

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Navy **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>
--	---

COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	5,431.540	221.058	275.813	386.860	-	386.860	-	-	-	-	-	-
3051: <i>E-2D Adv Hawkeye</i>	5,392.420	209.474	261.813	386.860	-	386.860	-	-	-	-	-	-
9999: <i>Congressional Adds</i>	39.120	11.584	14.000	0.000	-	0.000	-	-	-	-	-	-

**Program MDAP/MAIS Code:**  
**Project MDAP/MAIS Code(s):** 364

**A. Mission Description and Budget Item Justification**

The E-2D Advanced Hawkeye (AHE) program provides the Navy with a carrier-based airborne command and control platform, which is equipped with the APY-9 radar system, multiple communications systems for data and voice, and additional sensor systems. All of these systems are integrated into the aircraft via a computing infrastructure that is highly automated, which enables a highly trained crew of just 5 aviators to conduct battle management that would otherwise require several dozen personnel at multiple locations.

E-2D provides Theater Air and Missile Defense (TAMD) today, and is critical for establishing the long-range kill chains of Naval Integrated Fires Control (NIFC) necessary to defeat the threats of our peer adversaries. Work has begun on upgrading the 25-year old computing architecture of the AHE that will allow the Navy to lead the Joint All Domain Command and Control (JADC2) efforts in any theater.

As production of the airplane winds down (final airframe procurement is scheduled for FY23), the threat continues to increase in both capability and capacity. The E-2D Research, Development, Test and Evaluation budget reflects the Navy's investment into the E-2D to ensure that the US maintains a tactical advantage over any adversary.

Efforts initiated in recent years ensure that the E-2D can outpace the threat, and include upgrades to the air vehicle, mission systems, datalinks, and sensors. The program integrates and tests these new capabilities, and provides Fleet concurrent training equipment upgrades. Subsequent to successful testing, new capabilities are delivered on a regularly scheduled basis, and are put together as a Delta System/Software Configuration (DSSC) package to ensure commonality and configuration control across the Fleet.

In FY22, among the other E-2D mission systems R&D efforts, there are 2 major initiatives that will ensure that the E-2D is ready & relevant into the coming decades. First, obsolete and failing components of the 15-year old cockpit design are being addressed by HECTR (Hawkeye Cockpit Technical Refresh), which ensures a higher safety margin for carrier landings after 8-hour sorties, and will substantially decrease sustainment costs over the lifecycle of the airplane. Second is TCID (Theater Combat Identification), which includes the upgrades to the 25-year old computing infrastructure mentioned above. TCID will bring Multi-Level Security and Cross-Domain solutions through an Open Mission System Architecture. TCID is the key to establishing the CNO's vision for the Naval Operational Architecture and the Joint Chiefs' vision for JADC2. HECTR and TCID are planned for DSSC-6, FY27 delivery.

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Navy **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>
--	---

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	226.596	309.373	424.285	-	424.285
Current President's Budget	221.058	275.813	386.860	-	386.860
Total Adjustments	-5.538	-33.560	-37.425	-	-37.425
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-47.560			
• Congressional Rescissions	-	-			
• Congressional Adds	-	14.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.002	0.000			
• SBIR/STTR Transfer	-5.536	0.000			
• Rate/Misc Adjustments	0.000	0.000	-37.425	-	-37.425

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 9999: *Congressional Adds*

Congressional Add: *E-2D Hawkeye Advanced Radar*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	<b>FY 2020</b>	<b>FY 2021</b>
	11.584	14.000
	11.584	14.000
	11.584	14.000

**Change Summary Explanation**

Technical: N/A

Funding: The E-2D Advanced Hawkeye RDT&E,N budget increases significantly between FY21 and FY22 to accommodate development efforts with several prime and sub-vendors, government test activities for multiple DSSC builds, and the associated support. FY22 plans include the completion of complex DSSC-4 and continued DSSC-5 developmental test, these test activities will require increased ground/flight test resources. DSSC-6 prime development contracts for HECTR and Theater Combat Identification (TCID) will be executing at full capacity as well as prime development and integration contracts for Sensors Counter Electronic Attack Improvements. A FY22 contract is planned to develop an E-2D Distributed Readiness Training (D-DRT) simulator for advanced tactical training. The D-DRT simulator will allow training that is not currently possible due to constraints of the existing test ranges and national security; critical development and integration is necessary to incorporate the latest capabilities into the simulators. The increase in the FY22 budget supports these critical development efforts required to address obsolescence and keep pace with the rapidly advancing threat.

UNCLASSIFIED

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Navy		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	

Schedule: The overall program schedule has been adjusted to reflect the correction of deficiencies identified during developmental testing of DSSC 3.1. These deficiencies have since been resolved but prompted a bottoms up schedule review for future DSSC builds. Accordingly, the schedule associated with DSSC-4 & 5 has been proactively adjusted to reflect a more realistic timeline for development and integration. The changes by DSSC are annotated below.

Delta System/Software Configuration (DSSC) build capability changes are as follows:

DSSC-3: Removed NAVWAR capability; DSSC-4: Removed Data Fusion Improvements; DSSC-4 Incorporated NAVWAR capability;  
DSSC-5: Incorporated Data Fusion Improvements; DSSC-6: Fleet Release shifted from FY26 to FY27

Delta System/Software Configuration (DSSC) build schedule changes are as follows:

DSSC 4  
Developmental Test completion date changed from Q3/FY21 to Q3/FY22  
Operational Test completion date changed Q3/FY22 to Q2/FY23  
Fleet Release changed from Q3/FY22 to Q2/FY23

DSSC 5  
Developmental Test completion date changed from Q3/FY23 to Q4/FY24  
Operational Test completion date changed from Q2/FY24 to Q3/FY25  
Fleet Release changed from Q3/FY24 to Q4/FY25

DSSC 6  
Development Test completion date changed from Q4/FY25 to Q3/FY26

**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Navy **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>				<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3051: <i>E-2D Adv Hawkeye</i>	5,392.420	209.474	261.813	386.860	-	386.860	-	-	-	-	-	-
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-3.1 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.

DSSC-4 is planned for operational test and Fleet release in FY23. DSSC-4 provides critical capabilities needed to outpace the threat and enables components of NIFC increment 3. DSSC-4 is comprised of the following capabilities:

1. **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 provide 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.
2. **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.

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>
<p>3. 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.</p> <p>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. 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.</p> <p>5. DSSC-4 NIFC 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.</p> <p>DSSC-5 is planned for operational test and Fleet release in FY25. DSSC-5 provides the capabilities necessary for E-2D to meet NIFC increment 3 requirements and is comprised of the following capabilities:</p> <ol style="list-style-type: none"> <li>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.</li> <li>2. E-2D Data Fusion Improvements provides a fusion engine to blend on and off-board sensor derived track data (e.g. Electronic Surveillance, Satellite Receiver System data, Fighter to Fighter backlink data) with already blended radar, Identify Friend or Foe and Cooperative Engagement Capability track files, enhancing 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). Successful E-2D NIFC employment depends on a clear/unambiguous tactical picture.</li> <li>3. 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. 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.</li> <li>4. 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 CEC.</li> </ol> <p>E-2D Stores Performance Assessment Requested Quality (SPARQ):</p> <p>Due to budget constraints and reprioritization of efforts, E-2D Stores Performance Assessment Requested Quality (SPARQ) capabilities have been removed from the DSSC-5 build. These funds were reprioritized to higher development priorities. Capability to be incorporated in a future DSSC build.</p>		

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>
<p>DSSC-6 is planned for operational test and Fleet Release in FY27. DSSC-6 provides the capabilities necessary for E-2D to meet NIFC increment 3 requirements and is comprised of the following capabilities:</p> <ol style="list-style-type: none"> <li>1. 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 visual reference into the cockpit via a Head's- Up Display (HUD). 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.</li> <li>2. Theater E-2D Combat Identification (TCID) including Mission Computer Display re-architecture enables the E-2D to distribute longer range and more accurate Combat Identification 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.</li> <li>3. 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.</li> </ol> <p>E-2D Survivability capabilities for the ALQ-217 ESM:</p> <p>Due to budget constraints and reprioritization of efforts, E-2D Survivability capabilities for the ALQ-217 ESM capabilities have been removed from the DSSC-6 build. These funds were reprioritized to higher development priorities.</p> <p>Aerial Refueling (AR) Capability:</p> <p>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 &amp; 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 E-2D testing established operational envelopes for KC-10, KC-135, KC-707, and F/A-18E/F aircraft under E-2 Squadrons, PE 0204152N.</p> <p>ESM E-2D capabilities for the ALQ-217:</p>		

**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Navy **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>
--	---	--

E-2D AN/ALQ-217 Electronic Support Measures (ESM) integrates digital receiver and processing technology. The ALQ-217B digital ADRP addresses all known and imminent obsolescence issues in ALQ-217B Receiver/Processor. The replacement incorporates technical solutions to meet current and future mandates to support mission needs against evolving threats.

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<b>Title:</b> Air Vehicle	11.497	17.861	14.023	0.000	14.023
<b>Articles:</b>	-	-	-	-	-
<p><b>Description:</b> 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), Improved Landing Mode (ILM) capabilities, 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.</p> <p><b>FY 2021 Plans:</b> 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.</p> <p><b>FY 2022 Base Plans:</b> 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.</p> <p><b>FY 2022 OCO Plans:</b></p>					

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy	<b>Date:</b> May 2021
--	-----------------------

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>
--	---	--

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
---	----------------	----------------	---------------------	--------------------	----------------------

N/A					
-----	--	--	--	--	--

<b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> Air Vehicle decrease from FY21 to FY22 is due the Full Scale Fatigue transition from test cycling to teardown and inspection.					
--	--	--	--	--	--

<b><i>Title:</i></b> Mission Systems	63.883	100.224	178.654	0.000	178.654
<b><i>Articles:</i></b>	-	-	-	-	-

<b><i>Description:</i></b> 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 improvement 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 evaluate future capability expansions. Mission Systems efforts include, but are not limited to, Hawkeye Cockpit Technical Refresh (HECTR), improvements to/development of Communication Navigation and Identification Friend or Foe (CNI), Datalinks, avionics, Mission System Software (MSS), Theater Combat Identification (TCID) mission computer, Naval Integrated Fire Control (NIFC), Data Fusion, Cooperative Engagement Capability (CEC) Signal Data Processor (SDP) Upgrade, battle management, technology upgrades, and emergent tactical requirements as they arise.					
---	--	--	--	--	--

<b><i>FY 2021 Plans:</i></b> Funds provided to complete integration of DSSC-4 Sensor Netting solution. Continue integration efforts for DSSC-5 Sensor Netting solution. Continue DSSC-5 Data Fusion Improvements efforts. Continue DSSC-6 development efforts for Theater Combat Identification (TCID) and Hawkeye Cockpit Technical Refresh (HECTR). DSSC-5 Cooperative Engagement Capability (CEC) Signal Data Processor (SDP) software 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.					
---	--	--	--	--	--

<b><i>FY 2022 Base Plans:</i></b> Funds provided to complete integration DSSC-5 Sensor Netting solution. Continue DSSC-5 Data Fusion improvement efforts. Continue development efforts for HECTR. Complete development efforts and begin					
---	--	--	--	--	--

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<p>integration for TCID. Continue DSSC-5 CEC and SDP software and hardware efforts. Systems engineering will support ongoing and emergent analysis and design/development/test efforts required to identify Engineering Change Proposal (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.</p> <p><b>FY 2022 OCO Plans:</b> N/A</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Mission Systems FY21 to FY22 increase is due to the upgrade &amp; the ramp up of software and hardware efforts for HECTR, TCID, CEC and SDP. HECTR replaces failing and obsolete components in the cockpit to include replacement of the Aviation Flight Mission Computer (AFMC), which improves reliability and readiness, and will bring savings in sustainment over the lifetime of the program. HECTR also integrates a HeadsUp Display (HUD) and improved displays, which will mitigate pilot fatigue and safety concerns during carrier landings after longer Aerial Refueling missions. TCID directly enables the E-2D and the Joint Force to defend against the growing range and capabilities of adversaries, and will deliver interoperability with DoD's Joint All-Domain Command and Control (JADC2) framework. Without TCID in the E-2D, the Joint Force's air and missile defense will lag the emergent threat.</p>					
<p><b>Title:</b> Datalinks</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> 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 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.</p>	13.586	7.090	0.000	0.000	0.000
	-	-	-	-	-

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<p><b><i>FY 2021 Plans:</i></b> 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.</p> <p><b><i>FY 2022 Base Plans:</i></b> N/A</p> <p><b><i>FY 2022 OCO Plans:</i></b> N/A</p> <p><b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> Datalinks FY21 to FY22 decrease is due to the completion of integration for Multifunctional Information Distribution System/Joint Tactical Radio System (MIDS/JTRS) Tactical Targeting Networking Technology (TTNT) and E-2D Secret Internet Protocol Router Chat solution with the DSSC-4 release.</p>					
<p><b><i>Title:</i></b> Sensors</p> <p align="right"><b><i>Articles:</i></b></p> <p><b><i>Description:</i></b> E-2D Sensor Systems provide real-time situational awareness to Joint Force and Carrier Strike Group operations via active and passive detection 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 Systems hardware/software updates and capability expansions. Advanced system development and testing activities will address replacement components to address obsolescence, incorporate technical solutions to meet current and future mandates, and incorporate improved technology in of support mission needs against evolving threats. E-2D AN/ALQ-217 Electronic Support Measures (ESM) Theater Combat Identification (TCID) upgrade integrates digital receiver and processing technology, enabling the E-2D to locate, identify, and track current and future radars in combination with other ESM platforms across L-16 and Tactical Targeting Networking Technology (TTNT). The ESM upgrades bring increased processor capacity, sensor fidelity, and time accuracy. These capabilities will ensure the E-2D can perform its intended mission at locations required to support Naval and Joint force operations. Counter Electronic Attack (CEA) includes implementation of technologies developed by the Office of Naval Research. Studies and analyses will evaluate future capability expansions.</p>	34.674	41.503	62.208	0.000	62.208
	-	-	-	-	-

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy	<b>Date:</b> May 2021
--	-----------------------

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>
--	---	--

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
---	---------	---------	--------------	-------------	---------------

**FY 2021 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 (TCID) upgrades and DSSC-5 Counter Electronic Attack (CEA) capabilities. Continue DSSC-6 development efforts for DSSC-6 Counter Electronic Attack (CEA) 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 2022 Base Plans:**  
Funds provided to perform CEA flight test and lab demonstrations for integration of capability into DSSC-4 through DSSC-6. Continue DSSC-6 development efforts for CEA capabilities. Complete development, testing, and deliver final AN/ALQ-217 ESM Combat Identification upgrades due to deprioritization efforts. Continuous 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 2022 OCO Plans:**  
N/A

**FY 2021 to FY 2022 Increase/Decrease Statement:**  
Sensors FY21 to FY22 increase is due the prime development and integration contracts for CEA Improvements. CEA improves the ability of the E-2D to detect and track targets in a dense Electronic Attack (EA) environment. The Sensors budget line is vital to the Navy's development and fielding of advanced sensor upgrades required to keep pace with the rapidly advancing threat.

<b>Title:</b> Integration, Test, and Training	85.834	95.135	131.975	0.000	131.975
<b>Articles:</b>	-	-	-	-	-

**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 E-2D System Software Configuration (DSSC) integration, engineering risk reduction efforts, Developmental Test (DT), and Operational Test (OT). In order to improve E-2D resiliency in a cyber-warfare contested environment, concurrent program protection development and integration efforts for both cybersecurity and anti-tamper will be conducted to mitigate vulnerabilities in compliance with Risk Management Framework (RMF) processes, CyberSAFE certification, and Authorities to Operate for E-2D aircraft and labs. Efforts at the E-2D Systems Test

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

and Evaluation Lab (ESTEL) include incorporating Live Virtual Construct (LVC) capabilities to support reducing test costs and schedule as well as to mitigate testing challenges with classified capabilities. Purchase support equipment necessary to meet reliability and increase performance requirements. Incorporate updated mission systems components into both E-2D test aircraft and ESTEL to ensure accurate testing of the E-2D weapons system. Updates training devices concurrent with aircraft DSSC configurations, which includes development of E-2D Distributed Readiness Training (D-DRT) simulators that will allow training to incorporate the latest capabilities into the simulators as well as design, development, and fielding of advanced training tactics.

***FY 2021 Plans:***

Funds provided to continue engineering risk reduction and Advanced Development efforts, continue DSSC-4 developmental test (DT) and integration and begin DSSC-5 DT. Continue to incorporate E-2D Cyber warfare program protection needed to pace future threats for critical capabilities in support of DSSC builds. Continue Fleet training development for DSSC capabilities. Continue to build Live Virtual Construct (LVC) capabilities at the E-2 Systems Test and Evaluation Lab (ESTEL) to support future DT and Operational Test efforts.

***FY 2022 Base Plans:***

Funds provided to continue DSSC-4 and DSSC-5 DT. Development of the D-DRT simulator for training on advanced tactics and incorporate test articles for flight test and in the lab. Continue to incorporate E-2D Cyber warfare program protection needed to pace future threats for critical capabilities in support of DSSC builds. Continue Fleet training development for DSSC capabilities. Develop Norfolk aircrew training procedures. Continue to build LVC capabilities, which include replicating previous flight test and conducting live and/or virtual large scale test efforts.

***FY 2022 OCO Plans:***

N/A

***FY 2021 to FY 2022 Increase/Decrease Statement:***

Integration, Test, and Training FY21 to FY22 increase is due to the completion of DSSC-4 DT and the beginning of OT efforts. Continuous DSSC-5 DT efforts. DSSC-4 and DSSC-5 are more complex than previous DSSC builds and tests will require increased ground/flight test resources. DSSC-5 integration and DT will test new capabilities that require multiple E-2Ds airborne simultaneously. Use of the ESTEL will be maximized, but use of ESTEL can only replace some, not all, of the required multiple-aircraft tests. Increase for training development of E-2D D-DRT for advanced tactical training. D-DRT simulators will allow training that is not currently possible due to constraints of the existing test ranges and national security; critical development and integration is necessary

<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy	<b>Date:</b> May 2021
--	-----------------------

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>
--	---	--

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
to incorporate the latest capabilities into the simulators. Increased cost associated with the incorporation of new hardware and software capabilities into Test E-2D aircraft and/or the ESTEL.					
<b>Accomplishments/Planned Programs Subtotals</b>	209.474	261.813	386.860	0.000	386.860

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APN/0195: <i>E-2D AHE</i>	1,260.441	909.303	884.883	-	884.883	-	-	-	-	-	-
• APN/0605: <i>Initial Spares - E-2</i>	7.974	5.390	2.399	-	2.399	-	-	-	-	-	-
• APN/0544: <i>E-2 Series</i>	116.999	165.807	204.826	-	204.826	-	-	-	-	-	-

**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.

**UNCLASSIFIED**

**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>
--	---	--

<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AV - Primary Hardware-Fatigue	C/CPFF	Northrop Grumman Corporation (NGC) : Melbourne, FL	55.885	9.302	Nov 2019	9.379	Nov 2020	9.031	Nov 2021	-		9.031	-	-	-
DataLinks - Primary Hardware Dev-AMIIP/ SIPRChat & TTNT	C/CPIF	Northrop Grumman Corporation (NGC) : Melbourne, FL	112.765	5.898	Nov 2019	2.971	Nov 2020	0.000		-		0.000	-	-	-
AV - Primary Hardware-Aerial Refueling	SS/CPIF	Northrop Grumman Corporation (NGC) : Melbourne, FL	291.922	2.500	Feb 2020	2.230	Feb 2021	2.328	Feb 2022	-		2.328	-	-	-
AV - Primary Hardware Dev-NAVWAR	SS/CPFF	Northrop Grumman Corporation (NGC) : Melbourne, FL	13.534	0.732	Dec 2019	0.000		0.000		-		0.000	-	-	-
Sensors- Primary Hardware Dev - ESM	C/CPFF	Lockheed Martin : New York, NY	31.551	15.750	Dec 2019	11.255	Dec 2020	5.665	Dec 2021	-		5.665	-	-	-
MS - Primary Hardware Dev - Theater TCID	C/CPIF	Navy Syst Mgt Activity : Arlington, VA	0.000	2.490	Dec 2019	8.729	Dec 2020	12.141	Dec 2021	-		12.141	-	-	-
ITT - Primary Hardware Dev - Cyber	C/CPIF	Northrop Grumman Corporation (NGC) : Melbourne, FL	0.000	0.397	Dec 2019	0.130	Dec 2020	0.000		-		0.000	-	-	-
MS - Primary Hardware Dev - HECTR	Various	Northrop Grumm : Melbourne, FL	0.000	5.785	Aug 2020	17.105	Dec 2020	56.303	Dec 2021	-		56.303	-	-	-
ITT - Training Development	SS/FFP	Rockwell Collins : Cedar Rapids, IA	33.688	1.740	Dec 2019	6.200	Dec 2020	13.287	Dec 2021	-		13.287	-	-	-
MS - Primary Software Dev - Theater TCID	C/CPIF	Navy Syst Mgt Activity : Arlington, VA	0.000	1.282	Dec 2019	10.412	Dec 2020	20.502	Dec 2021	-		20.502	-	-	-
Primary Software Dev - Various	Various	Navy Syst Mgt Activity : Arlington, VA	133.495	19.667	Dec 2019	16.819	Dec 2020	15.409	Dec 2021	-		15.409	-	-	-
Sensors - Primary Software Development - ESM	C/CPFF	Lockheed Martin : New York, NY	17.597	8.494	Dec 2019	3.098	Dec 2020	3.689	Dec 2021	-		3.689	-	-	-

**UNCLASSIFIED**

<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2022 Navy</b>											<b>Date: May 2021</b>				
<b>Appropriation/Budget Activity</b> 1319 / 5						<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>					<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>				

<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
ITT - Primary Software Dev - Cyber	C/CPIF	Navy Syst Mgt Activity : Arlington, VA	0.000	0.000		0.000		4.498	Dec 2021	-		4.498	-	-	-
MS - Primary Software Dev - NIFC	C/CPFF	Navy Syst Mgt Activity : Arlington, VA	0.000	0.000		8.175	Dec 2020	15.893	Dec 2021	-		15.893	-	-	-
MS - Primary Software Dev - SDP	C/CPFF	Navy Syst Mgt Activity : Arlington, VA	0.000	0.000		7.593	Dec 2020	4.908	Dec 2021	-		4.908	-	-	-
Sensors - Primary Software -CEA	C/CPFF	Navy Syst Mgt Activity : Arlington, VA	0.000	0.000		0.000		34.849	Dec 2021	-		34.849	-	-	-
System Engineering	Various	Various : Various	2.140	3.766	Dec 2019	7.999	Dec 2020	14.354	Dec 2021	-		14.354	-	-	-
Prior Year Prod Dev costs no longer funded in FYDP	Various	Various : Various	3,646.855	0.000		0.000		0.000		-		0.000	-	-	-
<b>Subtotal</b>			4,339.432	77.803		112.095		212.857		-		212.857	-	-	N/A

**Remarks**

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), and Signal Data Processor (SDP). E-2D distributed readiness training device (D-DRT) for Advanced Tactical Training Upgrade to support DSSC-4 software configuration. Product Development Hardware and Software Development also increases due to the ramp up of DSSC-6 development efforts for Hawkeye Cockpit Technical Refresh (HECTR) and Theater Combat Identification (TCID).

<b>Support (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Software Development	Various	Navy Syst Mgt Activity : Arlington, VA	23.820	0.200	Dec 2019	0.000		0.000		-		0.000	-	-	-
MS -Software Development-SN	C/CPFF	Navy Syst Mgt Activity : Arlington, VA	34.519	28.553	Dec 2019	22.611	Dec 2020	21.427	Dec 2021	-		21.427	-	-	-

**UNCLASSIFIED**

**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>
--	---	--

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MS - Software Development-Data Fusion	C/CPFF	Navy Syst Mgt Activity : Arlington, VA	51.045	17.158	Dec 2019	27.019	Dec 2020	14.613	Dec 2021	-		14.613	-	-	-
Sensor - Software Development-CEA	C/CPFF	Navy Syst Mgt Activity : Arlington, VA	4.748	2.552	Dec 2019	1.000	Dec 2020	0.000		-		0.000	-	-	-
MS - Software Development - SPARQ	C/CPFF	Navy Syst Mgt Activity : Arlington, VA	20.754	0.303	Dec 2019	0.000	Dec 2020	0.000	Dec 2021	-		0.000	-	-	-
DataLinks -Software Development - CMFR	C/CPFF	Northrop Grumman Corporation : Melbourne, FL	15.447	6.300	Dec 2019	0.000		0.000		-		0.000	-	-	-
Government Engineering Support	WR	Naval Air Warfare Center Aircraft Division (NAWCAD) : Pax River, MD	160.959	15.685	Dec 2019	15.182	Dec 2020	21.229	Dec 2021	-		21.229	-	-	-
Government Engineering Support	WR	Naval Air Warfare Center Training Systems Division : Orlando, FL	13.417	0.400	Dec 2019	0.120	Dec 2020	0.000	Dec 2021	-		0.000	-	-	-
Government Engineering Support	Various	Various : Various	18.232	0.120	Nov 2019	4.785	Nov 2020	6.585	Dec 2021	-		6.585	-	-	-
Integrated Logistics Support	Various	Various : Various	16.956	1.746	Nov 2019	6.330	Nov 2020	12.721	Dec 2021	-		12.721	-	-	-
Contractor Engineering Support ETS	C/CPFF	Precise : Lexington Park, MD	4.125	1.481	Jan 2020	1.259	Jan 2021	1.471	Dec 2021	-		1.471	-	-	-
Prior Year Support costs no longer funded in FYDP	Various	Various : Various	129.919	0.000		0.000		0.000		-		0.000	-	-	-
<b>Subtotal</b>			493.941	74.498		78.306		78.046		-		78.046	-	-	N/A

**Remarks**  
Support cost increase due to the developmental test of DSSC-5 efforts for Sensor Netting and CEA. Government Engineering cost increased with DSSC-5 developmental test and DSSC-6 Development efforts. Integrated Logistics Support cost increases is due to a new contract award consolidating various support previously captured under Product Development.

**UNCLASSIFIED**

**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>
--	---	--

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental T&E	WR	NAWCAD : Pax River, MD	281.825	48.854	Nov 2019	47.356	Nov 2020	63.118	Nov 2021	-		63.118	-	-	-
Developmental T&E	Various	Various : Various	36.580	0.815	Nov 2019	2.239	Nov 2020	2.360	Nov 2021	-		2.360	-	-	-
Developmental T&E - ROR	SS/CPFF	Northrop Grumman Corporation(NGC) : Melbourne, FL	15.752	1.486	Dec 2019	1.500	Dec 2020	0.431	Dec 2021	-		0.431	-	-	-
Developmental T&E ETS	C/CPFF	Various : Various	14.490	1.135	Feb 2020	2.930	Feb 2021	4.339	Feb 2022	-		4.339	-	-	-
Operational T&E	Various	Various : Various	17.841	3.390	Nov 2019	6.159	Nov 2020	1.585	Nov 2021	-		1.585	-	-	-
Test Assets	Various	Various : Various	20.515	1.152	Dec 2019	10.801	Dec 2020	23.669	Dec 2021	-		23.669	-	-	-
Prior Year T&E costs no longer funded in FYDP	Various	Various : Various	101.568	0.000		0.000		0.000		-		0.000	-	-	-
<b>Subtotal</b>			488.571	56.832		70.985		95.502		-		95.502	-	-	N/A

**Remarks**  
 Development T&E cost increase is due to the ramp up of testing in support of DSSC-5. DSSC-5 is more complex than previous DSSC builds and tests will require increased ground/flight test resources. DSSC-5 integration and DT will test new capabilities that require multiple E-2Ds airborne simultaneously. Test asset cost category increased due to the maximized use of the E-2D Systems Test and Evaluation Lab (ESTEL). Efforts in the ESTEL will help mitigate testing challenging with classified capabilities incorporated in DSSC-5 and future DSSC builds. Portion of ESTEL Lab cost previously captured under product development.

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Travel	Various	Various : Various	3.768	0.341	Oct 2019	0.427	Oct 2020	0.455	Oct 2021	-		0.455	-	-	-
Prior Year Mgmt costs no longer funded in FYDP	Various	Various : Various	66.708	0.000		0.000		0.000		-		0.000	-	-	-
<b>Subtotal</b>			70.476	0.341		0.427		0.455		-		0.455	-	-	N/A

**Remarks**  
 E-2D Program Travel cost.



UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy

Date: May 2021

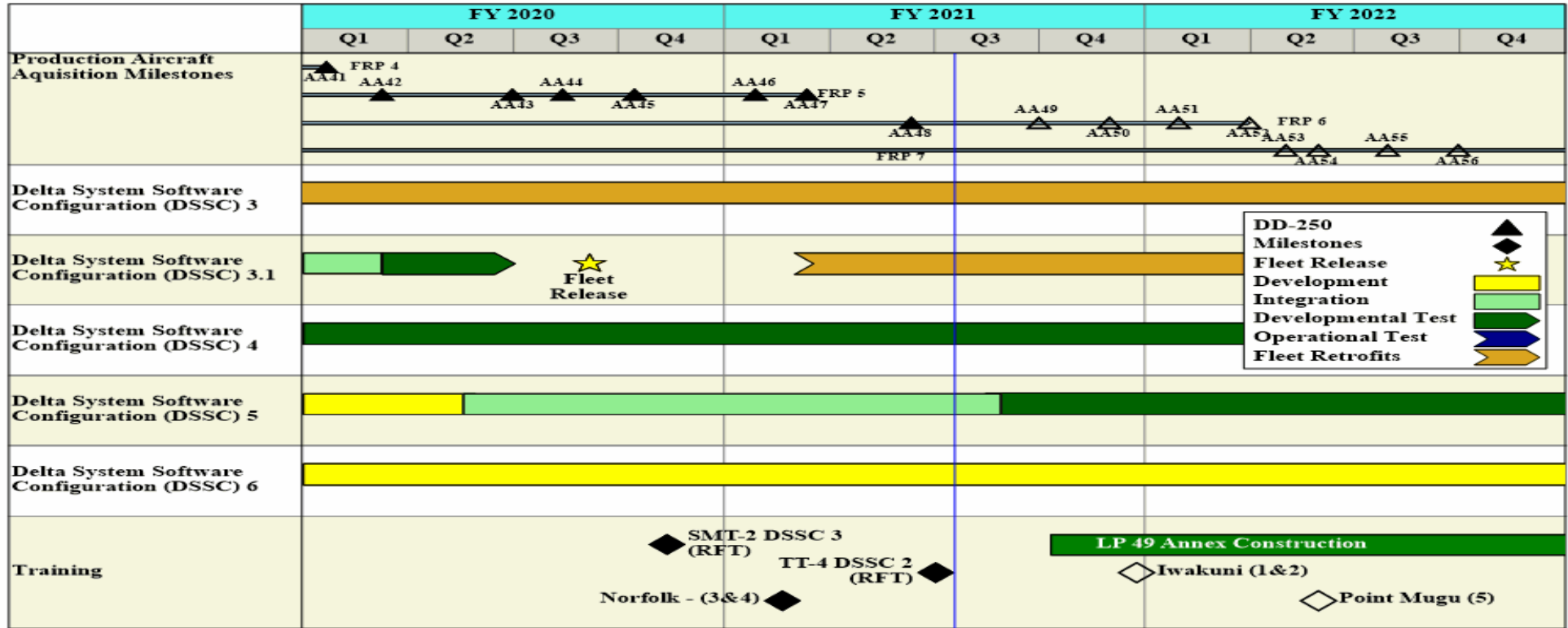
Appropriation/Budget Activity  
1319 / 5

R-1 Program Element (Number/Name)  
PE 0604234N / Advanced Hawkeye

Project (Number/Name)  
3051 / E-2D Adv Hawkeye



# PB22 E-2D Advanced Hawkeye



**UNCLASSIFIED**

**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Navy **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 3051 / <i>E-2D Adv Hawkeye</i>
--	---	--

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>E-2D Adv Hawkeye Delta Systems/Software Configuration (DSSC) Builds</i></b>				
Development & Design: DSSC-5 Systems Integration	2	2020	3	2022
Development & Design: DSSC-6 Hardware & Software Development	1	2020	4	2022
Test & Evaluation: Developmental Test & Evaluation: DSSC-4 Capability Dev & Testing	1	2020	3	2022
Test & Evaluation: Developmental Test & Evaluation: DSSC-5 Capability Dev & Testing	3	2021	4	2022
Test & Evaluation: Operational Test & Evaluation: DSSC-3 Fleet Release	1	2020	1	2020
Test & Evaluation: Operational Test & Evaluation: DSSC-3.1 Fleet Release	4	2020	4	2020
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
Deliveries: Production Deliveries - FRP V (4 A/C)	1	2020	4	2020
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

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 1319 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>				<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
9999: <i>Congressional Adds</i>	39.120	11.584	14.000	0.000	-	0.000	-	-	-	-	-	-
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)**

	<b>FY 2020</b>	<b>FY 2021</b>
<b>Congressional Add:</b> E-2D Hawkeye Advanced Radar	11.584	14.000
<b>FY 2020 Accomplishments:</b> N/A		
<b>FY 2021 Plans:</b> N/A		
<b>Congressional Adds Subtotals</b>	11.584	14.000

**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.

**UNCLASSIFIED**

**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</i>
--	---	--

<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Engineering	C/FFP	Northrop Grumman Corporation (NGC) : Melbourne, FL	20.892	1.198	Sep 2020	1.150	Aug 2021	0.000		-		0.000	-	-	-
System Engineering	Various	Various : Various	10.432	2.176	Jul 2020	1.400	Jul 2021	0.000		-		0.000	-	-	-
System Engineering	C/CPFF	Navy Syst Mgt Activity : Arlington VA	4.707	0.360	Sep 2020	0.450	May 2021	0.000		-		0.000	-	-	-
System Engineering	C/CPFF	North Star Scientific Corp : Kapolei, HI	0.000	5.790	Sep 2020	8.500	Sep 2021	0.000		-		0.000	-	-	-
<b>Subtotal</b>			36.031	9.524		11.500		0.000		-		0.000	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Engineering	WR	SPAWAR : San Diego	0.116	0.000		0.000		0.000		-		0.000	-	-	-
Government Engineering	WR	NAWCAD : Pax River	1.498	0.200	Jan 2020	0.200	May 2021	0.000		-		0.000	-	-	-
Software Development	C/CPFF	Navy Syst Mgt Activity : Arlington VA	1.068	1.360	Jan 2020	2.000	Jul 2021	0.000		-		0.000	-	-	-
<b>Subtotal</b>			2.682	1.560		2.200		0.000		-		0.000	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental T&E	WR	NAWCAD : Patuxent River, MD	0.407	0.500	Jan 2020	0.300	May 2021	0.000		-		0.000	-	-	-
<b>Subtotal</b>			0.407	0.500		0.300		0.000		-		0.000	-	-	N/A



**UNCLASSIFIED**

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy

Date: May 2021

Appropriation/Budget Activity  
1319 / 5

R-1 Program Element (Number/Name)  
PE 0604234N / *Advanced Hawkeye*

Project (Number/Name)  
9999 / *Congressional Adds*



# PB22

## Advanced Radar - Congressional Add

	FY 2020				FY 2021				FY 2022			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Milestones</b>	<div style="text-align: right;"> <p>◆ NSMA - Radar Research CA</p> <p>◆ HG-UESA NGC CA</p> <p>◆ HG-UESA NSS CA</p> <p>◆ MIT - Radar Research CA</p> <p>◆ Networked Sensors Experimentation CA</p> </div> <div style="float: right; border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Milestone </p> <p>Development </p> </div>											
<b>Systems Development</b>												

**UNCLASSIFIED**

**Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604234N / <i>Advanced Hawkeye</i>	<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</i>
--	---	--

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Advanced Radar Congressional Add</i></b>				
Systems Development: Systems Requirements	3	2021	4	2022
Systems Development: Contract Awards: Production Milestones - NSMA Radar Research	4	2021	4	2021
Systems Development: Contract Awards: Production Milestones - MIT Radar Research	3	2021	3	2021
Systems Development: Contract Awards: Production Milestones - NGUESA 1	4	2021	4	2021
Systems Development: Contract Awards: Production Milestones - NGUESA 2	4	2021	4	2021
Systems Development: Contract Awards: Production Milestones - Networked Sensors Experimentation	3	2021	3	2021