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

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

As of FY 2021 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Common Acronyms and Abbreviations for MDAP Programs

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

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

Program Information

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

DoD Component
Navy

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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 February 10, 2020

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 installed 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 capability.

Procurement

The prior Program of Record (POR) was 75 aircraft, currently on contract, and nine operational squadrons. A July 1, 2019 POR Readiness and Requirements Review Board validated the requirement to procure 86 aircraft to support nine carrier wings or 92 aircraft to support 10 carrier wings if the 2017 National Defense Authorization Act is not rescinded. The 41st US Navy aircraft was delivered on December 9, 2019. This aircraft is the 16th aircraft of the FY 2014-FY 2018 E-2D AHE Multi-Year Procurement (MYP). A contract for the second MYP (MYP-II) of 24 aircraft to be procured during FY 2019-FY 2023 was awarded on April 10, 2019. The Government of Japan procured four E-2D AHE aircraft as a modification to the E-2D AHE MYP contract using the Variation in Quantity (VIQ) clause. Japan funded a MYP for nine additional aircraft across FY 2019-FY 2022, setting the baseline quantity for the MYP-II to 33 aircraft. Enacted FY 2020 appropriations added two additional aircraft which will be procured using a VIQ clause of the US Navy MYP-II contract. The MYP-II VIQ offers an opportunity for France to procure E-2D AHE aircraft by FY 2023.

Development

The E-2D AHE program continues to incorporate capabilities into the Fleet via hardware and software modifications that are released on two to three year intervals.

E-2D AHE Delta System/Software Configuration Build 2 (DSSC-2), which incorporates prior test deficiency corrections and adds Dual Transmission Satellite Communication capability, was introduced to the Fleet via new production aircraft, starting with the 26th aircraft (AA-26) and via retrofit to prior fielded aircraft. VAW-120, VAW-121, VAW-125 and VAW-126 all have been transitioned to DSSC-2. VAW-125 moved to the Forward Deployed Naval Force in Japan in 2Q FY 2017. VAW-126 deployed with DSSC-2 in 3Q FY 2018. With the exception of AA-4 and AA-5 (aircraft that are in planned maintenance intervals), DSSC-2 is fully deployed. The program is fielding a modified version of DSSC-2 (DSSC-2.1) that adds Mode 5 Identification Friend or Foe interrogation capability to align with Navy efforts to accelerate this to the Fleet. VAW-121, VAW-125, and VAW-126 have been upgraded with DSSC-2.1. The balance of the fielded E-2D AHE aircraft are expected to transition later in FY 2020 or transition to DSSC-3 depending on fleet priorities and Modification Team Schedules.

DSSC-3, which incorporates Automatic Identification System, Embedded National Tactical Receiver, Aerial Refueling (AR), Accelerated Mid-Term Interoperability Improvement Project and improvements to the target tracking functionality completed Follow-On Operational Test and Evaluation in October 2019. Initial training aircraft began delivering to the Fleet in September 2019, and introduction for operational squadrons will begin in 3Q FY 2020.

Seven E-2D AHE aircraft have been modified with AR capability. AR Developmental Testing and Operational Testing are complete for KC-130, KC-135, KC-10, Omega KC-707 and F/A-18F aircraft. Continued testing with F/A-18, KC-130 and other aircraft as opportunities arise for envelope expansion is planned for FY 2020. E-2D AHE AR remains on track for IOC in FY 2020.

The initial sustainment concept for the E-2D AHE unique parts was Interim Contractor Support through the Material Support Date (MSD) (1Q FY 2016). From the MSD period through Navy Support Date (3Q FY 2025), conventional and performance-based Original Equipment Manufacturer (OEM) repair contracts and OEM onsite Technical Representatives will sustain the E-2D AHE. Since E-2D AHE-unique systems are designated as Core Capabilities, organic repair capabilities will be established in accordance with United States Code Title 10 requirements.

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

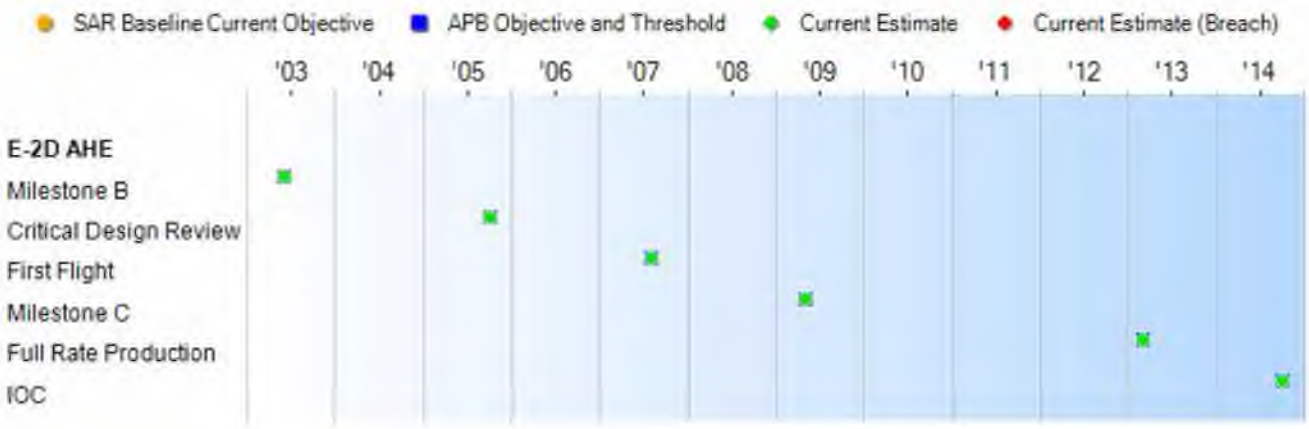
	on limited shipboard testing).
March 2013	A USD(AT&L) ADM granted authority to commence FRP procurement of 55 aircraft during FY 2013-2021.
April 2013	USD(AT&L) approved the FRP APB.
July 2013	A contract was awarded for the first FRP lot of five aircraft.
September 2013	The Aerial Refueling EMD contract 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.
August 2018	FY 2019 National Defense Authorization Act included language for authorizing the second E-2D AHE five year Multi-Year Procurement of 24 aircraft.
February 2019	The United States Government took possession of the first Japan E-2D AHE aircraft. It will be delivered to the Government of Japan in March 2019.
March 2019	DSSC-3 and AR FOT&E commenced. The first Japan E-2D AHE was delivered to the Japan Air Self Defense Force.
April 2019	The E-2D AHE MYP-II contract was awarded.
September 2019	The modification to the E-2D AHE MYP-II contract added the procurement of nine Japan aircraft.
October 2019	DSSC-3 and AR FOT&E (OT-D3) completed.

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 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	Oct 2014	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.	(T=O) 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	(T=O) 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	(T=O) =>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	(T=O) =>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	=>300 knots true	(T=O) =>300 knots	303.5 knots true	303.5 knots true

airspeed below 18,000 feet MSL	airspeed below 18,000 feet MSL	true airspeed below 18,000 feet MSL	airspeed below 18,000 feet MSL	airspeed below 18,000 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, authenticat -ion, 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, authenticat -ion, 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, authenticat -ion, 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

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 Development	(Sunk)

Procurement

Appn	BA	PE
Navy 1506	01	0204152N

Line Item	Name	
0195	E-2D Adv Hawkeye	(Shared)

Appn	BA	PE
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)

Appn	BA	PE
Navy 1205	01	0805976N

Project	Name		
62613603	Facilities Restoration and Mod-Training E-2D Operational Trainer Complex		(Sunk)

Appn	BA	PE
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	6707.0	7377.7	6973.7	4014.3	7104.2	7478.1
Procurement	13281.9	14832.9	16316.2	14832.9	14968.5	17578.0	17578.0
Flyaway	--	--	--	12239.0	--	--	14474.9
Recurring	--	--	--	11258.4	--	--	13268.3
Non Recurring	--	--	--	980.6	--	--	1206.6
Support	--	--	--	2593.9	--	--	3103.1
Other Support	--	--	--	2286.2	--	--	2760.9
Initial Spares	--	--	--	307.7	--	--	342.2
MILCON	46.7	88.7	97.6	90.6	48.6	101.0	104.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	17468.6	21628.6	N/A	21897.2	19031.4	24783.2	25160.1

Current APB Cost Estimate Reference

POE dated January 07, 2020

Cost Notes

CAPE Cost Risks: No cost estimate for the program has been completed in the previous year.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	5	5	5
Procurement	70	81	81
Total	75	86	86

Quantity Notes

The requirement has been validated at 86 aircraft to support nine fleet squadrons. Through the FY 2021 PB FYDP, the program is funded for 77 aircraft.

Cost and Funding

Funding Summary

Appropriation Summary FY 2021 President's Budget / December 2019 SAR (TY$ M)									
Appropriation	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
RDT&E	5441.9	226.6	309.4	424.3	488.1	395.1	192.7	0.0	7478.1
Procurement	11024.5	1267.3	785.8	886.7	1001.0	194.7	0.0	2418.0	17578.0
MILCON	73.6	0.0	30.4	0.0	0.0	0.0	0.0	0.0	104.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2021 Total	16540.0	1493.9	1125.6	1311.0	1489.1	589.8	192.7	2418.0	25160.1
PB 2020 Total	16549.7	1174.4	1128.3	1278.8	1441.2	596.3	0.0	0.0	22168.7
Delta	-9.7	319.5	-2.7	32.2	47.9	-6.5	192.7	2418.0	2991.4

Quantity Summary FY 2021 President's Budget / December 2019 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Development	5	0	0	0	0	0	0	0	0	5
Production	0	52	6	4	5	5	0	0	9	81
PB 2021 Total	5	52	6	4	5	5	0	0	9	86
PB 2020 Total	5	52	4	4	5	5	0	0	0	75
Delta	0	0	2	0	0	0	0	0	9	11

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	--	--	--	--	--	--	211.1
2017	--	--	--	--	--	--	354.4
2018	--	--	--	--	--	--	283.5
2019	--	--	--	--	--	--	205.6
2020	--	--	--	--	--	--	226.6
2021	--	--	--	--	--	--	309.4
2022	--	--	--	--	--	--	424.3
2023	--	--	--	--	--	--	488.1
2024	--	--	--	--	--	--	395.1
2025	--	--	--	--	--	--	192.7
Subtotal	5	--	--	--	--	--	7478.1

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	--	--	--	--	--	--	94.3
2015	--	--	--	--	--	--	154.9
2016	--	--	--	--	--	--	187.6
2017	--	--	--	--	--	--	309.3
2018	--	--	--	--	--	--	241.7
2019	--	--	--	--	--	--	171.9
2020	--	--	--	--	--	--	185.7
2021	--	--	--	--	--	--	248.6
2022	--	--	--	--	--	--	334.2
2023	--	--	--	--	--	--	376.9
2024	--	--	--	--	--	--	299.1
2025	--	--	--	--	--	--	143.0
Subtotal	5	--	--	--	--	--	6973.7

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	772.7	--	42.5	815.2	119.1	934.3
2014	5	979.4	--	47.6	1027.0	188.0	1215.0
2015	5	881.9	--	109.5	991.4	157.3	1148.7
2016	5	805.3	--	37.7	843.0	209.3	1052.3
2017	6	780.5	--	33.0	813.5	229.8	1043.3
2018	5	617.8	--	60.1	677.9	165.8	843.7
2019	6	1051.9	--	61.9	1113.8	202.6	1316.4
2020	6	983.8	--	104.1	1087.9	179.4	1267.3
2021	4	545.5	--	45.7	591.2	194.6	785.8
2022	5	691.1	--	73.4	764.5	122.2	886.7
2023	5	619.6	--	165.8	785.4	215.6	1001.0
2024	--	--	--	47.0	47.0	147.7	194.7
2025	--	--	--	--	--	--	--
2026	--	194.4	--	--	194.4	--	194.4
2027	6	1044.2	--	64.9	1109.1	123.4	1232.5
2028	3	537.5	--	116.0	653.5	125.7	779.2
2029	--	--	--	52.4	52.4	159.5	211.9
Subtotal	81	13268.3	--	1206.6	14474.9	3103.1	17578.0

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	799.1	--	69.6	868.7	191.1	1059.8
2012	5	791.7	--	34.7	826.4	121.7	948.1
2013	5	709.7	--	39.0	748.7	109.4	858.1
2014	5	887.9	--	43.2	931.1	170.4	1101.5
2015	5	787.7	--	97.8	885.5	140.5	1026.0
2016	5	704.7	--	33.0	737.7	183.2	920.9
2017	6	669.7	--	28.3	698.0	197.2	895.2
2018	5	520.5	--	50.6	571.1	139.7	710.8
2019	6	869.0	--	51.1	920.1	167.4	1087.5
2020	6	796.8	--	84.3	881.1	145.3	1026.4
2021	4	433.2	--	36.3	469.5	154.5	624.0
2022	5	538.0	--	57.1	595.1	95.2	690.3
2023	5	472.9	--	126.5	599.4	164.6	764.0
2024	--	--	--	35.2	35.2	110.5	145.7
2025	--	--	--	--	--	--	--
2026	--	139.8	--	--	139.8	--	139.8
2027	6	736.3	--	45.8	782.1	86.9	869.0
2028	3	371.6	--	80.2	451.8	86.8	538.6
2029	--	--	--	35.5	35.5	108.1	143.6
Subtotal	81	11258.4	--	980.6	12239.0	2593.9	14832.9

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	524.1
2011	5	778.9
2012	5	756.1
2013	5	743.3
2014	5	761.9
2015	5	825.0
2016	5	735.5
2017	6	733.4
2018	5	543.8
2019	6	737.6
2020	6	858.2
2021	4	489.4
2022	5	543.2
2023	5	565.5
2024	--	--
2025	--	--
2026	--	--
2027	6	807.1
2028	3	440.6
2029	--	--
Subtotal	81	11258.4

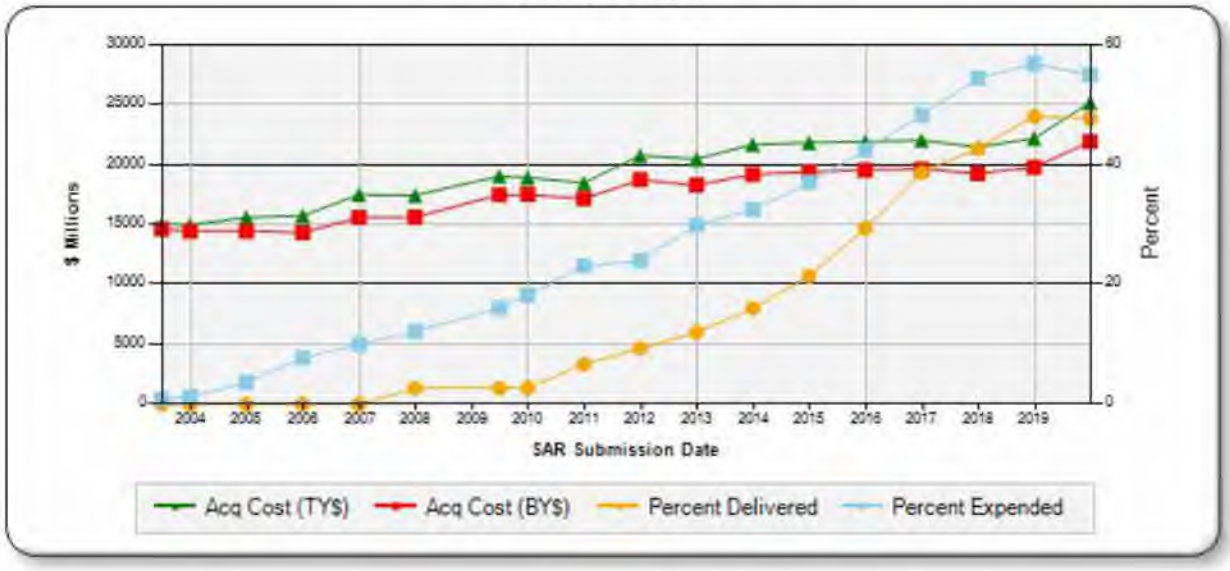
Annual Funding 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	TY $M Total Program
2008	11.5
2009	--
2010	16.8
2011	--
2012	15.4
2013	--
2014	--
2015	1.7
2016	28.2
2017	--
2018	--
2019	--
2020	--
2021	30.4
Subtotal	104.0

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	24.1
2017	--
2018	--
2019	--
2020	--
2021	23.4
Subtotal	90.6

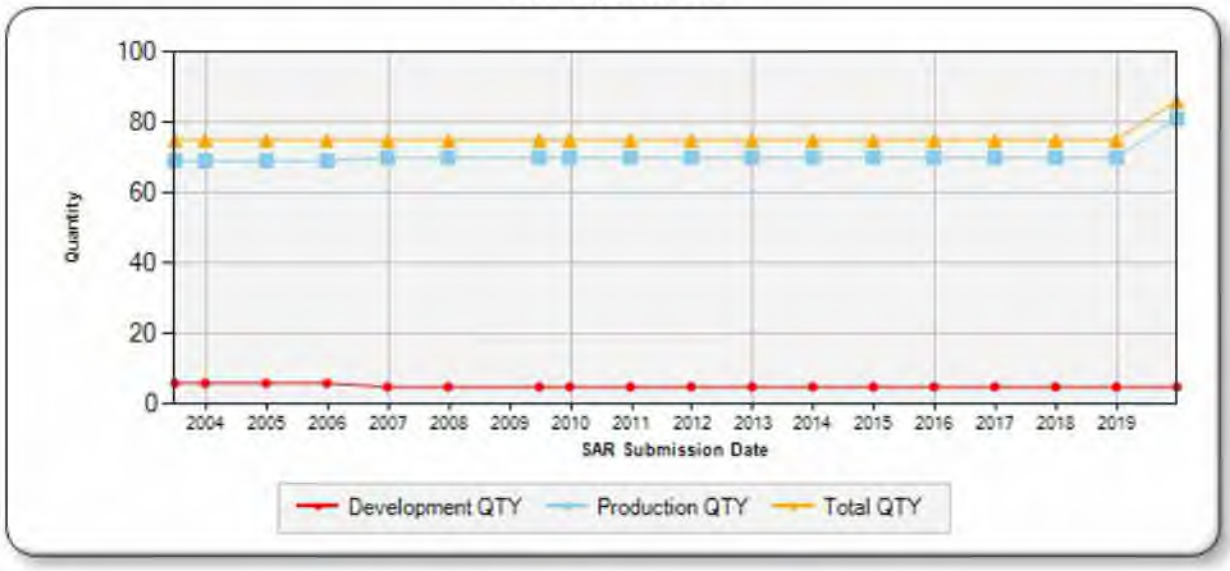
Charts

E-2D AHE first began SAR reporting in June 2003

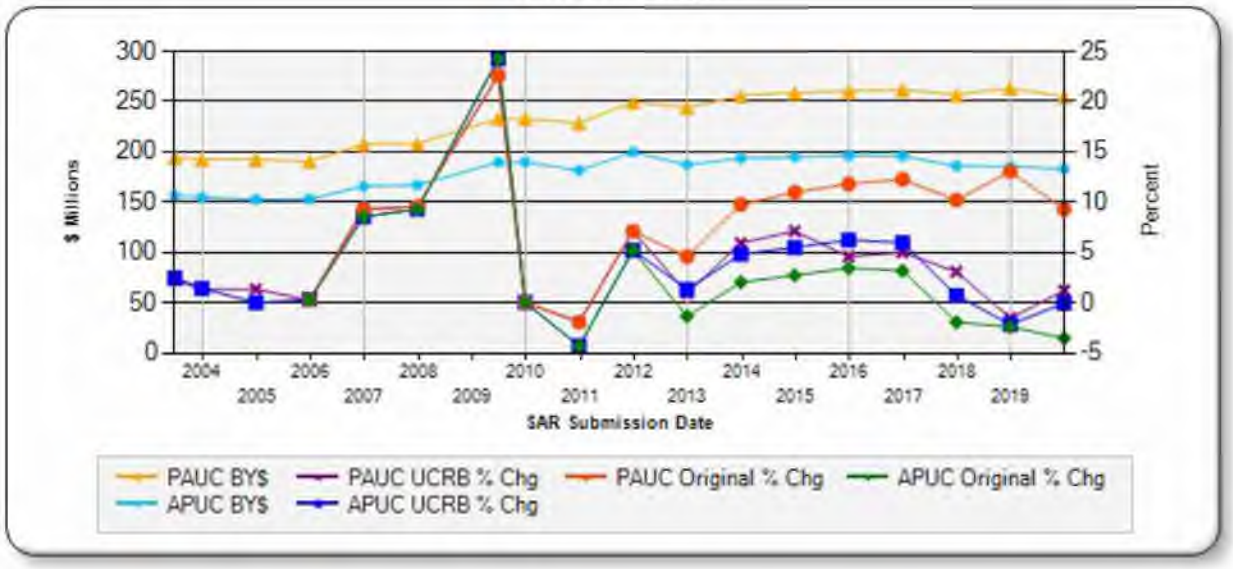
Program Acquisition Cost - E-2D AHE
Base Year 2009 $M



Quantity - E-2D AHE



Unit Cost - E-2D AHE
Base Year 2009 $M



Risks

Significant Schedule and Technical Risks

Significant Schedule and Technical Risks	
Milestone B (June 2003)	
1.	Technical: Radar Performance
2.	Technical: 2,065 pounds of weight reduction required to allow for System Development and Demonstration (SD&D) and in-service growth
3.	Technical: Single Engine Rate of Climb Performance
Milestone C (May 2009)	
1.	Schedule: The SD&D flight test program was scheduled to complete in October 2010. Delayed delivery of planned functionality, reliability of delivered functionality, deficiency report resolution, and aircraft availability rates could impact ability to execute the planned test program within program constraints. Delayed testing would drive the requirement for fixes later in the program than planned and potentially extend the weapon system specification verification beyond October 2010 resulting in schedule delays and cost impacts.
2.	Schedule: The NP2000-3 propeller system design might not be suitable for the E-2D AHE environment. This could result in system/component failures during flight test resulting in flight test program delays. During production, those failures could result in reduced aircraft availability.
Current Estimate (December 2019)	
1.	Schedule: If the new DoD Instruction 8510.01 Cybersecurity Framework is not implemented into the E-2D AHE, then the E-2D AHE Authority-to-Operate will be delayed or denied for Delta System/Software Configuration (DSSC) Builds beyond Build 4 (DSSC4).
2.	Schedule: If the required test assets are not available during DSSC-4 Developmental Testing and Operational Testing, then the DSSC-4 fleet release will be delayed.

Risks

Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Baseline Estimate (February 2020)	
1.	The Current Baseline Estimate aligns with PB 2021.
Original Baseline Estimate (June 2003)	
1.	After review of the programmatic and technical baseline at Milestone B, the MDA directed E-2D AHE to use the Navy POE of February 2015 as the funding requirement. The estimates were within six percent of each other.
2.	The Navy-POE and the Cost Analysis Improvement Group (CAIG) estimates both showed FYDP funding shortfalls in FY 2005-FY 2009 for SD&D and procurement that the Navy needed to address prior to proceeding with the program.
Revised Original Estimate (July 2009)	
1.	After review of the programmatic and technical baseline at Milestone C, the MDA directed E-2D AHE to use the CAIG ICE as the funding requirement. The Navy SCP was seven percent lower than the CAIG ICE.
2.	Both the CAIG ICE and the Navy SCP showed a shortfall in FY 2010-FY 2015 resources for procurement in the FYDP.
Current Procurement Cost (December 2019)	
1.	The current Procurement Cost is the same as the Current Baseline Estimate.

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	9/26/2019	9	1304.0	Case JA-P-SCW, procurement of fifth-thirteenth Japan aircraft.
Japan	7/31/2018	1	238.0	Case JA-P-SCQ, procurement of fourth Japan aircraft.
Japan	3/16/2018	1	244.0	Case JA-P-SCM, procurement of third Japan E-2D aircraft.
Japan	7/26/2016	1	225.0	Case JA-P-SCL, procurement of second Japan E -2D AHE aircraft.
Japan	8/11/2015	1	540.0	Case JA-P-SCJ, procurement of first Japan E-2D AHE aircraft and Non-Recurring Engineering.

Notes

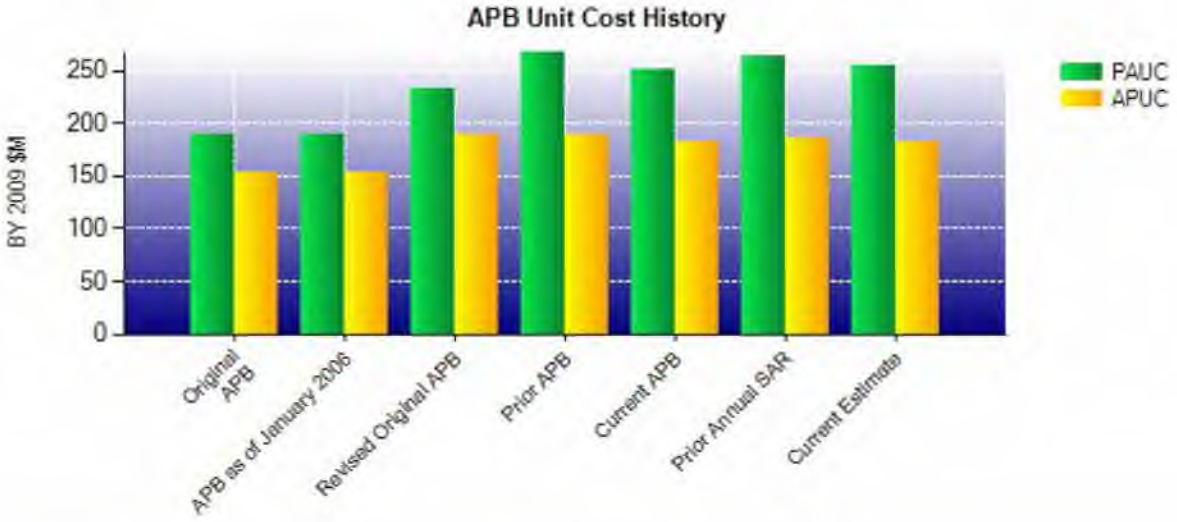
Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2009 $M Current UCR Baseline (Feb 2020 APB)	BY 2009 $M Current Estimate (Dec 2019 SAR)	% Change
Program Acquisition Unit Cost			
Cost	21628.6	21897.2	
Quantity	86	86	
Unit Cost	251.495	254.619	+1.24
Average Procurement Unit Cost			
Cost	14832.9	14832.9	
Quantity	81	81	
Unit Cost	183.122	183.122	0.00

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 2019 SAR)	% Change
Program Acquisition Unit Cost			
Cost	17468.6	21897.2	
Quantity	75	86	
Unit Cost	232.915	254.619	+9.32
Average Procurement Unit Cost			
Cost	13281.9	14832.9	
Quantity	70	81	
Unit Cost	189.741	183.122	-3.49



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	Feb 2019	267.311	189.323	296.669	214.929
Current APB	Feb 2020	251.495	183.122	288.177	217.012
Prior Annual SAR	Dec 2018	263.311	185.291	295.583	213.821
Current Estimate	Dec 2019	254.619	183.122	292.559	217.012

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	-0.474	-2.205	23.253	27.352	-21.172	0.000	12.053	38.807	292.559

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	-0.386	3.077	24.689	2.430	-39.432	0.000	12.798	3.176	217.012

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	25160.1
Total Quantity	N/A	75	75	86
PAUC	N/A	199.760	253.752	292.559

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	-16.7	-15.5	+1.0	-31.2
Quantity	--	--	--	--
Schedule	--	+1774.8	--	+1774.8
Engineering	+2125.6	+178.1	+29.9	+2333.6
Estimating	+981.0	-2532.0	+17.5	-1533.5
Other	--	--	--	--
Support	--	+593.6	--	+593.6
Subtotal	+3089.9	-1.0	+48.4	+3137.3
Current Changes				
Economic	+6.1	-15.8	+0.1	-9.6
Quantity	--	+2601.6	--	+2601.6
Schedule	--	+225.0	--	+225.0
Engineering	--	+18.7	--	+18.7
Estimating	+367.8	-662.0	+6.9	-287.3
Other	--	--	--	--
Support	--	+443.0	--	+443.0
Subtotal	+373.9	+2610.5	+7.0	+2991.4
Total Changes	+3463.8	+2609.5	+55.4	+6128.7
Current Estimate	7478.1	17578.0	104.0	25160.1

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	--	+1184.2	--	+1184.2
Engineering	+1752.2	+150.6	+25.7	+1928.5
Estimating	+800.4	-2072.9	+12.9	-1259.6
Other	--	--	--	--
Support	--	+426.6	--	+426.6
Subtotal	+2552.6	-311.5	+38.6	+2279.7
Current Changes				
Economic	--	--	--	--
Quantity	--	+1839.6	--	+1839.6
Schedule	--	+177.6	--	+177.6
Engineering	--	+13.3	--	+13.3
Estimating	+281.1	-480.8	+5.3	-194.4
Other	--	--	--	--
Support	--	+312.8	--	+312.8
Subtotal	+281.1	+1862.5	+5.3	+2148.9
Total Changes	+2833.7	+1551.0	+43.9	+4428.6
Current Estimate	6973.7	14832.9	90.6	21897.2

Previous Estimate: December 2018

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+6.1
Adjustment for current and prior escalation. (Estimating)	-1.7	-2.0
Revised estimate for Hawkeye Cockpit Technical Refresh. (Estimating)	+69.0	+87.9
Revised estimate to reflect Department wide funding adjustments. (Estimating)	+157.8	+209.8
Revised estimate for E-2D AHE test asset viability. (Estimating)	+60.1	+77.1
Decrease in FY 2019 for Small Business Innovation and Research funding. (Estimating)	-4.1	-5.0
RDT&E Subtotal	+281.1	+373.9

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-15.8
Total Quantity variance resulting from an increase of 11 E-2D AHE aircraft from 70 to 81. (Subtotal)	+1307.2	+1838.1
Quantity variance resulting from an increase of 11 E-2D AHE aircraft from 70 to 81. (Quantity)	(+1597.9)	(+2246.9)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(+132.1)	(+185.9)
Allocation to Engineering resulting from Quantity change. (Engineering) (QR)	(+13.3)	(+18.7)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(-436.1)	(-613.4)
Additional Quantity variance resulting from an increase of 11 E-2D AHE aircraft from 70 to 81. (Quantity)	+241.7	+354.7
Acceleration of procurement buy profile from FY 2023 to FY 2020. (Schedule)	0.0	-18.5
Additional Schedule Variance due to moving two aircraft from FY 2023 to FY 2020. (Schedule)	+45.5	+57.6
Adjustment for current and prior escalation. (Estimating)	+5.7	+6.8
Adjustment for current and prior escalation. (Support)	+1.3	+1.6
Increase in Other Support due to revised estimate to reflect actuals and aircraft quantity increase. (Subtotal)	+278.1	+397.9
Increase in Other Support due to revised estimate to reflect actuals. (Support)	(+5.1)	(+2.2)
Quantity related. (Support) (QR)	(+273.0)	(+395.7)
Increase in Initial Spares due to revised estimate to reflect actuals and aircraft quantity increase. (Subtotal)	+33.4	+43.5
Increase in Initial Spares due to revised estimate to reflect actuals. (Support)	(+24.4)	(+30.6)
Quantity related. (Support) (QR)	(+9.0)	(+12.9)
Revised estimate to reflect actual Government Furnished Equipment costs. (Estimating)	-79.5	-92.9
Addition of Tactical Targeting Network Technology terminals and antenna, Secret Internet Protocol Router Chat, and Electronic Support Measures to each aircraft. (Estimating)	+42.9	+54.8
E-2D AHE MultiyearProcurement II Savings. (Estimating)	-13.8	-17.3
Procurement Subtotal	+1862.5	+2610.5

(QR) Quantity Related

MILCON	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+0.1
Revised estimate to reflect Department wide funding adjustments. (Estimating)	+5.3	+6.9
MILCON Subtotal	+5.3	+7.0

Contracts

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	84.8	N/A	0	84.8	84.8

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the addition of Wing Center Section Fatigue Article Testing, the exercise of a repair option, and extending the period of performance to May 31, 2022.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (11/22/2019)	+0.2	-0.7
Previous Cumulative Variances	+0.7	0.0
Net Change	-0.5	-0.7

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to cost associated with the Program Support Secure Information Technology Interworking Order Allocations and Cyber Security Allocations that were not included in the original baseline plan.

The unfavorable cumulative schedule variance is due to long lead material not received as planned.

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	5199.2	N/A	30	5199.2	5199.2

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 four E-2D AHE aircraft to include Non-Recurring Engineering (NRE)for a Japan-unique Wet Outer Wing Panel totaling $963.3M under four FMS Letters of Offer and Acceptance, all of which has been added to this contract to date. Other modifications to the contract which have increased the value by $189.6M include the addition of the Advanced Radar Processor, Fiber Optic Improvement, Aerial Refueling capabilities, Engineering Change Orders, Economic Order Quantity Funding, and Nose Gear Catapult System Engineering Change Proposal. The most recent modifications are valued $16.6M and include Japan E-2D AHE Difference (from E-2C) Training and Japan NRE.

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 EVM 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: Procurement
Contract Name: Multi-Year Procurement (FRP Lots 7-11)
Contractor: Northrop Grumman Systems Corporation
Contractor Location: 2000 West NASA Boulevard
Melbourne, FL 32904
Contract Number: N00019-18-C-1037
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: February 22, 2018
Definitization Date: April 10, 2019

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
99.8	N/A	0	4763.7	N/A	33	4763.7	4763.7

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the contract being awarded on February 22, 2018 as an advanced acquisition contract for the FRP Lot 7 as a Not To Exceed contract in the amount of $99.8M. Subsequently, contract modifications for the addition of Long Lead parts for the fifth Japan E-2D AHE aircraft in the amount of $32.7M and the addition of Long Lead parts for two United States Navy E-2D aircraft in the amount of $49.9M were made. This contract was definitized April 10, 2019 and transitioned to a Fixed Price Incentive Firm contract for the procurement of 24 aircraft with a contract value of $3352.1M. Contract modifications for Product Support, Software Support Activity, and incorporation of NRE and Obsolescence Management increased the value to $3459.8M. The Government of Japan is procuring nine E-2D AHE aircraft to include NRE for a Japan-unique Wet Outer Wing Panel totaling 1303.9M bringing the the total contract value to $4783.7.

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 EVM waiver was granted by the Deputy Assistant Secretary of the Navy (Acquisition & Procurement) on August 3, 2018 due to the fact that the prime contractor has consistently delivered E-2D AHE aircraft on or ahead of schedule requirements and this follow-on (to the Multi-Year Procurement (FRP Lots 2-6)) contract would procure a mature and stable airframe configuration.

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	178.8	N/A	0	178.8	178.8

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. Additionally, the period of performance was extended to November 2020.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (11/22/2019)	+7.2	-5.8
Previous Cumulative Variances	+0.7	0.0
Net Change	+6.5	-5.8

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to the program not expending as planned due to late Government Furnished Equipment and technical issues with the Cross Domain Solution and router. This variance will reduce as the work is executed.

The unfavorable cumulative schedule variance is due to late Government Furnished Equipment and technical issues with the Cross Domain Solution and router. It is not anticipated that Northrop Grumman Corporation will be able to recover the schedule.

Contract Identification

Appropriation: Procurement
Contract Name: Aerial Refueling Retrofit Kits
Contractor: Northrop Grumman Systems Corporation
Contractor Location: 2000 West NASA Boulevard
Melbourne, FL 32904
Contract Number: N00019-18-F-2334
Contract Type: Firm Fixed Price (FFP)
Award Date: May 02, 2018
Definitization Date: May 02, 2018

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
74.5	N/A	0	74.7	N/A	0	74.7	74.7

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to a minor contract modification.

Cost and Schedule Variance Explanations

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

Contract Identification

Appropriation: RDT&E
Contract Name: Electronic Support Measures (ESM) Upgrade
Contractor: Lockheed Martin Corporation
Contractor Location: 1801 Route 17C
Owego, NY 13827
Contract Number: N00019-18-C-1066
Contract Type: Cost Plus Incentive Fee (CPIF)
Award Date: June 25, 2018
Definitization Date: June 25, 2018

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
64.7	N/A	0	70.3	N/A	0	70.3	70.3

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to a $5.57M Equitable Adjustment.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (10/27/2019)	0.0	-0.7
Previous Cumulative Variances	--	--
Net Change	+0.0	-0.7

Cost and Schedule Variance Explanations

The unfavorable cumulative schedule variance is due to the execution of multiple directed changes. This resulted in personnel simultaneously working the proposal efforts, the planned discrete efforts as well as changes to the baseline plan, driving schedule delays. Schedule recovery is anticipated.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	5	5	5	100.00%
Production	36	36	81	44.44%
Total Program Quantity Delivered	41	41	86	47.67%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	25160.1	Years Appropriated	19
Expended to Date	13824.0	Percent Years Appropriated	67.86%
Percent Expended	54.94%	Appropriated to Date	18033.9
Total Funding Years	28	Percent Appropriated	71.68%

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

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	February 11, 2020
Source of Estimate:	POE
Quantity to Sustain:	84
Unit of Measure:	Aircraft
Service Life per Unit:	25.00 Years
Fiscal Years in Service:	FY 2011 - FY 2050

Inflation Indices Utilized: FY 2020 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 Aircraft Authorization (PAA): 61
- Nine 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: 15%
Attrition Rate: 8%
Total Operating Flight Hours: 675,840
Total Operating Aircraft Years: 1,603

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 2050.

*PAA beyond Primary Mission Aircraft Authorization (PMAA) and FRS aircraft are typically not included in NAVAIR AIR-4.2 O&S cost estimates; however, PAA for VX-1 and Naval Aviation Warfighting Development Center (NAWDC) 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 (3rd Quarter FY 2025), 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	2.680	2.688
Unit Operations	0.432	0.416
Maintenance	5.600	3.524
Sustaining Support	0.727	0.236
Continuing System Improvements	1.911	1.041
Indirect Support	1.007	1.005
Other	0.000	0.000
Total	12.357	8.910

Item	Total O&S Cost $M			
	E-2D AHE			E-2C (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	19700.2	21670.2	19807.9	11796.5
Then Year	31347.8	N/A	31347.8	N/A

Equation to Translate Annual Cost to Total Cost

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

$12.357 (BY 2009 $M) = $19807.9 (BY 2009 $M)/1603

O&S Cost Variance		
Category	**BY 2009 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2018 SAR	15690.8	
Programmatic/Planning Factors	4304.5	Decreased the number of tactical aircraft squadrons

		from 10 to 9. Incorporated 11 additional aircraft reflected in the new Program of Record, extending the life cycle by five years. Incorporated a new attrition rate.
Cost Estimating Methodology	217.8	Updated Contract Maintenance estimate from an E-2C analogy methodology to a new methodology that reflects historical E-2D AHE execution actuals. Addressed deficiencies in the model.
Cost Data Update	-327.8	Incorporated FY 2018 execution actuals for all cost elements. Incorporated PB 2020 flight hour controls. Incorporated FY 2020 inflation indices.
Labor Rate	95.8	Incorporated FY 2020 Officer, Enlisted, and Civilian pay rates.
Energy Rate	0.0	
Technical Input	-173.2	Updated Workload Standard and Material Costs for Planned Maintenance Interval (PMI) events. Updated maintenance Cost Per Flight Hour (CPFH) to reflect Program Objective Memorandum (POM) 2020 Cost Adjustment Sheet (CAS) submissions. Updated Program Related Logistics (PRL) requirements, and APPN requirements for the modification of aircraft.
Other	0.0	
Total Changes	4117.1	
Current Estimate	19807.9	

Disposal Estimate Details

Date of Estimate:	January 22, 2020
Source of Estimate:	POE
Disposal/Demilitarization Total Cost (BY 2009 $M):	20.0

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