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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force **Date:** March 2023

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0207417F / <i>Airborne Warning and Control System (AWACS)</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	167.956	11.598	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	179.554
67411L: <i>Airborne Warning & Control System (AWACS)</i>	-	167.956	11.598	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	179.554
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Mission: E-3 Airborne Warning and Control System (AWACS) is the premier airborne platform providing Battle Management Command and Control (BMC2) for Commander In Chief and combatant commander tasking in joint, allied, and coalition operations, humanitarian relief, and homeland defense. AWACS provides a real-time picture of friendly, neutral, and hostile air activity. Its capabilities include: All-altitude/all-weather surveillance of the battle space; early warning of enemy actions; a real-time ability to find, fix, track, and assess airborne or maritime threats; and detection, location, and identification of electronic emitters.

Major efforts for the AWACS program include:

1. E-3 Replacement: E-3 Replacement is the planned E-3G AWACS replacement. The limited operational utility of the E-3G AWACS in contested conflicts coupled with its availability challenges create an operational imperative to replace it. E-3 Replacement will provide improved kill-chain effectiveness, enhanced reliability/availability, and reduced operating costs by integrating a modern Electronically Scanned Array sensor on a manned platform. The electronically scanned array is capable of radar beam steering, sector staring and much faster target revisit rates that translate into better target detection and tracking of modern threats well as more robust Electronic Protection that is not possible with the mechanically scanned radar used by E-3 AWACS. E-3 Replacement, now known as E-7A, has been moved to PE 0604007F.

2. E-3 Training, Support, and Infrastructure (TSI): The TSI program provides continuing lab operations and maintenance support for AWACS modernization and enhancement across the enterprise, as well as the development and execution of an AWACS Integration and Test Support (AITS) lab transfer acquisition strategy. These activities include managing the AWACS Development Test and Evaluation (DT&E) infrastructure and tracking and monitoring the AWACS support equipment and program Government Furnished Property, while managing the cost, schedule, and performance of the AITS lab transfer plan. The overall DT&E test infrastructure supports development and production projects and maintains facilities to support AWACS aircraft during system and sub-system testing in Seattle, WA, Baltimore, MD, and Oklahoma City, OK, along with Third Party Integration support from The Boeing Company to AWACS customers in the System AITS labs. The TSI assets also support multiple Foreign Military Sales (FMS) projects on a maintenance fee basis, not limited to, projects for France, Saudi Arabia and Japan efforts. Key programs include contractual management of the AWACS Avionics Integration Laboratory (AIL) integrated with the Block 40/45 Functional Group configured lab and the AWACS Radar Systems Integration Lab/Software Development Facility (SIL/SDF). These labs provide US, FMS, and Direct Commercial Sales customers with a configured development and qualification system and subsystem environment supporting all AWACS system and radar programs. TSI efforts allow new support equipment technologies and test strategies to be analyzed to ensure concurrent capability to sustain existing, modified, and upgraded E-3 equipment.

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3. E-3 Command and Control, Intelligence, Surveillance, and Reconnaissance (C2ISR): C2ISR system improvements investigate and develop future capabilities of the AWACS weapon system. These efforts also includes, but are not limited to, investigation, analysis, and development to ensure that AWACS successfully integrates with joint and coalition forces in a net-centric environment. C2ISR primarily supports pre-systems acquisition in the areas of materiel solution analysis and technology development. This is accomplished by prototyping and demonstrating capabilities required by the warfighter but also includes developing an E-3 Modernization & Sustainment Roadmap that projects user capability needs, as well as materiel solutions for the user needs. C2ISR also supports an analytical comparison of the operational effectiveness, suitability, life-cycle cost and system capabilities of alternative materiel solutions beyond the current AWACS that satisfy an established capability need identified in an Initial Capabilities Document (ICD), Rapid Prototyping Requirements Document (RPRD), or Rapid Fielding Requirements Document (RFRD).

4. E-3 Communication Network Upgrade (CNU): CNU will provide a Link 16 capability with high-jam-resistance, high-speed, crypto-secure computer-to-computer connectivity in support of every type of military platform from airborne assets to submarines. The current 20-year-old Class 2 terminal has sustainability/Diminishing Manufacturing Source (DMS) issues and does not support mandated Crypto Mod (CM) & Freq. Remap (FR). CNU resolves DMS issues, provides CM & FR, Link 16 enhancements & growth for Next Gen Tactical Data Link (TDL). CNU capabilities will be delivered in two phases, comprised of three Minimum Viable Product (MVP) efforts. Phase I: MVP1 (Crypto) will provide Enhanced Link 16 Crypto and Frequency Mapping, and MVP2 will provide High Powered Amplification of Communications (HPAs). Phase II: MVP3 (Link 16 Advanced Capabilities) will provide Link 16 advanced communications throughput via ethernet connection.

5. E-3 AWACS Communications Integration Program (ACIP): ACIP will provide Mobile User Objective System (MUOS) and Second-Generation Anti-Jam Tactical UHF Radio for NATO (SATURN) capability by replacing the existing Have Quick II and Demand Assigned Multiple Access (DAMA) SATCOM radios with new radios capable of communicating via multiple waveforms as a combined integration program on AWACS. Provides continued compatibility with US and Allied forces using frequency hopping UHF in support of airborne AMTI & BMC2 to CCMDs for Joint, Allied & Coalition operations by maintaining compatibility with CAF/Sister service C2 nodes and theater assets.

The total cost of the ACIP Middle Tier of Acquisition effort is \$108.765M, including RDT&E and procurement of prototype units.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program's funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22, \$2.525M was expended for civilian pay expenses in this program element, and in FY23, \$4.538M is forecasted for civilian pay expenses in this program element.

Note: FY22 Funding is incorrect due to database error. Due to database error, rescissions of \$20M and reprogramming action of \$3.925M are not reflected in FY22. FY22 funding should equal \$145.278M

Program Element 0604007F has been established for the E-3 Replacement, now known as E-7A.

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This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	167.014	239.658	599.899	0.000	599.899
Current President's Budget	167.956	11.598	0.000	0.000	0.000
Total Adjustments	0.942	-228.060	-599.899	0.000	-599.899
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-1.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	-226.776			
• Reprogrammings	6.603	0.000			
• SBIR/STTR Transfer	-5.661	0.000			
• Other Adjustments	0.000	-0.284	-599.899	0.000	-599.899

Change Summary Explanation

FY2023 Congressional Directed Reduction against CNU -\$1.000M; Congressional Directed Transfer -\$226.776M from PE 0207417F to 0604007F; Other Adjustments -\$0.284M FFRDC reduction

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Title: E-3 Replacement	22.163	0.000	0.000
Description: E-3 Replacement: E-3 Replacement is the planned E-3G AWACS replacement. The limited operational utility of the E-3G AWACS in contested conflicts coupled with its availability challenges create an operational imperative to replace it. E-3 Replacement will provide improved kill-chain effectiveness, enhanced reliability/availability, and reduced operating costs by integrating a modern Electronically Scanned Array sensor on a manned platform. The electronically scanned array is capable of radar beam steering, sector staring and much faster target revisit rates that translate into better target detection and tracking of modern threats well as more robust Electronic Protection that isn't possible with the mechanically scanned radar used by E-3 AWACS. E-3 Replacement, now known as, E-7A has been moved to PE 0604007F.			
FY 2023 Plans: N/A			
FY 2024 Plans: N/A			
FY 2023 to FY 2024 Increase/Decrease Statement:			

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
N/A				
<p>Title: E-3 Training, Support and Infrastructure (TSI)</p> <p>Description: Training, Support, and Infrastructure (TSI): Provides continuing management support for AWACS modernization and enhancement to include managing the AWACS Development Test and Evaluation (DT&E) and Production Qualification infrastructure and tracking and monitoring the AWACS vendor's core mission and aircrew training, support equipment and program Government Furnished Property, as well as providing Third Party Integration support from The Boeing Company to the AWACS Enterprise.</p> <p>FY 2023 Plans: TSI will continue to maintain and provide DT&E labs to AWACS programs and supporting AWACS modernization development and production providing an environment for integration & verification efforts. TSI supports Third Party Integration efforts using The Boeing Company AWACS labs in Oklahoma and Washington. TSI supports AWACS and other OSD mandated interoperability testing and supports mandatory AWACS Operational, Safety, and Suitability and Effectiveness program.</p> <p>FY 2024 Plans: N/A</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding discontinued to align with reduced E-3 development activities due to planned transition to E-3 Replacement.</p>		6.586	1.413	0.000
<p>Title: E-3 Command and Control, Intelligence, Surveillance and Reconnaissance (C2ISR)</p> <p>Description: Command and Control, Intelligence, Surveillance, and Reconnaissance (C2ISR): Investigate and develops future capabilities of the AWACS weapon system to include but are not limited to investigation, analysis, and development to ensure that AWACS successfully integrates with joint and coalition forces in a net-centric environment. Primarily supports pre-systems acquisition in the areas of materiel solution analysis and technology development (i.e., risk reduction activities).</p> <p>FY 2023 Plans: Continue to conduct engineering / integration studies to determine required modifications and associated costs to upgrade and support risk reduction activities for program planning. Continue to execute cooperative independent research and development.</p> <p>FY 2024 Plans: N/A</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>		34.867	1.801	0.000

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Funding discontinued to align with reduced E-3 development activities due to planned transition to E-3 Replacement.				
Title: E-3 Combat Identification (CID) Diminishing Manufacturing Sources (DMS) Description: Combat Identification (CID) Diminishing Manufacturing Sources (DMS): Addresses C2 CID shortfalls with a modern, persistent Airborne Moving Target Indication (AMTI) BMC2 CID. Supports the kill chain and decision superiority. FY 2023 Plans: N/A FY 2024 Plans: N/A FY 2023 to FY 2024 Increase/Decrease Statement: N/A		20.610	0.000	0.000
Title: E-3 Communication Network Upgrade (CNU) Description: Communication Network Upgrade (CNU): Provides a Link 16 capability with high-jam-resistance, high-speed, crypto-secure computer-to-computer connectivity in support of every type of military platform from from airborne assets to submarines. FY 2023 Plans: Continue rapid prototyping and development contract. FY 2024 Plans: N/A FY 2023 to FY 2024 Increase/Decrease Statement: Funding decreased due to planned completion of Rapid Prototyping.		41.734	1.000	0.000
Title: E-3 AWACS Communications Integration Program (ACIP) Description: AWACS Communications Integration Program (ACIP) Development: Provides Mobile User Objective System (MUOS) and Second Generation Anti-Jam Tactical UHF Radio for NATO (SATURN) capability by replacing the existing Have Quick II and DAMA SATCOM radios with new radios capable of communicating via multiple waveforms as a combined integration program on AWACS. FY 2023 Plans:		41.996	7.384	0.000

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Continue Rapid Prototyping and development of the SATURN effort			
FY 2024 Plans: N/A			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding decreased due to planned completion of Rapid Prototyping.			
Accomplishments/Planned Programs Subtotals	167.956	11.598	0.000

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item E00300: E-3	91.301	29.187	1.350	-	1.350	32.577	0.818	0.873	1.396	0.000	157.502
• APAF 05 0207417F: <i>Airborne Warning and Control System (AWACS)</i>	24.827	-	-	-	-	-	-	-	-	0.000	24.827
• APAF 06 Line Item 000999: <i>Initial Spares/Repair Parts</i>	4.274	-	-	-	-	-	-	-	-	0.000	4.274

Remarks

E. Acquisition Strategy
The modernization of the AWACS weapon system consists of multiple capability upgrades that are developed and fielded on competitive and sole source contracts. Full and open competition is explored for all new efforts where market research indicates opportunities exist.

Air Force Program Executive Officer (PEO) for Digital is the Milestone Decision Authority (MDA) for AWACS Programs, with the exception of the E-3 Block 40/45 Upgrade. The E-3 Block 40/45 Upgrade MDA is the Secretary of the Air Force, with authority delegated to the Assistant Secretary of the Air Force (Acquisition, Technology, and Logistics). Of note, E-3 Block 40/45 Upgrade has completed development activities, so it has no RDT&E funding and therefore not referenced in this document. The Decision Authority for current AWACS Middle Tier of Acquisition (MTA) and ACAT III programs is delegated to the E-3 Material Leaders. Air Force Life Cycle Management Center (AFLCMC) is the contracting authority for the AWACS portfolio and provides contracts, legal, and comptroller Support.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force **Date:** March 2023

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207417F / Airborne Warning and Control System (AWACS)	Project (Number/Name) 67411L / Airborne Warning & Control System (AWACS)
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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
E-3 Command and Control, Intelligence, Surveillance, and Reconnaissance (C2ISR)	SS/ Various	BAH & Various : Washington, DC	-	11.780	Jan 2022	-		-		-		-	Continuing	Continuing	-
E-3 Command and Control, Intelligence, Surveillance, and Reconnaissance (C2ISR) GTRI Study	SS/CPFF	Georgia Tech Research Ins : Atlanta, GA	-	1.523	Jan 2022	-		-		-		-	Continuing	Continuing	-
E-3 Command and Control, Intelligence, Surveillance, and Reconnaissance (C2ISR) Follow on Studies and Analysis	SS/CPFF	Boeing : Oklahoma City, OK	-	8.289	May 2022	-		-		-		-	Continuing	Continuing	-
E-3 Command and Control, Intelligence, Surveillance and Reconnaissance (C2ISR) Software Engineering Institute (SEI)	SS/CPFF	SEI : Pittsburgh, PA	-	1.703	May 2022	-		-		-		-	Continuing	Continuing	-
E-3 Combat Identification (CID) Diminishing Manufacturing Sources (DMS) Prototype Development	MIPR	DMEA : McClellan, CA	-	2.109	Jun 2022	-		-		-		-	Continuing	Continuing	-
E-3 Combat Identification (CID) Diminishing Manufacturing Sources (DMS) Software and Sub-System Level Development	SS/CPFF	Raytheon : Fort Wayne, IN	-	18.240	Jan 2022	-		-		-		-	Continuing	Continuing	-
E-3 Combat Identification (CID) Diminishing Manufacturing Sources	Various	76 SWES : Tinker AFB, OK	-	0.261	Jan 2022	-		-		-		-	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force **Date:** March 2023

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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
(SMS) Software Development															
E-3 Communication Network Upgrade (CNU)	Various	Space & Naval Warfare Sys : San Diego, CA	-	2.500	Jun 2022	-		-		-		-	Continuing	Continuing	-
E-3 Communication Network Upgrade (CNU) GTRI	Various	Georgia Tech Research Ins : Atlanta, GA	-	32.282	May 2023	-		-		-		-	Continuing	Continuing	-
E-3 Communication Network Upgrade (CNU) Software Development	Various	76 SWES : Tinker AFB, OK	-	3.814	Jan 2022	0.980	Oct 2023	-		-		-	Continuing	Continuing	-
ACIP Rapid Prototyping Alpha Phase	SS/CPFF	BAH : Lexington, MA	-	32.214	Aug 2022	6.627	Jun 2023	-		-		-	Continuing	Continuing	-
ACIP Rapid Prototyping Gov't Furnished Equipment (GFE)	MIPR	Various : TBD	-	1.609	Apr 2022	-		-		-		-	Continuing	Continuing	-
ACIP Rapid Prototyping Risk Reduction Studies and Analysis	MIPR	Various : TBD	-	1.040	Mar 2023	-		-		-		-	Continuing	Continuing	-
ACIP Rapid Prototyping Software Development	PO	76 SWES : Tinker AFB, OK	-	2.299	Mar 2023	-		-		-		-	Continuing	Continuing	-
E-3 Replacement Rapid Prototyping	SS/CPIF	The Boeing Company : Tukwila, OK	-	11.759	Feb 2023	-		-		-		-	Continuing	Continuing	-
Subtotal			-	131.422		7.607		-		-		-	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
E-3 Training, Support & Infrastructure (TSI) Systems AITS II	C/Various	Boeing : Oklahoma City, OK	-	3.481	Apr 2022	1.413	Dec 2023	-		-		-	Continuing	Continuing	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force			Date: March 2023
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	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AWACS PE 0207417F																												
TSI																												
C2ISR																												
CID DMS Alpha Phase																												
CNU Development																												
ACIP Risk Reduction																												
ACIP Prototyping																												
E-3 Replacement Prototyping																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207417F / Airborne Warning and Control System (AWACS)	Project (Number/Name) 67411L / Airborne Warning & Control System (AWACS)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AWACS PE 0207417F				
TSI	1	2022	1	2025
C2ISR	1	2022	4	2023
CID DMS Alpha Phase	1	2022	2	2022
CNU Development	1	2022	4	2024
ACIP Risk Reduction	1	2022	4	2022
ACIP Prototyping	4	2022	1	2025
E-3 Replacement Prototyping	2	2023	2	2028

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