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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 / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0207171F / <i>F-15 EPAWSS</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	1,005.231	100.232	67.956	13.982	0.000	13.982	0.000	0.000	0.000	0.000	0.000	1,187.401
657108: <i>EPAWSS DEVELOPMENT</i>	1,005.231	100.232	67.956	13.982	0.000	13.982	0.000	0.000	0.000	0.000	0.000	1,187.401
Quantity of RDT&E Articles	8	-	-	-	-	-	-	-	-	-	-	

Program MDAP/MAIS Code: 485

A. Mission Description and Budget Item Justification

The legacy F-15 Tactical Electronic Warfare System (TEWS) is functionally obsolete. It uses 1970's analog technology to combat 1980s-era radar-based ground and air threats. In addition, this aging system is becoming more difficult and expensive to sustain. As a result, the Air Force is replacing TEWS with the F-15 Eagle Passive/Active Warning and Survivability System (EPAWSS). F-15 EPAWSS is an advanced digital electronic warfare system capable of detecting, identifying, locating, denying, degrading, disrupting, and defeating modern and emerging threat systems in contested airspace with dense radio-frequency (RF) background environments. F-15 EPAWSS will provide indication, type, and position of ground-based RF threats as well as the indication, type, and bearing of airborne threats with the situational awareness needed to avoid, engage, or negate the threat. It will also prevent RF threat systems from detecting or acquiring accurate targeting information to complicate and/or negate an enemy threat targeting solution. Finally, EPAWSS will counter RF and infrared threat systems at end-game via electronic countermeasures (jamming), chaff, and/or flares.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY2022 \$2.370M was expended for civilian pay expenses in this program element, and in FY2023 \$0.997M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	112.012	67.956	13.950	0.000	13.950
Current President's Budget	100.232	67.956	13.982	0.000	13.982
Total Adjustments	-11.780	0.000	0.032	0.000	0.032
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-8.500	0.000			
• SBIR/STTR Transfer	-3.280	0.000			
• Other Adjustments	0.000	0.000	0.032	0.000	0.032

Change Summary Explanation

FY22 funding decreased due to SBIR reduction of \$3.280M and a BTR of \$8.5M

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
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Title: Eagle Passive/Active Warning Survivability System (EPAWSS)	100.232	67.956	13.982
Description: Planned replacement of the existing F-15 Tactical Electronic Warfare System (TEWS).			
FY 2023 Plans: Complete software integration, flight test, cybersecurity verifications, and logistics support planning efforts, such as development of Technical Publications. These efforts enable the program to meet the Acquisition Program Baseline Objective for completion of Initial Operational Test & Evaluation. To that end, funds may be used to address operational effectiveness/suitability/survivability anomalies or enhancements identified in developmental testing; conduct studies related to future modernization and technical insertion opportunities; assess new and emerging threat systems, and/or resolve emerging safety of flight issues.			
FY 2024 Plans: Complete EMD and Contractor closeout activities in order to proceed to a full rate production decision. Finalize software integration, resolve remaining performance deficiencies, support laboratory equipment upgrades, incorporate additional technical publications, and complete the development phase of the program. Funds may be used to execute and support cyber testing on aircraft hardware, conduct studies, address emerging threats, and leverage potential system enhancement opportunities that improve pilot situational awareness/overall system effectiveness.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Funding decreased because EPAWSS plans to complete the development phase			
Accomplishments/Planned Programs Subtotals	100.232	67.956	13.982

D. Other Program Funding Summary (\$ in Millions)											
Line Item	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
• APAF 05 Line Item	163.816	259.837	280.658	-	280.658	321.252	234.825	118.415	120.857	0.000	1,499.660
F15EWS: <i>Aircraft Modification</i>											
• APAF 07 Line Item 000999: <i>Aircraft Spares and Repair Parts</i>	28.005	19.796	0.000	-	0.000	13.531	27.947	25.582	29.176	0.000	144.037
• APAF 07 000075: <i>OTHER PRODUCTION CHARGES (OVERVIEW)</i>	24.823	-	11.953	-	11.953	2.037	-	-	-	0.000	38.813

Remarks

E. Acquisition Strategy

F-15 EPAWSS replaces the existing radar warning receiver, internal countermeasure system and countermeasure dispenser system. The F-15 EPAWSS technical approach is to leverage mature and proven hardware to field a critically-needed capability as soon as possible. In addition, the program tailored the Milestone C production decision into two decisions: Decision Point #1 was approved 1 Dec 20, constituting entry into the program's production phase, as well as initiating hardware procurement and modification line stand-up. Decision Point #2, approved on 23 Jun 22, allowed for hardware installation on operational F-15E aircraft and approved the full rate production (FRP) decision criteria. This tailoring provides the Milestone Decision Authority the ability to accelerate Initial Operational Capability by taking long-lead hardware procurement off the program critical path, reducing the schedule impact of kit lead times.

The prime integrator for this program is Boeing, responsible for selecting its suppliers and accountable for full aircraft-level installed performance. The prime integrator has subcontractor support from BAE Systems whose responsibilities include development of the onboard electronic warfare subsystem (hardware and software).

The EPAWSS EMD contract initially employed a mix of contract types, the largest being Cost Plus Incentive Fee (CPIF) for development and testing. In 2020, the program office restructured the EMD contract to Firm Fixed Price.

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS	Project (Number/Name) 657108 / EPAWSS DEVELOPMENT
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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			
F-15 EPAWSS TMRR	SS/ Various	Boeing : St. Louis, MO	233.738	-		-		-		-		-	0.000	233.738	176.450
F-15 EPAWSS EMD	SS/ Various	Boeing : St. Louis, MO	663.030	74.479	Nov 2021	53.182	Jan 2023	13.552	Oct 2023	-		13.552	0.000	804.243	765.308
F-15 EPAWSS	Various	Various : Various	30.958	7.252		4.446		0.430		-		0.430	0.000	43.086	115.854
Subtotal			927.726	81.731		57.628		13.982		-		13.982	0.000	1,081.067	N/A

Remarks
The final line item reference to "various" contract methods and performing activity/location address other government costs for various EMD-specific hardware, equipment modification/installation/shipping efforts, special studies, travel and support personnel that are required to meet program objectives. The specific execution vehicles vary by effort.

Support (\$ 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			
Direct Cite Authority	Allot	Various : Various	2.065	2.370		0.997		-		-		-	0.000	5.432	-
Subtotal			2.065	2.370		0.997		-		-		-	0.000	5.432	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			
Test and Evaluation	Various	Not specified. : TBD	51.680	7.437		0.497		-		-		-	0.000	59.614	-
Government Flight Test	Various	Various : Various	20.681	7.755		8.268		-		-		-	0.000	36.704	72.735
Subtotal			72.361	15.192		8.765		-		-		-	0.000	96.318	N/A

Remarks
The final line item reference to "various" contract methods and performing activity/location addresses other government costs for T&E (both DT&E & IOT&E) specific test equipment/hardware, test event support, test-related special studies, travel and support personnel that are required to meet program objectives. The specific execution vehicles vary by effort.

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

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Management Services (\$ 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			
Program Management Support Costs	Various	Various : Various	3.079	0.939		0.566		-		-		-	0.000	4.584	44.399
Subtotal			3.079	0.939		0.566		-		-		-	0.000	4.584	N/A

Remarks
The final line item reference to "various" contract methods and performing activity/location addresses other government costs for management support of EMD & T&E related activities, creation of special studies documentation, travel, and support personnel that are required to meet program objectives. The execution vehicles vary by effort.

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,005.231	100.232	67.956	13.982	-	13.982	0.000	1,187.401	N/A

Remarks
FINANCIAL PERFORMANCE: F-15 EPAWSS is evaluated against traditional Research and Development (R&D) program expenditure benchmarks. Unlike many traditional R&D programs, however, the F-15 EPAWSS Development contract is a Fixed Price contract with progress payments. 10 percent of incurred costs are withheld until the end of the contract, when they are liquidated. Mandatory funding obligations and progress payment withholds will cause the program to lag traditional expenditure benchmarks, painting an inaccurate portrait of overall program health.

Prior Years funding in FY 2013 and FY 2014 of \$15.100M was executed in PE 0207134F.

Prior Years funding in FY 2015 of \$37.726M was executed in PE 0207171F, Project 676038.

In FY 2016, EPAWSS efforts were transferred from Budget Activity 7, Operational Systems Development, PE 0207171F, Project Number 676038 to Budget Activity 5, Engineering and Manufacturing Development, PE 0207171F, Project Number 657108 per OSD direction.

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force **Date:** March 2023

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS	Project (Number/Name) 657108 / EPAWSS DEVELOPMENT
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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

	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028					
F-15 EPAWSS																														
Hardware Qualification Testing																														
Software Integration																														
Maintenance/Tech Pubs																														
Integrated Test and Evaluation																														
Configuration Audits & System Verification																														
EPAWSS Milestone C - Decision Point 2																														
Initial Operational Test & Evaluation																														
Hardware Test Support Cyber Controls and IT Refresh																														

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force **Date:** March 2023

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207171F / <i>F-15 EPAWSS</i>	Project (Number/Name) 657108 / <i>EPAWSS DEVELOPMENT</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>F-15 EPAWSS</i>				
Hardware Qualification Testing	1	2022	3	2022
Software Integration	1	2022	1	2024
Maintenance/Tech Pubs	1	2022	1	2024
Integrated Test and Evaluation	1	2022	2	2023
Configuration Audits & System Verification	3	2022	1	2024
EPAWSS Milestone C - Decision Point 2	3	2022	3	2022
Initial Operational Test & Evaluation	3	2023	1	2024
Hardware Test Support Cyber Controls and IT Refresh	2	2023	4	2024