Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy											Date: February 2020	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604234N *I Advanced Hawkeye*							
COST ($ in Millions)	**Prior Years**	**FY 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**Cost To Complete**	**Total Cost**
Total Program Element	5,225.928	205.612	226.596	309.373	-	309.373	424.285	488.084	395.062	192.747	769.780	8,237.467
3051: *E-2D Adv Hawkeye*	5,198.392	194.028	214.596	309.373	-	309.373	424.285	488.084	395.062	192.747	769.780	8,186.347
9999: *Congressional Adds*	27.536	11.584	12.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	51.120
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 364												

A. Mission Description and Budget Item Justification

The E-2D Advanced Hawkeye (AHE) program develops, demonstrates, tests, and procures the replacement of the AN/APS-145 radar system and other aircraft system components including Cooperative Engagement Capability Pre-Planned Product Improvement and Dual Transmit Satellite Communications that improve the E-2 weapon system to maintain open ocean mission capability while providing the United States Navy with an effective littoral surveillance, battle management, Naval Integrated Fire Control (NIFC) and Theater Air and Missile Defense (TAMD) capability. Key radar technologies are Space-Time Adaptive Processing, Electronically Scanning Array, solid state transmitter, high dynamic range digital receivers and Identification Friend or Foe (IFF)/radar aperture integration. The resultant detection system provides a substantially improved overland performance by correcting current sensor shortfalls and enhancing all current required mission areas, while simultaneously contributing to the emerging TAMD mission requirements. Mode 5 is an upgrade to the existing IFF System providing the warfighter positive, secure and reliable identification of friendly aircraft, surface and sub-surface platforms. Mode 5 replaces the National Security Administration de-certified Mode 4 IFF capability, which is no longer effective or suitable for modern military operations. Mode 5 will support the Joint Initial Operational (IOC) as defined by the Joint Requirements Oversight Council. The Hawkeye Cockpit Technical Refresh (HECTR) will bring a Required Navigation Performance Area Navigation (RNP RNAV) capability to the E-2D platform, improve reliability and address obsolescence of the current cockpit.

Throughout the development of the E-2D, the threat has continued to evolve increasing in both capability and capacity. The E-2D Research, Development, Test and Evaluation budget after IOC reflects the Navy's further investment into the E-2D to ensure that carrier based command and control continues to pace the 2020 and beyond threat in support of Navy and Joint operations around the world.

The program will be aligning the capability development in areas where there are interwoven technologies that leverage each other to provide the most efficient and cost effective means of delivering these capabilities to the warfighters. The program will deliver these capabilities to the Fleet users on an approximately 24 month release cycle as part of combined Delta System/Software Configuration (DSSC) builds. If a capability is delayed or accelerated it will move between DSSC builds which will be reflected in updates to this budget.

The E-2D program implemented an Agile software development model for multiple E-2D improvement and capability efforts in DSSC-4 and will continue to transition future improvements and capability efforts to the Agile model in future DSSCs. In Agile development, formal Preliminary Design Review (PDR) and Critical Design Review (CDR) are not executed; however, engineering and development rigor is retained through quarterly Release Baseline Reviews (RBRs). Additionally,

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy	Date: February 2020
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604234N *I Advanced Hawkeye*

Agile development allows for frequent delivery of usable and testable MCD code to allow for continuous interaction and feedback from Fleet operators, including Developmental Test (DT), Operational Test (OT), and the tactics community.

B. Program Change Summary ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	210.565	232.752	258.869	-	258.869
Current President's Budget	205.612	226.596	309.373	-	309.373
Total Adjustments	-4.953	-6.156	50.504	-	50.504
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-18.156			
• Congressional Rescissions	-	-			
• Congressional Adds	-	12.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.953	0.000			
• Program Adjustments	0.000	0.000	51.801	-	51.801
• Rate/Misc Adjustments	0.000	0.000	-1.297	-	-1.297

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2019	FY 2020
Project: 9999: *Congressional Adds*		
Congressional Add: *E-2D Hawkeye Advanced Radar*	11.584	12.000
Congressional Add Subtotals for Project: 9999	11.584	12.000
Congressional Add Totals for all Projects	11.584	12.000

Change Summary Explanation

Technical: N/A

Funding:
-Consolidated R-2a categories as follows:
1.) New Air Vehicle category includes previous Full Scale Fatigue Test, Aerial Refueling, & Navigation Warfare
2.) New Mission Systems category includes previous Naval Integrated Fire Control (NIFC), Theater Combat Identification (TCID), Data Fusion, Stores Performance Assessment Requested Quality (SPARQ), and Sensor Netting

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy	Date: February 2020
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604234N *I Advanced Hawkeye*

3.) New Datalinks category includes previous Multifunctional Information Distribution System/Joint Tactical Radio System (MIDS/JTRS) Tactical Targeting Networking Technology (TTNT), SIPR Chat, Crypto Modernization/Frequency Remapping, and Accelerated Mid-term Interoperability Improvement Program (AMIIP)
4. New Sensors category includes previous ALQ-217 Electronic Support Measures Upgrade & Survivability, and E-2D Counter Electronic Attack
5.) New DSSC Integration, Test, and Training includes previous DSSC Integration, Test, and Cyber Program Protection

-$51.8M was added to FY21 to address DSSC-5 wholeness based on current schedule and budget requirements.

Schedule:
1. Updated program schedules to match integrated master schedule formats.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604234N / *Advanced Hawkeye*	Project (Number/Name) 3051 / *E-2D Adv Hawkeye*	

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
3051: *E-2D Adv Hawkeye*	5,198.392	194.028	214.596	309.373	-	309.373	424.285	488.084	395.062	192.747	769.780	8,186.347
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 364

A. Mission Description and Budget Item Justification

The DSSC build schedule is outlined below along with the capabilities that are planned to comprise each DSSC build.

DSSC-3 was fleet released in FY19. DSSC-3 is comprised of the following capabilities:

1. The E-2D Accelerated Mid-Term Interoperability Improvement Program (AMIIP) will address the most severe Cooperative Engagement Capability and data link related interoperability issues. This capability will significantly improve the quality of the tactical surveillance picture across all participants, reduce the possibility of track mis-identification and mitigate Blue on Blue engagements. AMIIP provides stable sensor fusion foundation to support sensor/weapon coordination requirements.

2. NIFC enhancements will incorporate weapon system software improvements to implement capabilities and performance improvements needed to meet NIFC increment 2 requirements. These capabilities come from software development in both the E-2D Classified and NIFC Enhancement and Testing lines.

DSSC-3AR was fleet released in FY19. DSSC-3AR is comprised of all capabilities listed in DSSC-3 plus Aerial Refueling (AR).

1. An AR capability will allow the E-2D AHE to receive fuel from various organic and non-organic tanker aircraft. It provides Expanded Battle Space Surveillance and Targeting through significantly enhanced persistence and increased flexibility (range & endurance). AR will better enable the E-2D AHE to fully support current Carrier Strike Group /Joint 24/7 Theater Operations by providing more versatile stationing and/or forward basing options. Previous domestic E-2 concept demonstration effort successfully established the feasibility of tanking behind the F/A-18E/F and KC-130 aircraft under E-2 Squadrons, PE 0204152N.

DSSC-3.1 is planned for Developmental Test (DT) Assist and Fleet release in FY20. DSSC-3.1 is comprised of the following capabilities:

1. Crypto Modernization/Frequency Remapping: The E-2D Multifunctional Information Distribution System/Joint Tactical Radio System (MIDS/JTRS) with concurrent Multi-netting will be integrated into the E-2D. This effort includes replacing the Multifunctional Information Distribution System-Low Volume Terminal (MIDS LVT) radio with MIDS/JTRS that has incorporated Link-16 concurrent Multi-netting (CMN-4) and replacing the JTIDS High Power Amplifier Group with a Link-16 High Power Amplifier which will address Crypto Modernization and Frequency Remapping.

2. Hybrid-Beyond Line of Sight(H-BLOS)SIPRChat will provide a Secret Internet Protocol Router Network (SIPRNet)Chat capability via INMARSAT.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

3. E-2D Navigation Warfare (NAVWAR) prevents loss of Global Positioning System (GPS) by using a Controlled Reception Pattern Antenna (CRPA) and antenna electronics (AE) unit which will function to provide GPS access in an Electronic Attack (EA) environment. NAVWAR significantly reduces the likelihood of loss of critical GPS Position, Navigation and Timing functionality that is fundamental to E-2D battlespace awareness and its contributions to multiple link networks. Without NAVWAR capability, the E-2D AHE will be unable to provides its services in GPS contested airspace, putting Navy units at unacceptable risk and hindering Joint operational flexibility. NAVWAR capability will allow the E-2D AHE to operate in areas where signal disruption and jamming would prohibit unprotected GPS reception. With this new capability, the E-2D AHE will be able to provide continuous operations in a degraded GPS environment for mission areas that depend on GPS for precise position, navigation, and timing.

DSSC-4 is planned for operational test in FY21/22 and Fleet release in FY22. DSSC-4 provides critical capabilities needed to pace the 2020 threat and enabling components of NIFC increment 3. DSSC-4 is comprised of the following capabilities:

1. The E-2D Multifunctional Information Distribution System/Joint Tactical Radio System (MIDS/JTRS)Tactical Targeting Networking Technology (TTNT) integrates Advanced Tactical Data Link functionality into the E-2D. This effort includes replacing the MIDS LVT radio with MIDS/JTRS that has incorporated Link-16 Concurrent Multi-Netting and TTNT. MIDS/JTRS TTNT is a key enabler for E-2D sensor netting capability in support of the NIFC mission.

2. The fully integrated E-2D Secret Internet Protocol Router (SIPR) Chat capability will support integration of current collaboration tools including tactical "chat" (text) communications, real-time tasking, and Air Tasking Order distribution. Recent real world operations have demonstrated a migration of Command and Control communications from voice to Internet protocol based networks.

3. E-2D Data Fusion Phase 1 provides a fusion engine to blend all on-board sensor derived track data (e.g. Electronic Surveillance) with already blended radar, Identify Friend or Foe and Cooperative Engagement Capability track files, enhancing situational awareness and tactical decision making. Successful E-2D NIFC employment depends on a clear/unambiguous tactical picture.

4. The E-2D DSSC-4 Counter Electronic Attack (CEA) capability will allow the E-2D radar system to maintain performance in a hostile electromagnetic interference environment. The E-2D CEA will ensure continuous E-2D effectiveness is maintained in an Electronic Attack environment supporting the NIFC capability and overall Navy and Joint Integrated Air and Missile Defense strategy.

5. DSSC-4 Survivability will incorporate software improvements to implement capabilities and performance needed to meet partial NIFC increment 3 requirements. This improvement will specifically improve From the Sea (FTS) performance. Additional details are classified.

DSSC-5 is planned for operational test in FY23/24 and Fleet release in FY24. DSSC-5 provides the capabilities necessary for E-2D to meet NIFC increment 3 requirements and is comprised of the following capabilities:

1. DSSC-5 E-2D Sensor Netting capabilities provides fusion of data from off-board sources via a high bandwidth network that will allow E-2D to support NIFC increment 3 requirements. Additional details are classified.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

2. E-2D Stores Performance Assessment Requested Quality (SPARQ) optimizes E-2D contribution to system of system NIFC solutions. SPARQ improves Air Wing ability to take advantage of System of Systems capabilities of NIFC, reducing kill chain timelines.

3. E-2D Data Fusion Phase 2 provides a fusion engine to blend all off-board tactical data (e.g. Satellite Receiver System data, Fighter to Fighter backlink data) with already fused on-board tracks from the E-2D Data Fusion Phase 1 effort. Completing the Data Fusion of all track sources available to E-2D greatly enhances situational awareness and tactical decision making. Integrating Link-16 Network Participation Group 20 messages improves interoperability between E-2D and participating US Navy fighters, including 5th generation aircraft. This enhances the combat effectiveness of the E-2D, increases situational awareness and shortens kill-chain timeliness (including NIFC).

4. E-2D AN/ALQ-217 Electronic Support Measures (ESM) Theater Combat Identification (TCID) upgrade integrates digital receiver and processing technology, enables E-2 multi-ship geo-location and Time Difference Of Arrival with other sensors across L-16 and Tactical Targeting Networking Technology (TTNT), and provides a precision internal clock source to enable netted detection of advanced threat radar systems. Connectivity to Electronic Warfare (EW) netted sensors will provide multiple nodes, real time, enhanced CID capabilities. The ALQ-217 digital upgrade greatly enhances CID, battle space awareness, and effectiveness of blue forces. Also expanded capabilities of ALQ-217 hardware and software enable defensive countermeasures to enable Carrier Strike Group (CSG) Air Defense in Highly Contested (HC) environments.

5. The E-2D DSSC-5 Counter Electronic Attack (CEA) capability will allow the E-2D radar system to maintain performance in an advanced hostile intentional electromagnetic interference environment. The E-2D CEA will ensure continuous E-2D effectiveness is maintained in an Electronic Attack environment supporting the NIFC capability and overall Navy and Joint Integrated Air and Missile Defense strategy.

6. E-2D Cooperative Engagement Capability (CEC) Signal Data Processor (SDP) provides processing capacity and cryptographic upgrades required to implement the NIFC-CA capabilities integrated into DSSC 5. CEC utilizes the SDP to encrypt tactical data and control the antenna during transmission of the data. This capability will correct obsolescence deficiencies based on processors, encryption and capacity and establish the baseline architecture for expanded capability in SDP.

DSSC-6 is planned for operational test and Fleet Release in FY26. DSSC-6 provides the capabilities necessary for E-2D to meet NIFC increment 3 requirements and is comprised of the following capabilities:

1. E-2D Combat Identification (CID) including Mission Computer Display rearchitecture enables the E-2D to distribute longer range and more accurate Combat Identification (CID) data to the Carrier Strike Group (CSG). E-2D will receive National Technical Means (NTM) and tactical TCID data at all security levels and filter/ distribute at the highest possible security levels to the tactical edge. Using the Open Mission Systems (OMS) design, the new mission computer architecture will provide multi-level security and cyber hardening provisions to support current and planned capabilities. The OMS design will allow faster integration of these capabilities required to pace the evolving threat.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

2. The E-2D DSSC 6 Counter Electronic Attack (CEA) capability will allow the E-2D radar system to maintain performance in an advanced hostile electromagnetic interference environment. The E-2D CEA program will ensure continuous E-2D effectiveness is maintained in an Electronic Attack environment supporting the NIFC capability and overall Navy and Joint Integrated Air and Missile Defense strategy.

3. E-2D Survivability develops additional capabilities for the ALQ-217 ESM. It enables E-2D operations in a Highly Contested (HC) environment. This capability will ensure the E-2D can perform its intended mission at locations required to support Naval and Joint force operations.

4. E-2D Hawkeye Cockpit Technical Refresh (HECTR) involves a redesign of critical components of the current E-2D Integrated Navigation Control and Display System (INCDS) driven by component obsolescence and fleet identified deficiencies. The effort includes the integration of these components with remaining cockpit hardware, integration of new software applications, and integration with TCID weapon system architecture. HECTR will also integrate a Head's Up Display (HUD) into the cockpit. HECTR will bring a Required Navigation Performance Area Navigation (RNP RNAV) capability to the E-2D platform, to improve reliability, to address current human machine interface (HMI) deficiencies and to address obsolescence of the current cockpit. All current functions of the INCDS will be included in the HECTR cockpit, to include unique non-navigation functions such as landing gear and gross take-off weight, which are currently housed in the Avionics Flight Management Computer. Additionally, new capability, such as a weather radar and traffic avoidance may be integrated. HECTR is currently planned for DSSC-6, however, DSSC-6 capability fielding is not dependent upon HECTR.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Air Vehicle	23.335	15.890	17.861	0.000	17.861
Articles:	-	-	-	-	-
Description: E-2D Air Vehicle improvements include the development of solutions to improve safety, structural integrity, and systems reliability of the E-2D aircraft. Improvements include analysis and redesign of structural components and components to minimize excessive and premature wear, increase reliability, improve existing design deficiencies, and respond to Fleet urgent operational requirements. The improvements will address known, predicted, and emergent obsolescence equipment issues. These efforts include, but are not limited to Aerial Refueling (AR), airframe, engine, and electrical component improvements, full scale fatigue testing, and technology upgrades. Funding also includes the flight/engine hours that are necessary for design, development, validation and verification.					
FY 2020 Plans: E-2D will continue improvement efforts to maintain aircraft readiness. The program will continue to address known, predicted, and emergent obsolescence equipment issues, continuing efforts from prior years. Continue Full Scale Fatigue Test to assure continued safe operation of the aircraft. The test program will continue towards the final goal of 20,000 test hours. Inspections and analysis will be performed at 500 effective flight hour intervals. Repairs of the test article will be conducted as required. Continue AR capability envelope expansion efforts. Systems engineering will support ongoing and emergent analysis and design/ development/					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
test efforts required to identify engineering change proposal (ECP) requirements to correct systems safety, structural integrity, compatibility, and readiness issues including efforts to address structural, hydraulic, electrical, environmental, and mechanical systems. ***FY 2021 Base Plans:*** E-2D will continue improvement efforts to maintain aircraft readiness. The program will continue to address known, predicted, and emergent obsolescence equipment issues, continuing efforts from prior years. Continue Full Scale Fatigue Test to assure continued safe operation of the aircraft. The test program will continue towards the final goal of 20,000 test hours. Inspections and analysis will be performed at 500 effective flight hour intervals. Repairs of the test article will be conducted as required. Continue AR capability envelope expansion efforts. Systems engineering will support ongoing and emergent analysis and design/ development/test efforts required to identify ECP requirements to correct systems safety, structural integrity, compatibility, and readiness issues including efforts to address structural, hydraulic, electrical, environmental, and mechanical systems. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** FY20 to FY21 increase due to continuous AR capability envelope expansion efforts.					
Title: Mission Systems	69.258	76.808	123.614	0.000	123.614
Articles:	-	-	-	-	-
Description: E-2D Mission Systems improvements include development, integration, and testing of aircraft Mission Systems hardware/software updates and capability expansions to support aircraft avionics, displays, navigation, communication, electronic sensors, battle management, data fusion, system-of-systems and countermeasure efforts. Efforts include continuous design of Mission Systems equipment and software in order to maintain mission availability and safe and reliable operations. Advanced system development and testing activities will address replacement components to address obsolescence, incorporate technical solutions to meet current and future mandates and standards, and incorporate improved technology to support evolving mission needs. Studies and analyses will be performed to evaluate future capability expansions. Mission Systems efforts include, but are not limited to, improvements to/development of Communication Navigation and Identification Friend or Foe (CNI), avionics, Mission System Software (MSS), mission computer, Naval Integrated Fire Control (NIFC), data fusion, Cooperative Engagement Capability (CEC), Hawkeye Cockpit Technical Refresh (HECTR), battle management, technology upgrades, and emergent tactical requirements as they arise. ***FY 2020 Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Funds provided to continue DSSC-4 integration efforts of Data Fusion Phase 1 and DSSC-4 Sensor Netting solution. Complete DSSC-5 development efforts and begin DSSC-5 integration efforts of DSSC-5 Sensor Netting solution, Stores Performance Assessment Requested Quality (SPARQ), and Data Fusion Phase 2. Begin DSSC-6 development efforts for Theater Combat Identification (CID). Systems engineering will support ongoing and emergent analysis and design/development/test efforts required to identify ECP requirements to respond to evolving and emergent threats, mission systems, communications systems, navigation equipment, and countermeasures. Evaluate future capability expansions via studies and analyses. ***FY 2021 Base Plans:*** Funds provided to complete DSSC-4 integration of Data Fusion Phase 1 and DSSC-4 Sensor Netting solution. Continue DSSC-5 integration efforts of DSSC-5 Sensor Netting solution, Stores Performance Assessment Requested Quality (SPARQ), and Data Fusion Phase 2. Continue DSSC-6 development efforts for Theater Combat Identification (TCID). Begin Hawkeye Cockpit Technical Refresh (HECTR) development efforts. Systems engineering will support ongoing and emergent analysis and design/development/test efforts required to identify ECP requirements to respond to evolving and emergent threats, mission systems, communications systems, navigation equipment, and countermeasures. Evaluate future capability expansions via studies and analyses. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Mission Systems FY20 to FY21 increase will support the Software Development efforts for Sensor Netting, SPARQ, and Data Fusion for integration into the DSSC-5 build. Ramp up of DSSC-6 development efforts for Theater Combat Identification (TCID). Continue DSSC-6 design/development/test efforts for Hawkeye Cockpit Technical Refresh (HECTR).					
Title: Datalinks	9.266	13.586	7.250	0.000	7.250
Articles:	-	-	-	-	-
Description: E-2D Datalinks distribute incoming information, giving the E-2D increased and expanded battlespace awareness. Combined with a two-generation leap in radar sensor capability, the network enabled capability enables the Advanced Hawkeye to deliver actionable data to joint forces, key to keeping net-centric carrier battle groups out of harm's way and reducing the time between initial awareness and active engagement. E-2D Datalinks improvements include development, integration, and testing of aircraft Network Datalink updates and capability expansions. Efforts include continuous design of Datalink equipment in order to maintain mission availability and safe and reliable operations. Advanced system development and testing activities will address					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
replacement components to address obsolescence, incorporate technical solutions to meet current and future mandates and standards, and incorporate improved technology to support evolving mission needs. Studies and analyses will be performed to evaluate future capability expansions. Datalink efforts include, but are not limited to, improvements to/development of Multifunctional Information Distribution System/Joint Tactical Radio System (MIDS/JTRS), Secret Internet Protocol Router (SIPR) Chat capability, Crypto Modernization and Frequency Remapping (CM/FR), technology upgrades, and emergent tactical requirements as they arise. ***FY 2020 Plans:*** Funds provided to conduct developmental test assist for DSSC-3.1 H-BLOS SIPR chat solution for FY20 fleet release. Continue DSSC-4 integration efforts of Multifunctional Information Distribution System/Joint Tactical Radio System (MIDS/JTRS) Tactical Targeting Networking Technology (TTNT) and the fully integrated E-2D Secret Internet Protocol Router Chat solution. Systems engineering will support ongoing and emergent analysis and design/development/test efforts required to identify ECP requirements to respond to evolving and emergent threats. Evaluate future capability expansions via studies and analyses. ***FY 2021 Base Plans:*** Funds provided to complete DSSC-4 integration of Multifunctional Information Distribution System/Joint Tactical Radio System (MIDS/JTRS) Tactical Targeting Networking Technology (TTNT) and the fully integrated E-2D Secret Internet Protocol Router Chat solution. Systems engineering will support ongoing and emergent analysis and design/development/test efforts required to identify ECP requirements to respond to evolving and emergent threats. Evaluate future capability expansions via studies and analyses. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Data Links FY20 to FY21 decrease in Hardware Development of Tactical Targeting Networking Technology (TTNT) and E-2D Secret Internet Protocol Router Chat (SIPRChat) as the capabilities are being integrated into DSSC-4. Decrease is also due to the completion of Crypto Modernization and Frequency Remapping (CM/FR).					
Title: Sensors	23.934	25.571	59.967	0.000	59.967
Articles:	-	-	-	-	-
Description: E-2D Sensor Systems provide real-time situational awareness to carrier strike group environment via active and passive detectional processing capabilities. Sensor product upgrades provide real-time, on-scene improvements in the execution of early warning, battle management, and command and control missions. E-2D Sensor Systems improvements include development, integration, and testing of aircraft Sensor					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604234N / *Advanced Hawkeye*	Project (Number/Name) 3051 / *E-2D Adv Hawkeye*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Systems hardware/software updates and capability expansions. Efforts include continuous design of Sensor Systems equipment in order to maintain mission availability and safe and reliable operations. Advanced system development and testing activities will address replacement components to address obsolescence, incorporate technical solutions to meet current and future mandates and standards, and incorporate improved technology to support evolving mission needs. Studies and analyses will be performed to evaluate future capability expansions. Sensor Systems efforts include, but are not limited to, improvements to/development of Counter Electronic Attack (CEA), ALQ-217 Electronic Support Measures Upgrade and Survivability, technology upgrades, and emergent tactical requirements as they arise. ***FY 2020 Plans:*** Funds provided to continue DSSC-4 integration efforts of DSSC-4 Counter Electronic Attack (CEA) capabilities. Complete DSSC-5 development efforts and begin DSSC-5 integration efforts of AN/ALQ-217 Electronic Support Measures (ESM) Combat Identification (CID) upgrades and DSSC-5 Counter Electronic Attack (CEA) capabilities. Begin DSSC-6 development efforts for DSSC-6 Counter Electronic Attack (CEA) capabilities and E-2D Survivability capabilities. Systems engineering will support ongoing and emergent analysis and design/ development/test efforts required to identify ECP requirements to respond to evolving, emergent threats and countermeasures. Evaluate future capability expansions via studies and analyses. ***FY 2021 Base Plans:*** Funds provided to complete DSSC-4 integration of DSSC-4 Counter Electronic Attack (CEA) capabilities. Continue DSSC-5 integration efforts of AN/ALQ-217 Electronic Support Measures (ESM) Combat Identification (CID) upgrades and DSSC-5 Counter Electronic Attack (CEA) capabilities. Continue DSSC-6 development efforts for DSSC-6 Counter Electronic Attack (CEA) capabilities and E-2D Survivability capabilities. Systems engineering will support ongoing and emergent analysis and design/development/test efforts required to identify ECP requirements to respond to evolving, emergent threats and countermeasures. Evaluate future capability expansions via studies and analyses. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Sensors FY20 to FY21 funding increase will support DSSC-5 with continuous integration efforts of AN/ALQ-217 Electronic Support Measures (ESM) and Combat Identification (CID) upgrades. Continue software and hardware					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
developmental efforts of Counter Electronic Attack (CEA) and E-2D Survivability capabilities in support of DSSC-6.					
Title: Integration, Test, and Training	68.235	82.741	100.681	0.000	100.681
Articles:	-	-	-	-	-
Description: Funds the necessary E-2D integration, testing, and Fleet training equipment upgrades required to improve the E-2D weapon system capabilities to meet reliability and increase performance. Includes DSSC integration, engineering risk reduction efforts, developmental and operational test of E-2D. Development of cyber hardening, reaction and restoration defensive capabilities to increase E-2D resiliency in a cyber-warfare contested environment. Perform scans and Security Technical Implementation Guidance (STIGS) to identify vulnerabilities, develop mitigations, and comply with Risk Management Framework (RFM) to achieve and maintain a CyberSAFE certification and an Authority to Operate. Incorporates the Test Asset Viability effort to upgrade E-2D test aircraft and the E-2 Systems Test and Evaluation Lab (ESTEL) with updated mission system components to include supportability and mandated anti-tamper requirements. Updates training devices to include performance enhancements and to maintain concurrency with aircraft DSSC configurations. Supports design, development, and fielding of advanced training tactics, if feasible, ahead of aircraft capability fielding. Purchase support equipment necessary to meet reliability and increase performance requirements. Incorporate Test assets for the E-2D test aircraft and E-2 Systems Test and Evaluation Lab (ESTEL) with updated mission systems components. The test and evaluation (T&E) assets are needed to ensure proper T&E support for the E-2D weapons system.					
FY 2020 Plans: Funds provided to continue engineering risk reduction efforts, conduct DSSC-4 software merge and Aerial Refueling envelope expansion test. Incorporate E-2D Cyber warfare program protection needed to pace the 2020 threat for critical capabilities in support of DSSC builds.					
FY 2021 Base Plans: Funds provided to continue engineering risk reduction efforts, perform DSSC-4 developmental test and begin DSSC-4 operational test. Continue to incorporate E-2D Cyber warfare program protection needed to pace future threats for critical capabilities in support of DSSC builds. Begin systems engineering efforts for test asset viability. Continues fleet training development for DSSC capabilities.					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
FY20 to FY21 increase due to the incorporation of Test assets for the E-2D test aircraft and E-2 Systems Test and Evaluation Lab (ESTEL) with updated mission systems components, Enhanced Trainer Support and E-2D Distributed Readiness Trainer (D-DRT).					
Accomplishments/Planned Programs Subtotals	194.028	214.596	309.373	0.000	309.373

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• APN/0195: *E-2D AHE*	1,143.116	1,201.365	791.601	-	791.601	959.448	1,198.058	194.640	0.000	2,404.890	20,960.848
• APN/0605: *Initial Spares - E-2*	12.296	6.926	36.472	-	36.472	3.237	4.471	0.000	0.000	2.826	66.228
• APN/0544: *E-2 Series*	82.902	117.059	175.540	-	175.540	220.700	200.804	260.320	269.373	821.901	3,697.108

Remarks

D. Acquisition Strategy

Milestone C Acquisition Strategy was approved by Milestone Decision Authority, Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) on 29 Dec 2008. Milestone C approval to proceed into Production and Deployment was given 11 June 2009 by USD (AT&L). Certification for entrance into Initial Operational Test & Evaluation was received on 06 Feb 2012. Full Rate Production Acquisition Strategy approved on 20 August 2012. Initial Operational Test & Evaluation concluded 1 October 2012. Successfully held a Defense Acquisition Board for Full Rate Production. Received a successful decision to enter into Full Rate Production on 01 March 2013. Initial Operational Capability achieved on 10 October 2014. The program updated the ACAT-1C Acquisition Strategy on 14 December 2016 to cover Multi-year procurement II and modernization.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604234N / *Advanced Hawkeye*	Project (Number/Name) 3051 / *E-2D Adv Hawkeye*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AV - Primary Hardware-Fatigue	C/CPFF	Northrop Grumman Corporation (NGC) : Melbourne, FL	46.355	9.530	Nov 2018	9.302	Nov 2019	9.379	Nov 2020	-		9.379	76.052	150.618	150.618
DataLinks - Primary Hardware Dev-AMIIP/ SIPRChat & TTNT	C/CPIF	Northrop Grumman Corporation (NGC) : Melbourne, FL	108.982	3.783	Feb 2019	5.898	Nov 2019	3.131	Nov 2020	-		3.131	0.000	121.794	121.794
AV - Primary Hardware-Aerial Refueling	SS/CPIF	Northrop Grumman Corporation (NGC) : Melbourne, FL	282.048	9.874	Feb 2019	2.500	Feb 2020	2.230	Feb 2021	-		2.230	17.100	313.752	313.752
AV - Primary Hardware Dev-NAVWAR	SS/CPFF	Northrop Grumman Corporation (NGC) : Melbourne, FL	9.390	4.144	Dec 2018	2.410	Dec 2019	0.000		-		0.000	0.000	15.944	15.944
Sensors- Primary Hardware Dev - ESM	C/CPFF	Lockheed Martin : New York, NY	15.657	15.894	Dec 2018	15.750	Dec 2019	22.511	Dec 2020	-		22.511	22.493	92.305	92.305
MS - Primary Hardware Dev - Theater TCID	C/CPIF	Navy Syst Mgt Activity : Arlingron, VA	0.000	0.000		5.690	Dec 2019	10.289	Dec 2020	-		10.289	145.959	161.938	161.938
ITT - Primary Hardware Dev - Cyber	C/CPIF	Northrop Grumman Corporation (NGC) : Melbourne, FL	0.000	0.000		7.780	Dec 2019	2.676	Dec 2020	-		2.676	9.252	19.708	19.708
Training Development	SS/FFP	Rockwell Collins : Cedar Rapids, IA	31.802	1.886	Dec 2018	1.740	Dec 2019	6.200	Dec 2020	-		6.200	28.373	70.001	70.001
MS - Primary Software Dev - Theater TCID	C/CPIF	Navy Syst Mgt Activity : Arlington, VA	0.000	0.000		2.961	Dec 2019	17.512	Dec 2020	-		17.512	69.900	90.373	90.373
MS - Primary Software Dev - Various	Various	Navy Syst Mgt Activity : Arlington, VA	108.609	24.886	Dec 2018	21.655	Dec 2019	25.147	Dec 2020	-		25.147	354.540	534.837	534.837
Sensors - Primary Software Development - ESM	C/CPFF	Lockheed Martin : New York, NY	7.990	9.607	Dec 2018	8.494	Dec 2019	7.423	Dec 2020	-		7.423	30.546	64.060	64.060
MS - Primary Software Dev - HECTR	Various	Various : Various	0.000	0.000		0.000		11.089	Dec 2020	-		11.089	84.571	95.660	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ITT - Primary Software Dev - Cyber	C/CPIF	Navy Syst Mgt Activity : Arlington, VA	0.000	0.000		0.000		3.000	Dec 2020	-		3.000	26.476	29.476	101.252
MS - Primary Software Dev - NIFC	C/CPFF	Navy Syst Mgt Activity : Arlington, VA	0.000	0.000		0.000		11.875	Dec 2020	-		11.875	134.406	146.281	146.281
MS - Primary Software Dev - SDP	C/CPFF	Navy Syst Mgt Activity : Arlington, VA	0.000	0.000		0.000		7.593	Dec 2020	-		7.593	0.000	7.593	7.593
System Engineering	Various	Various : Various	0.913	1.227	Dec 2018	3.766	Dec 2019	7.999	Dec 2020	-		7.999	37.975	51.880	-
Prior Year Prod Dev costs no longer funded in FYDP	Various	Various : Various	3,646.855	0.000		0.000		0.000		-		0.000	0.000	3,646.855	-
		Subtotal	4,258.601	80.831		87.946		148.054		-		148.054	1,037.643	5,613.075	N/A

Remarks

Totals may not add due to rounding. Product development increases due to the Hardware and Software Development efforts for Electronic Support Measures(ESM), Counter Electronic Attack (CEA), Naval Integration Fire Control (NIFC), Signal Data Processor (SDP), and Training development for integration into the DSSC-5 build. Product Development Hardware and Software Development also increases due to the ramp up of DSSC-6 development efforts for Theater Combat Identification (TCID) and Hawkeye Cockpit Technical Refresh (HECTR).

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	Various	Navy Syst Mgt Activity : Arlington, VA	23.620	0.200	Dec 2018	0.200	Dec 2019	0.200	Dec 2020	-		0.200	0.804	25.024	25.024
MS -Software Development-SN	C/CPFF	Navy Syst Mgt Activity : Arlington, VA	20.528	13.991	Dec 2018	16.957	Dec 2019	21.111	Dec 2020	-		21.111	89.748	162.335	162.335
MS - Software Development-Data Fusion	C/CPFF	Navy Syst Mgt Activity : Arlington, VA	38.831	12.214	Dec 2018	9.867	Dec 2019	27.019	Dec 2020	-		27.019	50.961	138.892	138.892

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604234N / *Advanced Hawkeye*	Project (Number/Name) 3051 / *E-2D Adv Hawkeye*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Sensor - Software Development-CEA	C/CPFF	Navy Syst Mgt Activity : Arlington, VA	3.844	0.904	Dec 2018	2.552	Dec 2019	1.000	Dec 2020	-		1.000	209.625	217.925	217.925
MS - Software Development - SPARQ	C/CPFF	Navy Syst Mgt Activity : Arlington, VA	13.668	7.086	Dec 2018	5.638	Dec 2019	6.533	Dec 2020	-		6.533	15.017	47.942	47.942
MS - Software Development-NAVWAR	SS/CPIF	Northrop Grumman Corporation (NGC) : Melbourne, FL	3.450	0.418	Dec 2018	0.000		0.000		-		0.000	0.000	3.868	3.868
Sensors -Software Development - ESM	SS/CPIF	Northrop Grumman Corporation : Melbourne, FL	0.000	1.241	Dec 2018	0.000		0.000		-		0.000	0.000	1.241	1.241
DataLinks -Software Development - CMFR	C/CPFF	Northrop Grumman Corporation : Melbourne, FL	11.164	4.283	Dec 2018	6.300	Dec 2019	0.000		-		0.000	0.000	21.747	21.747
Government Engineering Support	WR	Naval Air Warfare Center Aircraft Division (NAWCAD : Pax River, MD	145.989	14.970	Dec 2018	15.685	Dec 2019	15.182	Dec 2020	-		15.182	100.340	292.166	-
Government Engineering Support	WR	Naval Air Warfare Center Training Systems Division : Orlando, FL	13.017	0.400	Nov 2018	0.400	Dec 2019	2.906	Dec 2020	-		2.906	0.000	16.723	-
Government Engineering Support	Various	Various : Various	17.723	0.509	Nov 2018	0.120	Nov 2019	5.285	Nov 2020	-		5.285	0.120	23.757	-
Integrated Logistics Support	Various	Various : Various	13.921	3.035	Nov 2018	1.746	Nov 2019	6.330	Nov 2020	-		6.330	7.572	32.604	-
Contractor Engineering Support ETS	C/CPFF	Precise : Lexington Park, MD	1.648	2.477	Jan 2019	1.481	Jan 2020	1.259	Jan 2021	-		1.259	9.643	16.508	16.508
Prior Year Support costs no longer funded in FYDP	Various	Various : Various	124.810	0.000		0.000		0.000		-		0.000	0.000	124.810	-
		Subtotal	432.213	61.728		60.946		86.825		-		86.825	483.830	1,125.542	N/A

Remarks

Totals may not add due to rounding.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604234N / *Advanced Hawkeye*	Project (Number/Name) 3051 / *E-2D Adv Hawkeye*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Support cost increase due to the integration of DSSC-5 efforts for Sensor Netting, SPARQ and Data Fusion. Government Engineering and Integrated Logistics Support cost category increased in support of DSSC-5 integration.															

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental T&E	WR	NAWCAD : Pax River, MD	242.381	39.444	Nov 2018	47.827	Nov 2019	44.274	Nov 2020	-		44.274	290.201	664.127	-
Developmental T&E	Various	Various : Various	36.480	0.100	Nov 2018	0.815	Nov 2019	2.239	Nov 2020	-		2.239	65.201	104.835	-
Developmental T&E - ROR	SS/CPFF	Northrop Grumman Corporation(NGC) : Melbourne, FL	13.252	2.500	Nov 2018	1.486	Dec 2019	1.500	Dec 2020	-		1.500	21.500	40.238	40.238
Developmental T&E ETS	C/CPFF	Various : Various	12.872	1.618	Feb 2019	1.135	Feb 2020	2.930	Feb 2021	-		2.930	15.298	33.853	33.853
Operational T&E	Various	Various : Various	11.494	6.347	Nov 2018	12.948	Nov 2019	6.159	Nov 2020	-		6.159	79.375	116.323	-
Test Assets	Various	Various : Various	19.384	1.131	Nov 2018	1.152	Dec 2019	16.965	Dec 2020	-		16.965	83.358	121.990	-
Prior Year T&E costs no longer funded in FYDP	Various	Various : Various	101.568	0.000		0.000		0.000		-		0.000	0.000	101.568	-
		Subtotal	437.431	51.140		65.363		74.067		-		74.067	554.933	1,182.934	N/A

Remarks

Totals may not add due to rounding.
Test and Evaluation developmental T&E, development T&E ETS, and test assets cost categories increases due to the ramp up of testing in support of DSSC-5 and to incorporate test assets for test aircraft and test lab with updated mission systems components.
Developmental Test & Evaluation (T&E), Developmental T&E (Engineering & Technical Services) and Operational T&E - various contractors and award dates throughout the fiscal year.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Various	Various : Various	3.439	0.329	Oct 2018	0.341	Oct 2019	0.427	Oct 2020	-		0.427	3.433	7.969	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604234N / *Advanced Hawkeye*	Project (Number/Name) 3051 / *E-2D Adv Hawkeye*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Mgmt costs no longer funded in FYDP	Various	Various : Various	66.708	0.000		0.000		0.000		-		0.000	0.000	66.708	-
		Subtotal	70.147	0.329		0.341		0.427		-		0.427	3.433	74.677	N/A

Remarks

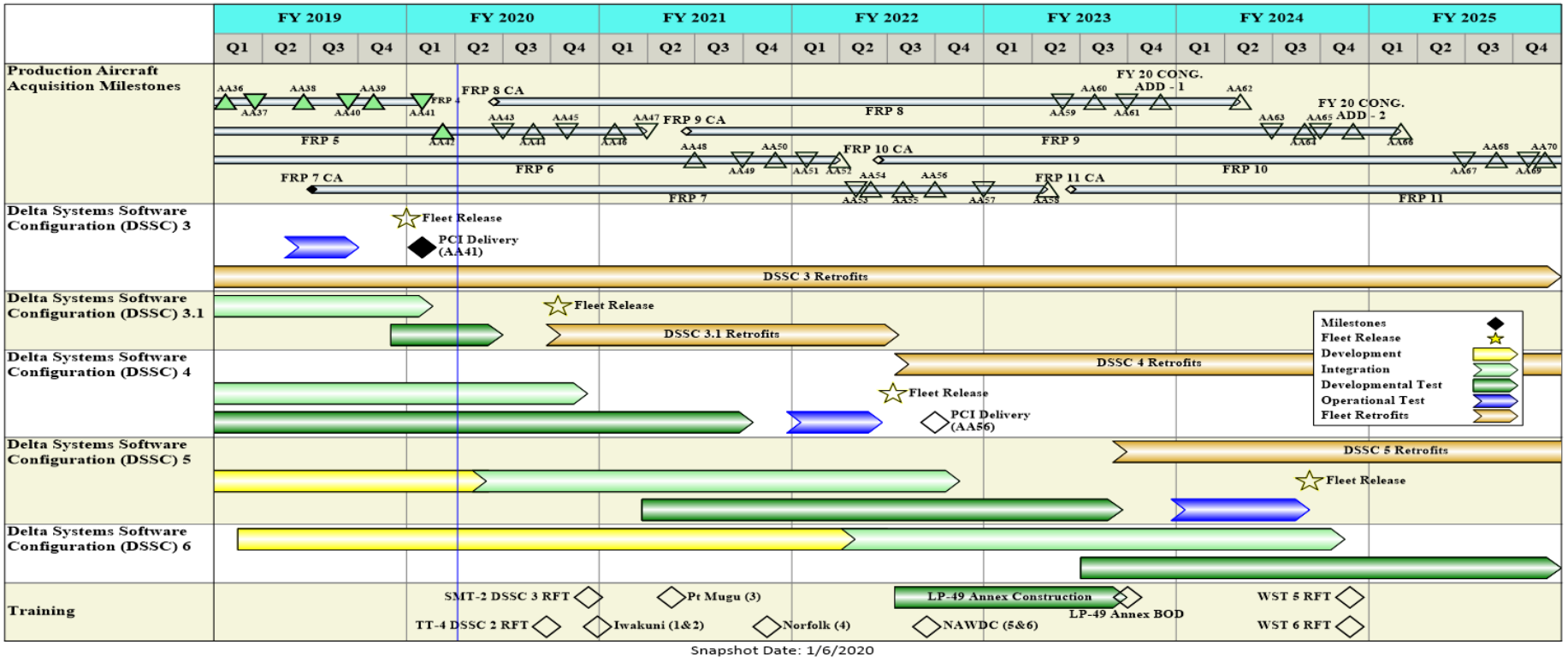
Totals may not add due to rounding.
Contractor Engineering Support, Government Engineering Support, Program Support and Travel - various contractors and/or award dates throughout fiscal year.

	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5,198.392	194.028		214.596		309.373		-		309.373	2,079.839	7,996.228	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

PB-21



2

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
E-2D Adv Hawkeye Delta Systems/Software Configuration (DSSC) Builds				
Test & Evaluation: Developmental Test & Evaluation: DSSC-4 Capability Dev & Testing	1	2019	3	2021
Test & Evaluation: Developmental Test & Evaluation: DSSC-5 Capability Dev & Testing	1	2021	3	2023
Test & Evaluation: Developmental Test & Evaluation: DSSC-6 Capability Dev & Testing	3	2023	4	2025
Test & Evaluation: Developmental Test & Evaluation: DSSC-3.1 Capability Dev & Testing	4	2019	3	2020
Test & Evaluation: Operational Test & Evaluation: DSSC-3 Operational Test	2	2019	4	2019
Test & Evaluation: Operational Test & Evaluation: DSSC-3 Fleeet Release	1	2020	1	2020
Test & Evaluation: Operational Test & Evaluation: DSSC-3.1 Fleet Release	4	2020	4	2020
Test & Evaluation: Operational Test & Evaluation: DSSC-4 Operational Test	4	2021	3	2022
Test & Evaluation: Operational Test & Evaluation: DSSC-4 Fleet Release	3	2022	3	2022
Test & Evaluation: Operational Test & Evaluation: DSSC-5 Operational Test	1	2024	2	2024
Test & Evaluation: Operational Test & Evaluation: DSSC-5 Fleet Release	3	2024	3	2024
Test & Evaluation: Contract Awards: Production Milestones - FRP Lot VII CA	3	2019	3	2019
Test & Evaluation: Contract Awards: Production Milestones - FRP Lot VIII CA	2	2020	2	2020
Test & Evaluation: Contract Awards: Production Milestones - FRP Lot IX CA	2	2021	2	2021
Test & Evaluation: Contract Awards: Production Milestones - FRP Lot X CA	2	2022	2	2022
Test & Evaluation: Contract Awards: Production Milestones - FRP Lot XI CA	2	2023	2	2023
Deliveries: Production Deliveries - FRP IV (4 A/C)	1	2019	4	2019
Deliveries: Production Deliveries - FRP IV (1 A/C)	1	2020	1	2020
Deliveries: Production Deliveries - FRP V (4 A/C)	1	2020	4	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Deliveries: Production Deliveries - FRP V (2 A/C)	1	2021	1	2021
Deliveries: Production Deliveries - FRP VI (3 A/C)	2	2021	4	2021
Deliveries: Production Deliveries - FRP VI (2 A/C)	1	2022	1	2022
Deliveries: Production Deliveries - FRP VII (2 A/C)	2	2022	2	2022
Deliveries: Production Deliveries - FRP VII - (2 A/C)	3	2022	3	2022
Deliveries: Production Deliveries - FRP VII (1 A/C)	4	2022	4	2022
Deliveries: Production Deliveries - FRP VII - (1 A/C)	2	2023	2	2023
Deliveries: Production Deliveries - FRP VIII (4 A/C)	2	2023	4	2023
Deliveries: Production Deliveries - FRP VIII (1 A/C)	1	2024	2	2024
Deliveries: Production Deliveries - FRP IX (4 A/C)	2	2024	4	2024
Deliveries: Production Deliveries - FRP IX (1 A/C)	1	2025	1	2025
Deliveries: Production Deliveries - FRP X (4 A/C)	2	2025	4	2025

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604234N / *Advanced Hawkeye*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
9999: *Congressional Adds*	27.536	11.584	12.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	51.120
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Congressional Add. Program Increase for E-2D Advanced Hawkeye(AHE) radar development.

A. Mission Description and Budget Item Justification

Congressional Add. The E-2D Advanced Hawkeye and associated APY-9 radar meet the requirements specified in the Capabilities Development Document (CDD), including detection ranges, detection velocities, and tracking accuracies, verified through extensive developmental and operational flight testing and deployed operations. Program increase for E-2D advanced radar development to stay ahead of the evolving threat.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020
Congressional Add: E-2D Hawkeye Advanced Radar	11.584	12.000
FY 2019 Accomplishments: N/A		
FY 2020 Plans: N/A		
Congressional Adds Subtotals	11.584	12.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Program increase to continue improving radar capability of the E-2D Hawkeye to stay ahead of the evolving threat. Planned investments in the E-2D, APY-9 radar and new antenna technology will continue to pace emerging threats.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604234N / *Advanced Hawkeye*	Project (Number/Name) 9999 / *Congressional Adds*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering	C/FFP	Northrop Grumman Corporation (NGC) : Melbourne, FL	15.381	5.511	Sep 2019	6.100	Sep 2020	0.000		-		0.000	0.000	26.992	21.308
System Engineering	Various	Various : Various	8.332	2.100	Jul 2019	2.540	Jul 2020	0.000		-		0.000	0.000	12.972	10.432
System Engineering	C/CPFF	Navy Syst Mgt Activity : Arlington VA	2.707	2.000	Sep 2019	1.000	Sep 2020	0.000		-		0.000	0.000	5.707	4.707
		Subtotal	26.420	9.611		9.640		0.000		-		0.000	0.000	45.671	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering	WR	SPAWAR : San Diego	0.116	0.000		0.000		0.000		-		0.000	0.000	0.116	-
Government Engineering	WR	NAWCAD : Pax River	1.000	0.498	Jan 2019	0.500	Jan 2020	0.000		-		0.000	0.000	1.998	-
Software Development	C/CPFF	Navy Syst Mgt Activity : Arlington VA	0.000	1.068	Jan 2019	1.360	Jan 2020	0.000		-		0.000	0.000	2.428	1.068
		Subtotal	1.116	1.566		1.860		0.000		-		0.000	0.000	4.542	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental T&E	WR	NAWCAD : Patuxent River, MD	0.000	0.407	Jan 2019	0.500	Jan 2020	0.000		-		0.000	0.000	0.907	-
		Subtotal	0.000	0.407		0.500		0.000		-		0.000	0.000	0.907	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604234N / *Advanced Hawkeye*	Project (Number/Name) 9999 / *Congressional Adds*	

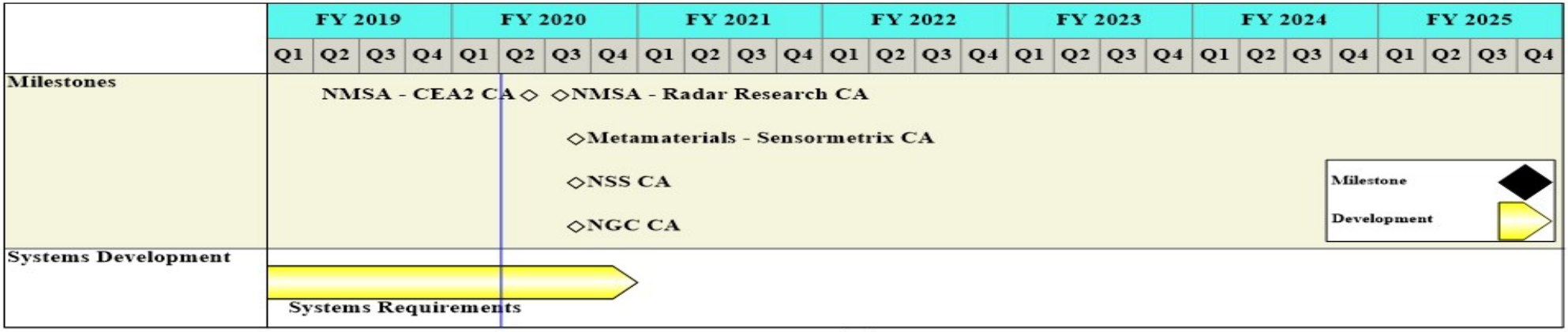
	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	27.536	11.584		12.000		0.000		-		0.000	0.000	51.120	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 9999 / *Congressional Adds*

DON 21 RDT&E Report

Advanced Radar – Congressional Add



Snapshot Date: 1/6/2020

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Advanced Radar Congressional Add				
Systems Development: Systems Requirements	1	2019	4	2020
Systems Development: Contract Awards: Production Milestones - CEA2	2	2020	2	2020
Systems Development: Contract Awards: Production Milestones - Radar Research	3	2020	3	2020
Systems Development: Contract Awards: Production Milestones - NGUESA 1	3	2020	3	2020
Systems Development: Contract Awards: Production Milestones - NGUESA 2	3	2020	3	2020
Systems Development: Contract Awards: Production Milestones - Metamaterial	3	2020	3	2020