect shift in Forward Operating Base procurement. (Estimating)	+22.6	+27.5
MILCON Subtotal	+19.5	+28.1

Contracts

General Notes

The program is reporting all CLINs on the System Development and Demonstration (SDD) contract individually to increase transparency as each individual effort is over $40M TY.

Contract Identification

Appropriation: RDT&E
Contract Name: Triton UAS SDD Contract
Contractor: Northrop Grumman Systems Corporation
Contractor Location: 17006 Goldentop Rd
San Diego, CA 92150
Contract Number: N00019-08-C-0023
Contract Type: Cost Sharing (CS)
Award Date: April 22, 2008
Definitization Date: April 22, 2008

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1164.0	N/A	2	1948.3	N/A	2	2743.7	2748.1

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to contract scope increases negotiated to satisfy United States Navy requirements.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (5/9/2017)	+1.3	-12.6
Previous Cumulative Variances	-106.1	-38.0
Net Change	+107.4	+25.4

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to an Over Target Baseline (OTB) in July 2016 which reset the variances.

The favorable net change in the schedule variance is due to an OTB in July 2016 which reset the variances.

Contract Identification

Appropriation: RDT&E
Contract Name: Triton UAS SDD Contract SDTA CLIN
Contractor: Northrop Grumman Systems Corporation
Contractor Location: 17006 Goldentop Rd
San Diego, CA 92150
Contract Number: N00019-08-C-0023/1
Contract Type: Cost Sharing (CS)
Award Date: November 04, 2011
Definitization Date: November 04, 2011

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
280.3	N/A	3	275.9	N/A	2	318.2	314.1

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to an Over Target Baseline (OTB) in July 2016 which reduced the prior fee earned on the contract which caused the price to decrease.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (5/9/2017)	-3.1	-1.6
Previous Cumulative Variances	-1.2	-30.3
Net Change	-1.9	+28.7

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to increased sustaining engineering support and higher production operations support.

The favorable net change in the schedule variance is due to an OTB in July 2016 which reset the variances.

Contract Identification

Appropriation: RDT&E
Contract Name: Triton UAS SDD Contract AARSS CLIN
Contractor: Northrop Grumman Systems Corporation
Contractor Location: 17066 Goldentop Rd
San Diego, CA 92150
Contract Number: N00019-08-C-0023/402
Contract Type: Cost (CR)
Award Date: June 16, 2015
Definitization Date: June 16, 2015

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
39.1	N/A	0	39.0	N/A	0	43.1	44.1

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to rounding.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (5/9/2017)	-5.9	-1.6
Previous Cumulative Variances	-0.9	-0.5
Net Change	-5.0	-1.1

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to an overrun caused primarily at Northrop Grumman in Thin Tiles Subarray development and allocation accounts.

The unfavorable net change in the schedule variance is due to a Period of Performance extension.

Contract Identification

Appropriation: RDT&E
Contract Name: Triton UAS SDD Contract FTA CLIN
Contractor: Northrop Grumman Systems Corporation
Contractor Location: 17006 Goldentop Rd
San Diego, CA 92150
Contract Number: N00019-08-C-0023/403
Contract Type: Cost (CR)
Award Date: July 13, 2016
Definitization Date: July 13, 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
69.5	N/A	0	69.5	N/A	0	63.0	69.5

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (5/9/2017)	+0.4	-1.9
Previous Cumulative Variances	--	--
Net Change	+0.4	-1.9

Cost and Schedule Variance Explanations

The favorable cumulative cost variance is due to less than anticipated Material Review Board discrepancies for the fatigue test wing build at Triumph.

The unfavorable cumulative schedule variance is due to delayed material spending due to late subcontract awards.

Notes

This is the first time this contract is being reported.

Contract Identification

Appropriation: Procurement
Contract Name: Triton UAS LRIP 1 Contract
Contractor: Northrop Grumman Systems Corporation
Contractor Location: 17006 Goldentop Rd
San Diego, CA 92150
Contract Number: N00019-15-C-0002
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: September 27, 2016
Definitization Date: September 27, 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
331.5	343.4	3	331.5	343.4	3	333.2	331.5

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (5/9/2017)	+1.8	-8.8
Previous Cumulative Variances	--	--
Net Change	+1.8	-8.8

Cost and Schedule Variance Explanations

The favorable cumulative cost variance is due to an underrun of touch labor in sustaining engineering for the wing production.

The unfavorable cumulative schedule variance is due to wing production delays.

Notes

This is the first time this contract is being reported.

Deliveries and Expenditures

Deliveries				
Delivered to Date	**Planned to Date**	**Actual to Date**	**Total Quantity**	**Percent Delivered**
Development	2	2	4	50.00%
Production	0	0	66	0.00%
Total Program Quantity Delivered	2	2	70	2.86%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	16882.4	Years Appropriated	14
Expended to Date	4247.9	Percent Years Appropriated	46.67%
Percent Expended	25.16%	Appropriated to Date	5841.6
Total Funding Years	30	Percent Appropriated	34.60%

The above data is current as of May 23, 2017.

Operating and Support Cost

Cost Estimate Details

Date of Estimate: December 20, 2016
Source of Estimate: Milestone C
Quantity to Sustain: 68
Unit of Measure: Aircraft
Service Life per Unit: 20.00 Years
Fiscal Years in Service: FY 2018 - FY 2046

The average monthly flight hour utilization rate is 256.2 flight hours/month/aircraft beginning at IOC, and the average annual flight hour utilization rate is 3,074.4 flight hours/year/aircraft. Primary Authorized Aircraft is 20, and these 20 aircraft are to be distributed equally across five orbits. The program is estimated to have a five year ramp up period, followed by a 20 year service period, followed by a four year ramp down period, and after accounting for the specific months of delivery and attrition, this results in 450.572 aircraft years. The predicted attrition rate of the Unmanned Aircraft is four per 100,000 flight hours. The quantity of aircraft to sustain is 68, comprised of two operationalized System Demonstration Test Article aircraft and 66 production aircraft.

Sustainment Strategy

The MQ-4C Triton UAS logistics focuses on total platform supportability to include air vehicle, mission control, information technology (e.g., networks) and payload sustainment across the program life cycle. The Triton Product Support team is organized, resourced, and executing the plan to establish organic supply support, repair capability, and sustaining engineering, to include Software Support, that will meet future operational readiness requirements and operating cost objectives. The prime contractor will provide some Interim Contractor Support as the organic infrastructure is established beginning with Early Operational Capability (EOC) in FY18.

Antecedent Information

No Antecedent. The MQ-4C Triton is projected to fly significantly more hours than the closest analogous airframe and has different missions, different concept of operations, and different payloads; resulting in substantially different projected avionics repair costs (the next major O&S cost driver after the number of flight hours).

Annual O&S Costs BY2016 $M		
Cost Element	**MQ-4C Triton Average Annual Cost Per Aircraft**	**No Antecedent (Antecedent) N/A**
Unit-Level Manpower	4.601	0.000
Unit Operations	1.764	0.000
Maintenance	19.093	0.000
Sustaining Support	1.697	0.000
Continuing System Improvements	4.053	0.000
Indirect Support	1.654	0.000
Other	0.000	0.000
Total	32.862	--

Item	Total O&S Cost $M			
	MQ-4C Triton			No Antecedent (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	14806.7	16287.4	14806.7	0.0
Then Year	20551.1	N/A	20551.1	N/A

Equation to Translate Annual Cost to Total Cost

Total Aircraft O&S = Unitized cost * number of operational aircraft years
($14,806.7M = $32.862M * 450.572 aircraft years)

O&S Cost Variance		
Category	**BY 2016 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2015 SAR	12680.3	
Programmatic/Planning Factors	77.2	Updated aircraft delivery schedule and incorporated Early Operational Capability (EOC) utilization rate
Cost Estimating Methodology	585.6	Updated methodology of element 2.3 Temporary Duty from analogy to engineering estimate and incorporated delta to CAPE Milestone C Estimate
Cost Data Update	49.9	Updated escalation rates and historical analogy data
Labor Rate	167.4	Updated military rate for FY 2016 OSD Military Standard Composite Rates and Original Equipment Manufacturer (OEM) rates to latest Forward Pricing Rate Agreement (FPRA) rates
Energy Rate	-46.1	Fuel index updates
Technical Input	1292.4	Updated component pricing and reliability predictions, added Intermediate-Level manpower, updated Program Related Logistics (PRL) and Program Related Engineering (PRE) inputs, incorporated Multi-Int upgrade, updated Modifications, and incorporated radar redesign initiative
Other	0.0	
Total Changes	2126.4	
Current Estimate	14806.7	

Disposal Estimate Details

Date of Estimate: December 20, 2016

Source of Estimate: CAPE ICE

Disposal/Demilitarization Total Cost (BY 2016 $M): Total costs for disposal of all Aircraft are 17.5

Disposal of attrition aircraft is included in the Disposal estimate.