Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-364

E-2D Advanced Hawkeye Aircraft (E-2D AHE)

As of FY 2019 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Sensitivity Originator

No originator info 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)

Program Information

Program Name
E-2D Advanced Hawkeye Aircraft (E-2D AHE)

DoD Component
Navy

Responsible Office

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References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated July 31, 2009

Approved APB

Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated March 25, 2015

Mission and Description

The E-2D Advanced Hawkeye Aircraft (E-2D AHE) is a carrier based, all weather, multi-mission aircraft. The E-2D AHE mission is to provide premier airborne Battle Management Command and Control and Surveillance as part of the Naval and Joint Integrated Air and Missile Defense architecture including the Naval Integrated Fire Control-Counter Air capability. The centerpiece of the E-2D AHE is the APY-9 radar system. This radar system is designed specifically to provide significantly enhanced surveillance detection and tracking capability against advanced threat aircraft and cruise missile systems in the overland, littoral, and open ocean environments. Maritime surveillance is also maintained in the open ocean scenarios. The E-2D AHE provides early warning of hostile threats and provides the force with the right data to prosecute any engagement. Key capabilities along with the radar include the Identification Friend or Foe system and Electronic Support Measures for surveillance and combat identification, advanced mission processing capability to integrate all on-board sensor data and off-board information into a coherent tactical picture, and communications, data link, and sensor netting systems to share information across the battlespace. These capabilities allow the E-2D AHE to provide a significant contribution to execution of other mission areas such as Strike, Combat Search and Rescue, and Homeland Defense. As a part of the E-2D AHE radar modernization effort, the Navy also invested in integrating a full glass cockpit and full Communication Navigation Surveillance/Air Traffic Management capability. The glass cockpit will also provide the capability for the pilot or co-pilot to perform tactical mission functions. Additionally, aerial refueling capability is being developed to increase the duration of the maximum time on station.

Executive Summary

Program Highlights Since Last Report

The E-2D Advanced Hawkeye Aircraft (AHE) is a carrier-based, all-weather, multi-mission aircraft. The E-2D AHE mission is to provide airborne Battle Management Command and Control and Surveillance as part of the Naval and Joint Integrated Air and Missile Defense architecture including the Naval Integrated Fire Control-Counter Air capability.

Procurement

The E-2D AHE Program of Record totals 75 aircraft. The 32nd aircraft was delivered on December 8, 2017. This aircraft is the 7th aircraft of the FY 2014-2018 E-2D AHE Multi-Year Procurement (MYP). The Government of Japan procured two E-2D AHE aircraft as a modification to the E-2D AHE MYP contract using the variation in quantity clause. Japan is expected to procure an additional two E-2D AHE aircraft via yearly Letters of Offer and Acceptance (LOAs), at a rate of one per Japan Fiscal Year (JFY), for the next two years. A Letter of Request (LOR) for a LOA was received for JFY 2017 aircraft and a LOR for a LOA is anticipated for JFY 2018 aircraft in April 2018.

Development

The E-2D AHE program continues to incorporate capabilities into the E-2D AHE fleet via hardware and software modifications that are released on two to three year intervals. VAW-121 deployed in FY 2017 with E-2D AHE Delta System/Software Configuration 1 (DSSC-1).

VAW-125 transitioned to the Forward Deployed Naval Force in Japan 2nd quarter FY 2017 in the fleet upgrade DSSC-2 configuration which incorporates prior test deficiency corrections as well as Dual Transmission Satellite Communication capability. VAW-126 is expected to deploy with DSSC-2 in FY 2018. In support of Navy efforts to accelerate required capability to the Fleet, a modified version of DSSC-2 (DSSC-2.1) that adds Mode 5 Identification Friend or Foe (IFF) interrogation capability, will be fielded by the 3rd quarter of FY 2018.

DSSC-3 has completed 50% of Developmental Testing (DT) and is on track for Follow-On Test and Evaluation (FOT&E) in FY 2019. This configuration incorporates several capabilities such as Automatic Identification System, Embedded National Tactical Receiver, Aerial Refueling (AR), Mode 5 IFF interrogator, Accelerated Mid-Term Interoperability Improvement Project, Integrated Fire Control Improvements, and an Advanced Radar Processor.

Three E-2D AHE aircraft have been modified with AR capability and that capability is on track for IOC in FY 2020. AR DT is in progress and fuel has been transferred from KC-10, KC-130, KC-135, and F/A-18F aircraft; testing with KC-10 and Omega KC-707 aircraft is planned for FY 2018. .

Sustainment

The E-2D AHE initial sustainment concept for E-2D AHE-unique parts was Interim Contractor Support through the Material Support Date (MSD) (1st Quarter FY 2016) with common systems supported organically. For the period of MSD through the Navy Support Date (4th quarter FY 2023), Naval Supply Systems Command Weapons System Support will support E-2D AHE unique systems through conventional and/or performance-based repair contracts with Original Equipment Manufacturers. With few exceptions, E-2D AHE unique systems have been designated as Core Capabilities and the program is pursuing the establishment of organic repair capabilities to comply with United States Code Title 10 requirements. As these organic repair capabilities are established, business case analyses will be conducted to determine the best value sustainment strategies, whether it is fully organic or public-private partnership.

DSSC-2 FOT&E reported a Radar Availability (Ao) KPP of 0.62 (the raw measurement) as a result of it being calculated differently than specified by the methodology in the CDD. The CDD-calculated method showed a Radar Ao demonstrated performance of 0.88 against a ≥0.85 threshold. The CDD-calculated method simulates a mature logistics

support system by forecasting logistics delay times during a 24 hour period. The CDD method highlights design performance which can be masked in a raw measurement. The raw measurement adds value because it shows the maturity of the logistics supply system. The program expects the raw value to improve during DSSC-3 FOT&E with the fielding of the Advanced Radar Processer (ARP). The ARP projected reliability improvements are based on a 70% reduction in the number of processor modules from the legacy radar processor.

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

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	**Significant Development Description**
June 2003	The E-2D AHE program received Milestone B approval to enter the System Development and Demonstration acquisition phase.
October 2005	The Critical Design Review was completed one month prior to the original Milestone B schedule objective.
July 2007	A Pilot Production contract for three aircraft was awarded.
August 2007	First Test Flight occurred on the original Milestone B schedule objective.
September 2007	The CDD was approved by the JROC. Seven KPPs were added post Milestone B.
December 2007	First Mission System (radar) Flight Test.
March 2009	The Cost Analysis Improvement Group (CAIG) conducted an ICE and reported a Significant cost breach to APUC and PAUC.
April 2009	USD(AT&L) issued an ADM directing the program perform a review similar to the one for a Critical Nunn-McCurdy breach even though a Critical breach had not occurred.
May 2009	As part of the Nunn-McCurdy review, the CAIG updated their ICE and reported the program was in a Critical Nunn-McCurdy breach. The Overarching Integrated Product Team Lead directed the Navy to consider an accelerated production ramp to reduce cost to mitigate the critical breach. A Critical Nunn -McCurdy review out-brief/Milestone C DAB was held and a revised APB Deviation Report was submitted announcing a Significant breach to APUC and PAUC based on the CAIG estimate using a revised production ramp, which accelerated aircraft procurement by moving six aircraft to within the FYDP and ending production one year earlier.
June 2009	The Navy declared a Critical Nunn-McCurdy breach based on the updated CAIG ICE. USD(AT&L) issued an ADM acknowledging the breach and stated all required actions to resolve it were completed. The ADM rescinded the Milestone B and documented completion of a root cause analysis. Upon reviewing the program and business case analysis, USD(AT&L) made the certifications required by 10 U.S.C. 2366b(d) to allow the program to re-enter the acquisition process at Milestone C. The Navy was directed to use the accelerated production ramp briefed at the DAB. Finally, the ADM approved the E-2D AHE program to enter into the Production and Deployment Phase, specifically to procure LRIP Lots 1 and 2. A contract was awarded for LRIP Lot 1 and Advanced Procurement for LRIP Lot 2. A quarterly exception SAR was submitted reporting the Nunn-McCurdy unit cost breach.
July 2009	The program received a new APB that rebaselined the program to a Production Baseline, replaced the original APB approved in June 2003, and reset the APUC and PAUC values.
January 2010	A contract was awarded for LRIP Lot 2.
July 2010	A contract for one LRIP Lot 2 Congressionally added aircraft was awarded.
March 2011	A DAB approved procurement of LRIP Lots 3 and 4 as well as Advanced Procurement for FRP Lot 1.
July 2011	A contract was awarded for LRIP Lot 3.
January 2012	A contract was awarded for LRIP Lot 4.
February 2012	The PEO for Tactical Aircraft Programs certified the E-2D AHE to enter Initial Operational Test and Evaluation (IOT&E).
October 2012	IOT&E was completed with the Commander, Operational Test and Evaluation Forces assessing the E -2D AHE as operationally effective; operationally suitable for shore based operations (based on limited shipboard testing).
March 2013	A USD(AT&L) ADM granted authority to commence FRP procurement of 55 aircraft during FY 2013-

	2021.
April 2013	USD(AT&L) approved the FRP APB.
July 2013	A contract was awarded for the first FRP lot of five aircraft.
September 2013	The Aerial Refueling EMD contract was awarded.
October 2013	Test events for the Verification of Correction of Deficiencies period for IOT&E were completed
May 2014	A USD(AT&L) ADM granted authority to proceed with a Multi-Year Procurement (MYP) during FY 2014 through FY 2018. It also designated E-2D AHE as an ACAT IC MDAP and delegated MDA to the Secretary of the Navy.
June 2014	A MYP contract for 25 aircraft in FRP Lots 2-6 during FY2014-2018was awarded saving the Navy approximately $369M.
July 2014	Delta System/Software Configuration Build 1 (DSSC-1), which is the IOC hardware/software configuration, was released to the Fleet following a recommendation by the Commander, Operational Test Forces during FOT&E (OT-D1) execution.
October 2014	IOC was achieved on the APB schedule objective.
March 2015	The first Fleet Squadron Deployment commenced with DSSC-1 incorporated.
May 2015	DSSC-1 OT-D1 was completed.
August 2015	The Japan Ministry of Defense signed a Letter of Offer and Acceptance (LOA) for one E-2D AHE.
October 2015	The Material Support Date was achieved.
November 2015	The Japan E-2D AHE aircraft was placed on contract as a modification to the E-2D AHE MYP contract utilizing a variation in quantity clause. The first E-2D AHE Fleet Squadron Deployment completed.
July 2016	The Government of Japan procured a second E-2D AHE as a contract modification to the E-2D AHE MYP contract utilizing a variation in quantity clause.
October 2016	DSSC-2 completed FOT&E (OT-D2).
December 2016	The first E-2D AHE flight in the Aerial Refueling configuration was made.
January 2017	The E-2D AHE DSSC-2 Authorization to Operate was received; valid for three years.
March 2017	VAW-125 deployed with DSSC-2.

Threshold Breaches

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

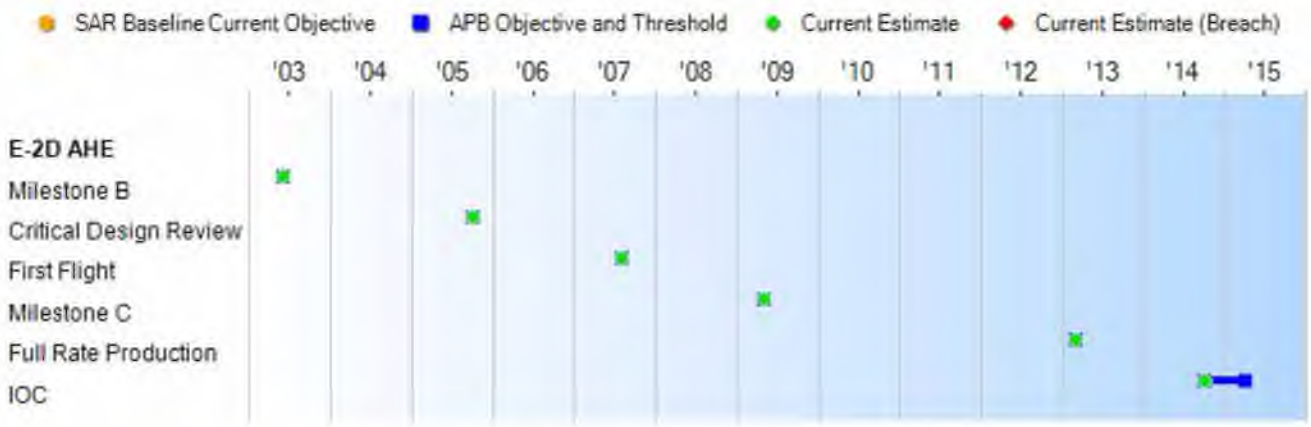
Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Explanation of Breach

The MILCON cost breach is due to the requirement to construct a building at Naval Air Station Norfolk in FY 2021 to house two E-2D Advanced Hawkeye Weapons Systems Trainers for classified advanced aircrew tactics training.

A Program Deviation Report is being drafted.

Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate
Milestone B	May 2003	Jun 2003	Jun 2003	Jun 2003
Critical Design Review	Nov 2005	Oct 2005	Oct 2005	Oct 2005
First Flight	Aug 2007	Aug 2007	Aug 2007	Aug 2007
Milestone C	Mar 2009	May 2009	May 2009	May 2009
Full Rate Production	Dec 2012	Mar 2013	Mar 2013	Mar 2013
IOC	Oct 2014	Oct 2014	Apr 2015	Oct 2014

Change Explanations

None

Performance

Performance Characteristics				
SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
Radar Ao				
=>0.98	=>0.98	=>0.85	0.62	>=0.88
Survivability - Safe Egress In Crash				
The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.	The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.	The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.	The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.	The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.
Manpower (Full Operational Capability - FY 2020)				
Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683 Training Os/Es =< 76 / 60	Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683 Training Os/Es =< 76 / 60	Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683 Training Os/Es =< 76 / 60	Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683 Training Os/Es =< 76 / 60	Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683 Training Os/Es =< 76 / 60
Unrefueled Time On Station				
=>2.0 hours at a station distance of 200nm	=>2.0 hours at a station distance of 200nm	=>2.0 hours at a station distance of 200nm	2.10 hours at a station distance of 200nm	2.10 hours at a station distance of 200nm
Flat Turn Service Ceiling				
=>25,000 feet above MSL at mission profile	=>25,000 feet above MSL at mission profile	=>25,000 feet above MSL at mission profile	25,600 feet above MSL at mission profile	25,600 feet above MSL at mission profile
Level Flight Airspeed				
=>300 knots true airspeed below	=>300 knots true airspeed below	=>300 knots true airspeed below	303.5 knots true airspeed below 18,000	303.5 knots true airspeed below 18,000

18,000 feet MSL	18,000 feet MSL	18,000 feet MSL	feet MSL	feet MSL
Network-Centric Military Operations (Network Readiness)				
The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include: (1) The DISR mandated GIG IT standards and profiles identified in the TV-1, (2) DISR mandated GIG KIPs identified in the KIP declaration table, (3) NCOW RM Enterprise Services (4) IA requirements include availability, integrity, authentication, confidential-ity, non-repudiation, and issuance of an ATO by the DAA (5) Operationally effective information exchanges; and MC-performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views	The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include: (1) The DISR mandated GIG IT standards and profiles identified in the TV-1, (2) DISR mandated GIG KIPs identified in the KIP declaration table, (3) NCOW RM Enterprise Services (4) IA requirements include availability, integrity, authentication, confidential-ity, non-repudiation, and issuance of an ATO by the DAA (5) Operationally effective information exchanges; and MC-performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include: (1) The DISR mandated GIG IT standards and profiles identified in the TV-1 (2) DISR mandated GIG KIPs identified in the KIP declaration table (3) NCOW RM Enterprise Services (4) IA requirements including availability integrity, authentication, confidential-ity, non-repudiation, and issuance of an IATO by the DAA (5) Operationally effective information exchanges and MC-performance and IA attributes, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include: (1) The DISR mandated GIG IT standards and profiles identified in the TV-1 (2) DISR mandated GIG KIPs identified in the KIP declaration table (3) NCOW RM Enterprise Services (4) IA requirements including availability integrity, authentication, confidentiality, nonrepudiation, and issuance of an IATO by the DAA (5) Operationally effective information exchanges and MC-performance and IA attributes, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include: (1) The DISR mandated GIG IT standards and profiles identified in the TV-1 (2) DISR mandated GIG KIPs identified in the KIP declaration table (3) NCOW RM Enterprise Services (4) IA requirements including availability integrity, authentication, confidentiality, nonrepudiation, and issuance of an IATO by the DAA (5) Operationally effective information exchanges and MC-performance and IA attributes, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views

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

Requirements Reference

CDD dated March 3, 2009

Change Explanations

None

Notes

The December 22, 2016 DSSC-2 Follow-On Operational Test and Evaluation reported a Radar Ao of 0.62 as a result of it being calculated differently than specified by the methodology in the CDD. The CDD-calculated method would show a Radar Ao demonstrated performance of 0.88. The CDD-calculated method simulates a mature logistics support system by forecasting logistics delay times during a 24 hour period. The CDD method highlights design performance which can be masked in a raw measurement. The raw measurement adds value because it shows the maturity of the logistics supply system. The program expects this raw value to grow with time and eventually match or exceed the demonstrated design value as defined in the CDD.

Acronyms and Abbreviations

Ao - Operational Availability
ATO - Authorization to Operate
DAA - Designated Approval Authority
DISR - DoD Information Technology Standards and Profile Registry
DSSC-2 - Delta System/Software Configuration Build 2
Es - Enlisted
g - gravity
GIG - Global Information Grid
IA - Information Assurance
IATO - Interim Authorization to Operate
IT - Information Technology
KIPs - Key Intelligence Profiles
MC - Mission Critical
MSL - Mean Sea Level
NCOW RM - Net-Centric Operations and Warfare Reference Model
nm - nautical mile
Os - Officers
TV-1 - Technical View 1

Track to Budget

RDT&E

Appn		BA	PE	
Navy	1319	05	0604234N	
Project			Name	
3051			E-2D Adv Hawkeye	
9999			Congressional Add for Advanced Radar Processor	(Sunk)

Procurement

Appn		BA	PE	
Navy	1506	01	0204152N	
Line Item			Name	
0195			E-2D Adv Hawkeye	(Shared)
Navy	1506	06	0204152N	
Line Item			Name	
0605			Spares and Repair Parts	(Shared)

MILCON

Appn		BA	PE		
Navy	1205	01	0703676N		
Project			Name		
69232565			E-2D Hangar/Apron Modifications at Pt. Mugu		(Sunk)
Navy	1205	01	0805976N		
Project			Name		
62613603			Facilities Restoration and Mod-Training E-2D Operational Trainer Complex		(Sunk)
Navy	1205	01	0815976N		
Project			Name		
60495420			Facilities New Footprint - Trainers NAS Fallon Training Facility, E-2D portion	(Shared)	(Sunk)
62688404			Norfolk (LP-49) Training Annex		

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2009 $M			BY 2009 $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	4140.0	5674.4	6241.8	6136.8	4014.3	5803.1	6369.3
Procurement	13281.9	12932.0	14225.2	13028.7	14968.5	15045.0	14987.2
Flyaway	--	--	--	10717.2	--	--	12301.6
Recurring	--	--	--	9936.8	--	--	11382.3
Non Recurring	--	--	--	780.4	--	--	919.3
Support	--	--	--	2311.5	--	--	2685.6
Other Support	--	--	--	2011.4	--	--	2355.6
Initial Spares	--	--	--	300.1	--	--	330.0
MILCON	46.7	67.2	73.9	88.4[1]	48.6	73.6	100.4
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	17468.6	18673.6	N/A	19253.9	19031.4	20921.7	21456.9

[1] *APB Breach*

Current APB Cost Estimate Reference

POE dated February 02, 2015

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 Production Estimate	Current APB Production	Current Estimate
RDT&E	5	5	5
Procurement	70	70	70
Total	75	75	75

Cost and Funding

Funding Summary

Appropriation Summary FY 2019 President's Budget / December 2017 SAR (TY$ M)									
Appropriation	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
RDT&E	4944.6	292.5	223.6	225.1	191.1	230.7	261.7	0.0	6369.3
Procurement	8882.9	850.4	995.9	947.1	877.8	973.5	1262.0	197.6	14987.2
MILCON	73.6	0.0	1.7	1.7	23.4	0.0	0.0	0.0	100.4
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2019 Total	13901.1	1142.9	1221.2	1173.9	1092.3	1204.2	1523.7	197.6	21456.9
PB 2018 Total	13925.8	1142.9	1174.2	1168.6	1182.9	1317.5	1030.3	1065.0	22007.2
Delta	-24.7	0.0	47.0	5.3	-90.6	-113.3	493.4	-867.4	-550.3

Quantity Summary FY 2019 President's Budget / December 2017 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
Development	5	0	0	0	0	0	0	0	0	5
Production	0	41	5	4	4	4	5	7	0	70
PB 2019 Total	5	41	5	4	4	4	5	7	0	75
PB 2018 Total	5	41	5	4	4	4	5	4	3	75
Delta	0	0	0	0	0	0	0	3	-3	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
2002	--	--	--	--	--	--	73.2
2003	--	--	--	--	--	--	105.8
2004	--	--	--	--	--	--	325.5
2005	--	--	--	--	--	--	541.7
2006	--	--	--	--	--	--	595.6
2007	--	--	--	--	--	--	480.8
2008	--	--	--	--	--	--	784.8
2009	--	--	--	--	--	--	467.9
2010	--	--	--	--	--	--	345.8
2011	--	--	--	--	--	--	167.8
2012	--	--	--	--	--	--	108.5
2013	--	--	--	--	--	--	115.7
2014	--	--	--	--	--	--	103.0
2015	--	--	--	--	--	--	171.2
2016	--	--	--	--	--	--	202.9
2017	--	--	--	--	--	--	354.4
2018	--	--	--	--	--	--	292.5
2019	--	--	--	--	--	--	223.6
2020	--	--	--	--	--	--	225.1
2021	--	--	--	--	--	--	191.1
2022	--	--	--	--	--	--	230.7
2023	--	--	--	--	--	--	261.7
Subtotal	5	--	--	--	--	--	6369.3

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2009 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2002	--	--	--	--	--	--	84.7
2003	--	--	--	--	--	--	120.6
2004	--	--	--	--	--	--	360.9
2005	--	--	--	--	--	--	585.2
2006	--	--	--	--	--	--	624.0
2007	--	--	--	--	--	--	491.7
2008	--	--	--	--	--	--	788.2
2009	--	--	--	--	--	--	464.0
2010	--	--	--	--	--	--	337.8
2011	--	--	--	--	--	--	160.1
2012	--	--	--	--	--	--	101.8
2013	--	--	--	--	--	--	107.5
2014	--	--	--	--	--	--	94.4
2015	--	--	--	--	--	--	154.9
2016	--	--	--	--	--	--	180.5
2017	--	--	--	--	--	--	310.2
2018	--	--	--	--	--	--	251.7
2019	--	--	--	--	--	--	188.9
2020	--	--	--	--	--	--	186.5
2021	--	--	--	--	--	--	155.2
2022	--	--	--	--	--	--	183.7
2023	--	--	--	--	--	--	204.3
Subtotal	5	--	--	--	--	--	6136.8

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
2008	--	72.2	--	--	72.2	--	72.2
2009	2	404.5	--	--	404.5	67.6	472.1
2010	3	584.6	--	33.7	618.3	161.5	779.8
2011	5	848.6	--	73.9	922.5	202.9	1125.4
2012	5	852.8	--	37.4	890.2	131.1	1021.3
2013	5	772.4	--	42.5	814.9	119.2	934.1
2014	5	979.4	--	47.6	1027.0	188.1	1215.1
2015	5	881.9	--	109.5	991.4	157.3	1148.7
2016	5	805.3	--	37.8	843.1	209.2	1052.3
2017	6	807.0	--	52.8	859.8	202.1	1061.9
2018	5	627.9	--	53.8	681.7	168.7	850.4
2019	4	763.6	--	54.9	818.5	177.4	995.9
2020	4	691.8	--	56.0	747.8	199.3	947.1
2021	4	630.5	--	57.1	687.6	190.2	877.8
2022	5	768.5	--	68.2	836.7	136.8	973.5
2023	7	891.3	--	146.9	1038.2	223.8	1262.0
2024	--	--	--	47.2	47.2	150.4	197.6
Subtotal	70	11382.3	--	919.3	12301.6	2685.6	14987.2

Annual Funding 1506 | Procurement | Aircraft Procurement, Navy							
Fiscal Year	Quantity	BY 2009 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2008	--	71.8	--	--	71.8	--	71.8
2009	2	396.6	--	--	396.6	66.3	462.9
2010	3	561.4	--	32.4	593.8	155.1	748.9
2011	5	799.2	--	69.6	868.8	191.1	1059.9
2012	5	791.9	--	34.7	826.6	121.8	948.4
2013	5	709.7	--	39.1	748.8	109.5	858.3
2014	5	888.6	--	43.2	931.8	170.6	1102.4
2015	5	788.7	--	97.9	886.6	140.8	1027.4
2016	5	707.4	--	33.2	740.6	183.7	924.3
2017	6	696.9	--	45.6	742.5	174.5	917.0
2018	5	532.5	--	45.6	578.1	143.1	721.2
2019	4	635.4	--	45.7	681.1	147.6	828.7
2020	4	564.4	--	45.7	610.1	162.6	772.7
2021	4	504.3	--	45.7	550.0	152.2	702.2
2022	5	602.7	--	53.5	656.2	107.2	763.4
2023	7	685.3	--	112.9	798.2	172.1	970.3
2024	--	--	--	35.6	35.6	113.3	148.9
Subtotal	70	9936.8	--	780.4	10717.2	2311.5	13028.7

Cost Quantity Information 1506 | Procurement | Aircraft Procurement, Navy		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2009 $M**
2008	--	--
2009	2	414.8
2010	3	524.0
2011	5	779.0
2012	5	756.3
2013	5	743.6
2014	5	762.4
2015	5	826.0
2016	5	737.7
2017	6	760.4
2018	5	554.0
2019	4	521.5
2020	4	609.6
2021	4	529.0
2022	5	602.6
2023	7	815.9
2024	--	--
Subtotal	70	9936.8

Annual Funding 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	TY $M Total Program
2008	11.5
2009	--
2010	16.8
2011	--
2012	15.4
2013	--
2014	--
2015	1.7
2016	28.2
2017	--
2018	--
2019	1.7
2020	1.7
2021	23.4
Subtotal	100.4

Annual Funding 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	BY 2009 $M
	Total Program
2008	11.4
2009	--
2010	16.0
2011	--
2012	14.2
2013	--
2014	--
2015	1.5
2016	24.2
2017	--
2018	--
2019	1.4
2020	1.4
2021	18.3
Subtotal	88.4

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	6/13/2003	4/3/2011
Approved Quantity	22	15
Reference	Milestone B ADM	LRIP Lots 3 and 4 ADM
Start Year	2009	2009
End Year	2012	2012

The Current Total LRIP Quantity is more than 10% of the total production quantity due to 15 aircraft being the minimum to maintain the industrial base and ensure successful transition to FRP.

The 15 planned LRIP aircraft (including one FY 2011 supplemental) represent 20% of the total quantity. The reduction in LRIP quantities is due to the production quantity ramp changes.

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost $M	Description
Japan	7/26/2016	1	225.0	Japan Case Number JA-P-SCL, E-2D Advanced Hawkeye, procurement of the second Japan E-2D AHE aircraft.
Japan	8/11/2015	1	540.0	FMS Case JA-P-SCJ, E-2D Advanced Hawkeye, Non-Recurring Engineering to support Japan Unique Wet-Outer Wing Panel Configuration, Spares, Support Equipment and Product Support.

Notes

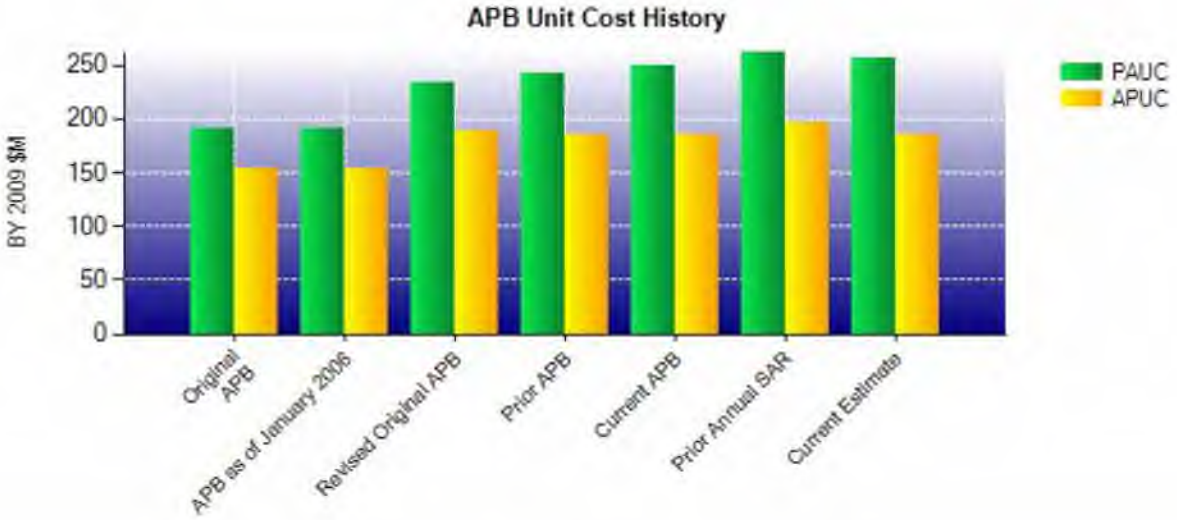
Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2009 $M Current UCR Baseline (Mar 2015 APB)	BY 2009 $M Current Estimate (Dec 2017 SAR)	% Change
Program Acquisition Unit Cost			
Cost	18673.6	19253.9	
Quantity	75	75	
Unit Cost	248.981	256.719	+3.11
Average Procurement Unit Cost			
Cost	12932.0	13028.7	
Quantity	70	70	
Unit Cost	184.743	186.124	+0.75

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2009 $M Revised Original UCR Baseline (Jul 2009 APB)	BY 2009 $M Current Estimate (Dec 2017 SAR)	% Change
Program Acquisition Unit Cost			
Cost	17468.6	19253.9	
Quantity	75	75	
Unit Cost	232.915	256.719	+10.22
Average Procurement Unit Cost			
Cost	13281.9	13028.7	
Quantity	70	70	
Unit Cost	189.741	186.124	-1.91



APB Unit Cost History					
Item	Date	BY 2009 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	Jun 2003	189.977	152.732	199.760	166.551
APB as of January 2006	Jun 2003	189.977	152.732	199.760	166.551
Revised Original APB	Jul 2009	232.915	189.741	253.752	213.836
Prior APB	Apr 2013	241.280	184.743	269.981	214.929
Current APB	Mar 2015	248.981	184.743	278.956	214.929
Prior Annual SAR	Dec 2016	261.481	195.833	293.429	227.687
Current Estimate	Dec 2017	256.719	186.124	286.092	214.103

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	
199.760	5.871	0.000	3.025	8.235	28.608	0.000	8.253	53.992	253.752

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
253.752	-1.575	0.000	22.800	22.559	-19.849	0.000	8.405	32.340	286.092

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	
166.551	4.414	-0.572	3.241	4.910	27.393	0.000	7.899	47.285	213.836

Current SAR Baseline to Current Estimate (TY $M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
213.836	-1.280	0.000	24.429	2.544	-34.431	0.000	9.006	0.268	214.103

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	May 2003	May 2003	Jun 2003
Milestone C	N/A	Mar 2009	Mar 2009	May 2009
IOC	N/A	Apr 2011	Oct 2014	Oct 2014
Total Cost (TY $M)	N/A	14982.0	19031.4	21456.9
Total Quantity	N/A	75	75	75
PAUC	N/A	199.760	253.752	286.092

Cost Variance

Summary TY $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	4014.3	14968.5	48.6	19031.4
Previous Changes				
Economic	-21.5	-37.0	+0.6	-57.9
Quantity	--	--	--	--
Schedule	--	+1831.9	--	+1831.9
Engineering	+1149.2	+178.1	+29.9	+1357.2
Estimating	+853.5	-1670.8	-5.5	-822.8
Other	--	--	--	--
Support	--	+667.4	--	+667.4
Subtotal	+1981.2	+969.6	+25.0	+2975.8
Current Changes				
Economic	-7.5	-52.6	-0.1	-60.2
Quantity	--	--	--	--
Schedule	--	-121.9	--	-121.9
Engineering	+334.7	--	--	+334.7
Estimating	+46.6	-739.4	+26.9	-665.9
Other	--	--	--	--
Support	--	-37.0	--	-37.0
Subtotal	+373.8	-950.9	+26.8	-550.3
Total Changes	+2355.0	+18.7	+51.8	+2425.5
CE - Cost Variance	6369.3	14987.2	100.4	21456.9
CE - Cost & Funding	6369.3	14987.2	100.4	21456.9

Summary BY 2009 $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	4140.0	13281.9	46.7	17468.6
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	+1199.7	--	+1199.7
Engineering	+986.2	+150.6	+25.7	+1162.5
Estimating	+709.4	-1402.1	-5.2	-697.9
Other	--	--	--	--
Support	--	+478.2	--	+478.2
Subtotal	+1695.6	+426.4	+20.5	+2142.5
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	-84.4	--	-84.4
Engineering	+266.4	--	--	+266.4
Estimating	+34.8	-574.0	+21.2	-518.0
Other	--	--	--	--
Support	--	-21.2	--	-21.2
Subtotal	+301.2	-679.6	+21.2	-357.2
Total Changes	+1996.8	-253.2	+41.7	+1785.3
CE - Cost Variance	6136.8	13028.7	88.4	19253.9
CE - Cost & Funding	6136.8	13028.7	88.4	19253.9

Previous Estimate: December 2016

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-7.5
Increase in funding for Counter Electronic Attack (CEA) Phase II. (Engineering)	+152.2	+190.7
Increase in funding for Cyber Boundary defense. (Engineering)	+44.2	+55.0
Additional funding for new mission computer. (Engineering)	+70.0	+89.0
Decrease in FY 2017 for Small Business Innovation and Research (SBIR) funding. (Estimating)	-9.4	-10.8
Revised estimate to reflect Department-wide funding adjustments. (Estimating)	-20.4	-25.0
Revised estimate for Naval Integrated Fire Control Counter Air. (Estimating)	+21.8	+27.9
Revised estimate for Delta System Software Configuration integration and test. (Estimating)	+31.0	+39.7
Revised estimate for fatigue analysis. (Estimating)	+9.5	+12.2
Adjustment for current and prior escalation. (Estimating)	+2.3	+2.6
RDT&E Subtotal	+301.2	+373.8

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-52.6
Acceleration of procurement buy profile from FY 2024 to FY 2023. (Schedule)	0.0	-11.3
Additional schedule variance due to acceleration of three aircraft from FY 2024 to FY 2023. (Schedule)	-84.4	-110.6
Revised estimate due to projected savings from a FY 2019 - FY 2023 Multi-Year Procurement. (Estimating)	-267.9	-335.9
Revised estimate to reflect actuals. (Estimating)	-193.9	-255.0
Revised estimate for forward pricing rate recommendation for Northrop Grumman Aerospace Sector labor rates. (Estimating)	-81.1	-103.5
Revised estimate for shutdown costs due to acceleration of the procurement buy profile resulting in the reduction of one production lot. (Estimating)	-40.7	-55.8
Adjustment for current and prior escalation. (Estimating)	+9.6	+10.8
Adjustment for current and prior escalation. (Support)	+2.0	+2.5
Decrease in Other Support due to acceleration of the procurement buy profile resulting in the reduction of one production lot. (Support)	-28.2	-45.6
Increase in Initial Spares due to updated program requirements. (Support)	+5.0	+6.1
Procurement Subtotal	-679.6	-950.9

MILCON	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.1
Adjustment for current and prior escalation. (Estimating)	+0.1	+0.1
Additional funding to construct a building at Naval Air Station Norfolk to house two E-2D Advanced Hawkeye Weapons Systems Trainers for classified advanced aircrew tactics	+21.1	+26.8

training. (Estimating)		
MILCON Subtotal	+21.2	+26.8

Contracts

Contract Identification

Appropriation: RDT&E
Contract Name: E-2D Aerial Refueling
Contractor: Northrop Grumman Systems Corporation
Contractor Location: 2000 West NASA Boulevard
Melbourne, FL 32904
Contract Number: N00019-13-C-0135/1
Contract Type: Cost Plus Incentive Fee (CPIF)
Award Date: September 27, 2013
Definitization Date: September 27, 2013

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
226.7	N/A	0	255.1	N/A	0	222.0	230.3

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to incentive payments and increased contract scope to include the directed change addition of an aerial refueling probe controlled breakpoint effort and the addition of an aerial refueling kit and two kit installations.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/26/2018)	+1.5	-1.3
Previous Cumulative Variances	+2.8	0.0
Net Change	-1.3	-1.3

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to the Travel and Allocations account. The Allocations have impacted all Northrop Grumman Corporation programs, but to a greater extent the Aerial Refueling program because of the dollar value. This impact cannot be mitigated, but is offset by the positive cost variances in other areas.

The unfavorable cumulative schedule variance is due to earlier efforts related to suppliers, Dayton T. Brown and East West Industries. However, schedule has since recovered.

Contract Identification

Appropriation: Procurement
Contract Name: Multi-Year Procurement (FRP Lots 2-6)
Contractor: Northrop Grumman Systems Corporation
Contractor Location: 2000 West NASA Boulevard
Melbourne, FL 32904
Contract Number: N00019-13-C-9999/1
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: May 17, 2013
Definitization Date: June 30, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
113.7	N/A	0	4756.1	N/A	26	4756.1	4756.1

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to this contract being awarded on May 17, 2013 as an advanced acquisition contract for the FRP Lot 2 as a Not To Exceed contract in the amount of $113.7M. On July 31, 2013, an additional $9.3M contract modification was made. This contract was definitized on June 30, 2014 and transitioned to Fixed Price Incentive Firm Contract for the procurement of 25 aircraft with a contract value of $3906.7M. The Government of Japan is procuring two E-2D aircraft to include non-recurring engineering for a Japan-unique Wet Outer Wing Panel totaling $765M under two FMS Letters of Offer and Acceptance of which $607.2M has been added to this contract to date. Other modifications to the contract which have increased the value by $343.5M include the addition of the Advanced Radar Processor, Fiber Optic Improvement, Aerial Refueling capabilities, Engineering Change Orders, Economic Order Quantity Funding, Nose Gear Catapult System Engineering Change Proposal, and incorporation of Crew Comfort into a Japan FMS Non Recurring Engineering effort.

Cost and Schedule Variance Explanations

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

General Contract Variance Explanation

Cost and schedule variances are not reported for this contract because an earned value management waiver was granted by the Deputy Assistant Secretary of the Navy for Acquisition and Procurement on May 12, 2014 as delegated by the Assistant Secretary of the Navy for Research, Development, and Acquisition due to the fact that the E-2D AHE airframe is being produced in a mature FRP environment, with a prime contractor displaying a long-term history of consistently meeting delivery schedules at or below contract targets.

Contract Identification

Appropriation: RDT&E
Contract Name: Full Scale Fatigue Test
Contractor: Northrop Grumman Systems Corporation
Contractor Location: 2000 West NASA Boulevard
Melbourne, FL 32904
Contract Number: N00019-14-C-0036/1
Contract Type: Cost Plus Fixed Fee (CPFF)
Award Date: July 07, 2014
Definitization Date: July 07, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
52.4	N/A	0	64.2	N/A	0	56.1	58.8

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the additional scope of Wing Center Section Fatigue Article Testing and the exercise of a repair option.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/26/2018)	+1.1	+0.1
Previous Cumulative Variances	+1.3	-0.1
Net Change	-0.2	+0.2

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to material charges for repairs on the test article. The repair has since been completed.

The favorable net change in the schedule variance is due to late delivery of materials needed to support Outer Wing Panel (OWP) efforts. The OWP has since complete; therefore schedule has recovered.

Contract Identification

Appropriation: RDT&E
Contract Name: Post IOC Capibilities
Contractor: Northrop Grumman systems Corporation
Contractor Location: 2000 West NASA Boulevard
Melbourne, FL 32904
Contract Number: N00019-15-C-0091/1
Contract Type: Cost Plus Incentive Fee (CPIF)
Award Date: April 06, 2015
Definitization Date: April 06, 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
146.7	N/A	0	172.0	N/A	0	143.1	157.0

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to increased contract scope to include cybersecurity requirements and directed reallocation of the Tactical Targeting Network Technology frequency band by the National Telecommunications and Information Administration.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/26/2018)	+8.6	-6.3
Previous Cumulative Variances	+8.9	-2.6
Net Change	-0.3	-3.7

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to technical challenges related to the router selection and connector issues from supplier, Rodelco. Both of these technical issues have now been resolved and testing and deliveries are expected in the next few months.

The unfavorable net change in the schedule variance is due to the technical challenges related to the router selection and connector issues that have both caused schedule slippage. Consequently, Phase two activities (the completion of Beyond Line of Sight efforts) are now predicted to complete five months beyond the baseline plan.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	5	5	5	100.00%
Production	27	27	70	38.57%
Total Program Quantity Delivered	32	32	75	42.67%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	21456.9	Years Appropriated	17
Expended to Date	11675.0	Percent Years Appropriated	73.91%
Percent Expended	54.41%	Appropriated to Date	15044.0
Total Funding Years	23	Percent Appropriated	70.11%

The above data is current as of February 12, 2018.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	January 29, 2018
Source of Estimate:	POE
Quantity to Sustain:	73
Unit of Measure:	Aircraft
Service Life per Unit:	20.00 Years
Fiscal Years in Service:	FY 2011 - FY 2046

Inflation Indices Utilized: FY 2018 OSD rates

Flight Hours per Aircraft per Month: 40 (assumes no change in the Concept of Operations associated with the Aerial Refueling effort)
Number of Aircraft per Carrier Airborne Early Warning Squadron (AEW): 5
Total Number of Primary Authorized Aircraft (PAA): 66
- Ten 5 aircraft Carrier AEW squadrons
- One 12 aircraft Fleet Replacement Squadron (FRS)
- 2 aircraft at Air Test and Evaluation Squadron One (VX-1)*
- 2 aircraft at Naval Strike Air Warfare Center (NSAWC)*

Aircraft Flight Hours Life Limit: 9,600
Pipeline Rate: 8%
Attrition Rate: 0%
Total Operating Flight Hours: 595,974
Total Operating Aircraft Years: 1,325

The Quantity to Sustain only includes fleet-owned assets, thereby excluding two developmental aircraft which are Naval Air Systems Command (NAVAIR)-owned assets.

The Total Operating Aircraft Years is calculated by summing the actual or estimated annual Primary Aircraft Inventory from FY 2011 through FY 2046.

*PAA beyond Primary Mission Aircraft Authorized (PMAA) and FRS aircraft are typically not included in NAVAIR AIR-4.2 O&S cost estimates; however, PAA for VX-1 and NSAWC have been included in the E-2D AHE O&S cost estimate.

Sustainment Strategy

The E-2D AHE initial sustainment concept for E-2D AHE unique parts was Interim Contractor Support through Material Support Date (MSD) with common systems supported organically. For the period of MSD (1st Quarter FY 2016) through Navy Support Date (4th Quarter FY 2023), Naval Supply Systems Command Weapons System Support will support E-2D AHE unique systems through conventional and/or performance-based repair contracts with Original Equipment Manufacturers. With few exceptions, E-2D AHE unique systems have been designated as Core Capabilities and the program is pursuing the establishment of organic repair capabilities to comply with the U.S. Code Title 10 requirements. As these organic repair capabilities are established, business case analyses will be conducted to determine the best value sustainment strategies, whether it is fully organic or public-private partnership.

Antecedent Information

The antecedent program is the E-2C. Annual costs for the antecedent program are based upon a three-year average of Naval Visibility and Management of Operating and Support Costs (VAMOSC) data from FY 2010 – FY 2012, the last three years prior to the start of the E-2C transition to E-2D AHE. Costs for the three years are summed and then divided by the sum of aircraft count for the three years. The average number of aircraft in the three-year VAMOSC dataset is 58.33. Since Naval VAMOSC does not capture Indirect Support costs, the E-2C Indirect Support cost is calculated by multiplying the E-2C Unit-Level Manpower by the ratio of E-2D AHE Indirect Support to E-2D AHE Unit-Level Manpower.

For comparison purposes, the Total O&S Cost is the product of the Antecedent's Average Annual cost per Unit and the Operating Aircraft Years of the E-2D AHE.

Annual O&S Costs BY2009 $M		
Cost Element	**E-2D AHE Average Annual Cost Per Aircraft**	**E-2C (Antecedent) Average Annual Cost Per Aircraft**
Unit-Level Manpower	2.595	2.688
Unit Operations	0.419	0.416
Maintenance	5.967	3.524
Sustaining Support	0.675	0.236
Continuing System Improvements	1.479	1.041
Indirect Support	0.988	1.005
Other	0.000	0.000
Total	12.123	8.910

The flight hour utilization rate for E-2C is 30.8 hours per aircraft per month, which contributes to the delta in Unit Operations and Maintenance cost between the E-2D AHE and E-2C.

Item	Total O&S Cost $M			
	E-2D AHE			E-2C (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	17334.7	19068.2	16057.1	11796.5
Then Year	23824.4	N/A	23583.1	N/A

Equation to Translate Annual Cost to Total Cost

Average Annual Aircraft O&S Cost = Total O&S Cost / Total Operating Aircraft Years

$12.123 (BY 2009 $M) = $16057.1 (BY 2009 $M)/1325

O&S Cost Variance		
Category	**BY 2009 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec	15720.2	

2016 SAR		
Programmatic/Planning Factors	141.2	Updated Aerial Refueling retrofit schedule. Updated PAA and squadron standup to reflect Budget Estimate Submission 2019, resulting in squadron standups to shift to the right. Updated VX-1 and NSAWC flight hour factors per Cost Analysis and Visibility Tracking System (based on PB19) to estimate outyears beyond FYDP. Updated flight hour profile per PB19, an overall increase of 14K flight hours.
Cost Estimating Methodology	17.7	Incorporated outyear inflation calculations in 3.4 Depot Maintenance Engine Repair costs. Updated FRS aircraft deliveries to reflect dynamic profile adjustments.
Cost Data Update	222.7	Incorporated 2016 E-2C O&S Cost Analysis data for outyear analogies. Updated Operational Safety Improvement Program (OSIP) Modification Spares funding per Baseline II Naval Supply, reflecting OSIP deletions. Incorporated FY18 pricing for 3.1 and 3.2 Consumables and Aviation Depot Level Repairables. Updated "Common Growth Start" start year from 2018 to 2019. Incorporated 2018 inflation indices.
Labor Rate	1.1	Updated civilian rates from FY 2013 to FY 2016.
Energy Rate	-45.8	Updated fuel rates.
Technical Input	0.0	
Other	0.0	
Total Changes	336.9	
Current Estimate	16057.1	

Disposal Estimate Details

Date of Estimate: January 29, 2018

Source of Estimate: POE

Disposal/Demilitarization Total Cost (BY 2009 $M): Total costs for disposal of all Aircraft are 16.9

The estimate will be refined based on future updates to the *E-2D Deactivation, Demilitarization & Disposal (3D) Plan.*