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Department of Defense  
OFFICE OF PREPUBLICATION AND SECURITY REVIEW

## **Selected Acquisition Report (SAR)**



# **F-15 Eagle Passive Active Warning Survivability System (F-15 EPAWSS)**

**FY 2024 President's Budget**

**Defense Acquisition Visibility Environment  
(DAVE)**

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## Common Acronyms and Abbreviations

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

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

## Program Information

### Program Name

F-15 Eagle Passive Active Warning Survivability System (F-15 EPAWSS)

### DoD Component

Air Force

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## Responsible Office

### Program Manager (Acting)

**Name:** Jimmy C. Bailey

**Date Assigned:** Acting

**Address:** 235 Byron Street  
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## Mission and Description

### F-15 EPAWSS

The F-15 is a versatile 4th-generation fighter aircraft and is central to Combatant Commanders' ability to fulfill the National Defense Strategy (Joint Lethality in Contested Environments) for numerous operational plans (OPLANS) and contingency plans (CONPLANS) in near-peer conflicts. The proliferation of fourthgeneration enemy aircraft, sophisticated - double-digit - anti-aircraft missile systems, and other threat systems pose a significant threat to F-15 survivability. Therefore, it is necessary to invest in the F-15 platform to ensure it remains viable well into the 21st century. The F-15 Eagle Passive Active Warning and Survivability System (EPAWSS) replaces the legacy, analog, functionally-obsolete F-15 Tactical Electronic Warfare System. F-15 EPAWSS is a 21st century, digital electronic warfare suite which includes electronic detection and identification, geolocation, electronic countermeasures (jamming), and countermeasures dispensing (chaff/flares), providing advanced, game-changing capabilities for the modern fight. Specifically, EPAWSS enables the F-15 to detect, identify, and locate Radio Frequency (RF) threats as well as deny, degrade, deceive, disrupt, and defeat RF and electro-optical / infrared threat systems in contested environments with dense RF backgrounds.

## Executive Summary

### F-15 EPAWSS

#### Program Highlights Since Last Report

The program is using a tailored acquisition strategy that split Milestone C into two decision points, which takes hardware procurement off the critical path and accelerates capability delivery by 16-months. The first decision point (Production Decision) occurred October 2020 and the program formally entered into the production phase in December 2020, awarding the Lot 1 effort for six Electronic Warfare (EW) kits. The program awarded the Lot 2 contract option for 12 EW kits in April 2022. The program completed Milestone C Decision Point #2 (Deployment Decision) in June 2022. This approval authorized LRIP hardware installations on up to 43 aircraft, and the program inducted the first two aircraft for the EPAWSS modifications in June/July 2022.

In January 2022, the acting Service Acquisition Executive signed an Acquisition Decision Memorandum formally approving the program to mitigate Diminishing Manufacturing Sources and Materiel Shortages (DMSMS) parts-obsolescence issues for the duration of EPAWSS production. The program is now in a position to protect future EPAWSS production in support of F-15EX and F-15E for both Low-Rate and Full-Rate Production. The program also completed a Maintenance Demonstration and review of the Time Compliance Technical Order; there are no showstoppers and the program is addressing minor issues. The overarching product support package in support of Initial Operational Capability is on-schedule.

In February 2022, the program team completed the final planned test event at the Air Force Research Lab Integrated Demonstrations and Applications Laboratory (AFRL IDAL) at Wright-Patterson AFB. The results of this important test demonstrated EPAWSS meets all CDD requirements in a dense signal environment. Additionally, aircrew have seen a significant reduction in display clutter over the last several software iterations. As a result, the program, with concurrence from Developmental Testing/Operational Testing (DT/OT) and Air Combat Command (ACC), closed the mis-identification operational-effectiveness issue. Also in February 2022, Boeing delivered the final software package containing new functional content, which demonstrated outstanding performance in flight test missions.

In May 2022, BAE Systems completed qualification of the EPAWSS hardware, albeit there are some deficiencies that pose a medium airworthiness (cost) risk in the rare occurrence of a lightning event. The Program Manager has the authority to accept this risk and will do so once the report is finalized and the program begins Functional Configuration and Physical Configuration Audits expected ~June 2023. Finally, in December 2022, Boeing delivered the final software build, EPAWSS Flight Bundle (EFB) 9P, to flight test. The program remains on-track to start Initial Operational Test and Evaluation (IOT&E) in April 2023, in accordance with the Acquisition Program Baseline (APB) Objective date.

#### Significant Issues:

The FY 2024 President's Budget (PB) force structure decision decreases the F-15E EPAWSS procurement quantity by 118 (from 217 to 99), while setting the F-15 EX quantities at 104 (includes 2 aircraft under pending Above Threshold Reprogramming (ATR)). Due to the sunk cost of Development (\$750M), this overall quantity reduction drives significant increases in unit cost. In accordance with 10 U.S.C §4371-4377, this report serves as formal notification of a Significant Nunn-McCurdy breach for F-15 EPAWSS. The program will submit a separate Notification Letter to initiate formal Congressional notification.

Based on the September 2022 Program Office Estimate, the program faces an \$85.8M procurement disconnect in FY 2024-FY 2025. These shortfalls will slow kit buys/installs, impact sparing required for fielding/IOC, and delay standup of the organic depot capability beyond the statutory requirement (IOC +4 years).

Previous cost overruns and schedule delays in the development program drove the Air Force to restructure the EMD contract from cost-type to firm-fixed-price in August 2020, which reduced monthly billings significantly starting in FY 2021. The program offered \$52M in FY 2021 RDT&E as an FY 2021 Omnibus source, which SASC denied. The Air Force removed \$52M in FY 2023 Research, Development, Test and Evaluation (RDT&E) (INV-011), which corrected the total program budget.

The program is actively mitigating and/or monitoring the following key risks: Diminishing Manufacturing Sources and Material Shortages; funding instability; ability to meet manufacturing commitments; incorporation of aircraft modifications into F-15 Programmed Depot Maintenance; and software performance during flight test.

There are no significant software-related issues with this program at this time.

History of Significant Developments Since Program Initiation	
History of Significant Developments Since Program Initiation	
Date	Significant Development Description
Jan - 2023	Exercised MS Windows IT Upgrade Option CLIN on LRIP Contract.
Dec - 2022	Awarded fifth Diminishing Manufacturing Sources and Material Shortages (DMSMS) contract.
Dec - 2022	Completed EFB 9P Performance Qualification Testing.
Dec - 2022	Completed MRAP-C at Nellis, AFB.
Dec - 2022	Delivered EFB 9P to Flight Test.
Nov - 2022	Completed all MS-C Documentation.
Nov - 2022	Completed SVR#2 Phase 1 Event.
Oct - 2022	Awarded fourth Diminishing Manufacturing Sources and Material Shortages (DMSMS) contract.
Oct - 2022	Provided EPAWSS Academics to Nellis AFB Ops/Mnx.
Sep - 2022	Awarded \$1.4M Over and Above (O&A) contract modification.
Sep - 2022	Awarded third Diminishing Manufacturing Sources and Material Shortages (DMSMS) contract.
Sep - 2022	Delivered updated preliminary flight publications.
Sep - 2022	Participated in Black Flag exercise.
Aug - 2022	USAF force structure decision decreased the F-15E procurement quantity by 118 (from 217 to 99) in the FY24 BES (new total program quantity 167).
Jul - 2022	Inducted 2nd LRIP aircraft into San Antonio contractor modification facility.
Jun - 2022	Awarded LRIP Lot 2 contract option (17 EW kits).
Jun - 2022	Awarded second Diminishing Manufacturing Sources and Material Shortages (DMSMS) contract.
Jun - 2022	Completed 4th (final) Cyber Vulnerability Test.
Jun - 2022	Completed 4th (final) Pt. Mugu Ground Test.
Jun - 2022	Inducted 1st LRIP aircraft into San Antonio contractor modification facility.
Jun - 2022	USAF SAE signed MS-C DP-2 (Deployment Decision) ADM.
Apr - 2022	USAF force structure decision decreased the F-15EX procurement quantity by 64 (from 144 to 80) in the FY23 PB (new total program quantity 299).
Feb - 2022	Delivered final mission system software containing new functional content.
Jan - 2022	Completed 6th (final) test at Air Force Research Lab Integrated Demonstrations & Applications Laboratory.
Sep - 2021	Definitized Low-Rate Initial-Production (LRIP) Contract.
Aug - 2021	Completed 3rd (final) installed-system test at Benefield Anechoic Chamber (BAF).



Date	Significant Development Description
Aug - 2021	Completed modification of 8th and final developmental test aircraft.
May - 2021	Participated in NORTHERN EDGE 2021 Operationally-focused Large Force Exercise.
Apr - 2021	Completed modification and first flight of 7th developmental test aircraft.
Feb - 2021	USAF SAE approved the Production Acquisition Program Baseline (APB).
Dec - 2020	Awarded LRIP Undefined Contract Action.
Dec - 2020	USAF SAE signed Milestone C-Decision Point 1 (Production Decision) ADM, program formally entered into Production Phase.
Aug - 2020	Restructured development contract from cost-type to firm-fixed-price.
Jun - 2020	Completed modification and first flight of 6th developmental test aircraft.
Mar - 2020	Completed modification and first flight of 5th developmental test aircraft.
Feb - 2020	Completed modification and first flight of 4th developmental test aircraft.
Jan - 2020	Provided program deviation report for schedule breach (IOT&E Start; Full Rate Production Decision; and F-15E and F-15C Required Assets Available).
Jan - 2020	USAF SAE added 144 F-15EX to APB (new total program quantity 363).
Nov - 2019	Completed modification and first flight of 3rd developmental test aircraft.
Sep - 2019	Completed modification and first flight of 2nd developmental test aircraft.
Apr - 2019	Completed modification and first flight of 1st developmental test aircraft.
Apr - 2019	Conducted 1st installed-system (interoperability) test at BAF.
Apr - 2019	Provided a Program Deviation Report for Significant Nunn-McCurdy Breach for Program Acquisition Unit Cost.
Jun - 2017	USAF force structure decision removed 194 F-15C models from APB (new total quantity 219).
Feb - 2017	Completed Critical Design Review.
Dec - 2016	Completed Milestone B.
Nov - 2016	Awarded Development Contract.
Nov - 2016	USD(AT&L) approved the original APB (217 F-15E and 196 F-15C, total quantity 413).
Jul - 2016	Completed Preliminary Design Review.
Aug - 2015	USD(AT&L) approved Milestone A.

## Schedule

### F-15 EPAWSS

Events	Milestone Baseline Objective	Current Baseline Objective/Threshold		Current Estimate/Actual	Deviation
Milestone A	Aug 2015	Aug 2015	Aug 2015	Aug 2015	
Preliminary Design Review	Jul 2016	Jul 2016	Jul 2016	Jul 2016	
Milestone B	Nov 2016	Nov 2016	Nov 2016	Nov 2016	
Critical Design Review	Feb 2017	Feb 2017	Feb 2017	Feb 2017	
Milestone C Decision Point #1	Dec 2020	Dec 2020	Dec 2020	Dec 2020	
Milestone C Decision Point #2	May 2022	May 2022	Nov 2022	Jun 2022	
IOT&E Start	Apr 2023	Apr 2023	Oct 2023	Apr 2023	
Full Rate Production Decision	Apr 2024	Apr 2024	Oct 2024	Apr 2024	
F-15E RAA	Apr 2025	Apr 2025	Oct 2025	Apr 2025	

#### Schedule Note

Conducted Milestone B briefing on September 23, 2016; Milestone Decision Authority (MDA) signed Acquisition Decision Memorandum (ADM) on November 2, 2016.

The MDA approved an updated Acquisition Strategy in September 2018, directing the program to use two decision points in-lieu of a single Milestone C decision:

- Decision Point #1 (October 2020) was the formal Production Decision and constituted the statutory Milestone C event - authorized entry into the production phase and award of the LRIP contract. The MDA signed the ADM on December 1, 2020.
- Milestone C Decision Point #2 (June 2022) was the Deployment Decision and authorized the start of LRIP installations on operational F-15E aircraft. The MDA signed the ADM on June 23, 2022.

F-15C RAA is not applicable due to USAF FY 2018 PB force structure decision to remove F-15C models from the program baseline.

At the June 2022 AFROC, the F-15E RAA was adjusted from 24 to 12 EPAWSS-modified F-15E aircraft at a single location along with delivery of training equipment and material, support equipment, spares, technical data, and mission planning/Mission Data File Generation software.

## Performance

### F-15 EPAWSS

Performance Characteristics					
Milestone Baseline	Current Baseline Objective/Threshold	Demonstrated Performance		Current Estimate/Actual	Deviation
<b>(KPP) - Sustainment (Ao and Am)</b>					
Ao = 99% Am = 90%	Ao = 99% Am = 90%	Ao = 97% Am = 88%	Ao = 97% Am = 90%	Ao = 99% Am = 90%	

#### Requirement Reference

CDD dated September 18, 2014

#### Performance Note

CSAF approved updated Capabilities Development Document on June 27, 2022.

## Acquisition Budget Estimate

### F-15 EPAWSS

#### Total Acquisition Cost

		Milestone APB	Current Baseline		Budget Estimate PB 2024		
Category	Base Year	Objective (BY\$M)	Objective (BY\$M)	Threshold (BY\$M)	BY\$M	TY\$M	Deviation
RDT&E	2016	1,236	1,236	1,359.6	1,097.9	1,190.4	
Procurement	2016	3,314.1	3,314.1	3,645.5	1,856	2,384.7	
MILCON	2016	0	0	0			
Acq. O&M	2016	0	0	0			
<b>Total</b>		<b>4,550.1</b>	<b>4,550.1</b>		<b>2,953.9</b>	<b>3,575.1</b>	
PAUC	2016	12.535	12.535	13.382	14.339	17.355	
APUC	2016	9.180	9.180	10.120	9.143	11.747	

#### Budget Note

##### Budget Estimate Note:

- FY 2024 President's Budget (PB) RDT&E includes actuals, FY 2023 appropriated, and FY 2024 forecasted development costs for the F-15 EPAWSS program of record (based on 2022 F-15 EPAWSS Program Office Estimate (POE) finalized in September 2022).
- FY 2024 PB Procurement data above includes historical actuals, FY 2023 appropriated, FY 2024- complete forecasted procurement costs (based on 2022 F-15 EPAWSS POE finalized in September 2022). It also includes F-15EX EPAWSS A-kit costs, F-15EX EPAWSS B-kit costs and Air Force directed cost factors.
- The Procurement values used in the PAUC and APUC calculation include F-15E EPAWSS Procurement, F-15EX EPAWSS A-kit costs, F-15EX EPAWSS B-kit costs and Air Force directed cost factors associated with the F-15E procurement quantity (99) and F-15EX EPAWSS procurement quantity (104).

##### Baseline Note:

- Original APB RDT&E includes development costs for the F-15 EPAWSS program of record.
- Original APB Procurement includes F-15 EPAWSS electronic warfare A-kits, B-kits, installation, and support equipment for 217 F-15E and 196 F-15C aircraft (413 total).
- Current Production APB includes development costs for the F-15 EPAWSS program of record.
- Current APB Procurement APB includes F-15 EPAWSS electronic warfare A-kits, B-kits, installation, and support equipment for 217 F-15E aircraft and F-15 EPAWSS A-kits, B-kits, and Air Force directed cost factors for 144 F-15EX aircraft (361 total).
- 2ea F-15C models modified for developmental test (prior to AF force structure decision to remove F-15C models from the program baseline) will not be upgraded to the final F-15 EPAWSS production configuration.

***Total End Item Quantity***

Quantity Category	Current APB Quantity	Current Estimate Quantity
Development	2	3
Procurement	361	203
O&M-Acquired	--	--

**Quantity Note**

The current APB Procurement quantity of 361 includes 217 F-15E and 144 F-15EX aircraft. The two listed under Development are F-15C models that will not be upgraded to the final EPAWSS production configuration. The FY 2023 PB request reduced F-15EX procurement quantity from 144 to 80 and then the FY 2024 PB increased the F-15EX quantity to 104. The F-15EX quantity of 104 assumes Congressional approval of a \$145M pending ATR to enable the procurement of two aircraft. The FY 2024 PB includes a reduction of the F-15E procurement quantity from 217 to 99 (EPAWSS will only be installed on F-15Es with P&W -229 engines). The Current Estimate procurement quantity reflected in the above table includes 99 F-15E and 104 F-15EX aircraft. Five of six E-model test aircraft have P&W -229 engines and will upgrade to the final production configuration, so one will not receive further upgrades; that E-model, along with the two C-model test aircraft, bring the total Development aircraft to three.

## Unit Cost

### F-15 EPAWSS

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Category (\$M) Base Year: 2016	Current UCR Baseline	Current Estimate	% Change
<b>Program Acquisition Unit Cost</b>			
Cost	4,550.1	2,953.9	
Quantity	363	206	
Unit Cost	12.535	14.339	14.39%
<b>Average Procurement Unit Cost</b>			
Cost	3,314.1	1,856.0	
Quantity	361	203	
Unit Cost	9.180	9.143	-0.40%

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Category (\$M) Base Year: 2016	Original UCR Baseline	Current Estimate	% Change
<b>Program Acquisition Unit Cost</b>			
Cost	4,251.5	2,953.9	
Quantity	413	206	Significant
Unit Cost	10.294	14.339	39.30%
<b>Average Procurement Unit Cost</b>			
Cost	3,375.0	1,856.0	
Quantity	413	203	
Unit Cost	8.172	9.143	11.88%

### Cost Growth Details

#### Original Baseline PAUC Breach Explanation

The reduction of the F-15E EPAWSS procurement quantity from 217 to 99 in the FY 2024 PB, coupled with an F-15EX procurement quantity of 104 (original baseline 144), causes a Significant Nunn-McCurdy breach based on the September 2022 Program Office Estimate.

#### Impacts of Schedule Changes on Unit Cost

The Significant Nunn-McCurdy Breach has no impact to the EPAWSS program schedule.

#### Impacts of Performance Changes on Unit Cost

The Significant Nunn-McCurdy Breach has no impact to the EPAWSS program performance.

#### Actions Taken or Proposed to Control Future Cost Growth

Upon awarding the development (EMD) contract in CY 2016, Boeing and BAE Systems agreed to a Firm Fixed Price Competitive Pricing Arrangement that established pricing for the entirety of EPAWSS Group B hardware production (originally F-15C and F-15E, but now applies to F-15E and F-15EX). Additionally, as a result of cost overruns early in the development program, in FY 2020 the Air Force Service Acquisition Executive directed the program to restructure the EMD contract from cost-type to Firm Fixed Price (completed August 20, 2020). As a result of these two initiatives, the program has experienced nominal true cost growth since CY 2019. The Significant Nunn-McCurdy breach is driven by the reduction in overall procurement quantity for F-15E and F-15EX.

<b>Unit Cost Note</b>
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**Current Baseline Compared with Current Estimate**

- There was a reduction of the F-15E EPAWSS procurement quantity from 217 to 99, and the F-15EX procurement quantity of 104 (original baseline 144).
- The current APB PAUC calculation = (F-15E & F-15C EPAWSS RDT&E + F-15E EPAWSS Procurement + F-15EX EPAWSS A-Kit costs + F-15EX EPAWSS B-Kit costs + cost factors) / (F-15C RDT&E quantity (2) + F-15E procurement quantity (217) + F-15EX procurement quantity (144) (363 total))
- The current APB APUC calculation = (F-15E EPAWSS procurement costs + F-15EX EPAWSS A-Kit costs + F-15EX EPAWSS B-Kit costs + cost factors) / (F-15E procurement quantity (217) + F-15EX procurement quantity (144) (361 total))
- Current Estimate PAUC calculation = (F-15E & F-15C EPAWSS RDT&E + F-15E EPAWSS Procurement + F-15EX EPAWSS A-kit costs + F-15EX EPAWSS B-kit costs + cost factors) / (F-15C/E RDT&E quantity (3) + F-15E procurement quantity (99) + F-15EX procurement quantity (104) (206 total))
- Current Estimate APUC calculation = (F-15E EPAWSS procurement costs + F-15EX EPAWSS A-kit costs + F-15EX EPAWSS B-kit costs + cost factors) / (F-15E procurement quantity (99) + F-15EX procurement quantity (104) (203 total))

**Original Baseline Compared with Current Estimate**

- The reduction of the F-15E EPAWSS procurement quantity from 217 to 99, coupled with an F-15EX procurement quantity of 104 (original baseline 144), causes a Significant Nunn-McCurdy breach based on the September 2022 Program Office Estimate.
- Original APB PAUC calculation = (F-15C & F-15E EPAWSS RDT&E + F-15C & F-15E EPAWSS Procurement) / (F-15C quantity (196) + F-15E quantity (217) (413 total))
- Original APB APUC calculation = (F-15C EPAWSS procurement costs + F-15E EPAWSS procurement costs) / (F-15C quantity (196) + F-15E quantity (217) (413 total))
- Current Estimate PAUC calculation = (F-15E & F-15C EPAWSS RDT&E + F-15E EPAWSS Procurement + F-15EX EPAWSS A-kit costs + F-15EX EPAWSS B-kit costs + cost factors) / (F-15C/E RDT&E quantity (3) + F-15E procurement quantity (99) + F-15EX procurement quantity (104) (206 total))
- Current Estimate APUC calculation = (F-15E EPAWSS procurement costs + F-15EX EPAWSS A-kit costs + F-15EX EPAWSS B-kit costs + cost factors) / (F-15E procurement quantity (99) + F-15EX procurement quantity (104) (203 total))

***Risk and Sensitivity Analysis*****Risk and Sensitivity Analysis****Current Procurement Cost (December - 2022)**

1. If the program is unsuccessful in ongoing mitigations for Diminishing Manufacturing Sources & Material Shortages or the number/frequency of obsolescence issues becomes unmanageable, there may be insufficient hardware for production, resulting in delayed RAA/IOC.
2. If the electronic warfare kit supplier is unable to meet the production schedule due to commitments across multiple defense programs and supplier constraints, the aircraft modification schedule and IOC may be delayed.

**Original Baseline Estimate (November - 2016)**

1. The EPAWSS Original Baseline was set by the MDA in a November 2, 2016 ADM approving Milestone B. The CAPE review of the cost estimates prepared for the F-15 EPAWSS Milestone B review dated September 26, 2016 noted the Air Force conducted an analysis of the program staffing levels over time compared to similar electronic warfare systems. CAPE concluded the staffing levels are reasonable and achievable. To assess the reasonableness of the SCP and the ICE, CAPE reviewed the technical and cost data collected from Boeing and BAE Systems in support of the Milestone B decision. F-15 Saudi Arabia DEWS, from which EPAWSS heavily leverages, shares 87% of the software, 76% of the firmware, and 81% of the hardware with EPAWSS. CAPE noted the DEWS leverage reduces the overall risk for development and procurement and provides a reasonable analogy for cost estimating.

***Significant Schedule Risks*****Significant Schedule Risks****Current Estimate (December - 2022)**

1. 1. If F-15 Programmed Depot Maintenance at Robins AFB is unable to incorporate the EPAWSS modifications starting mid-way through low-rate initial production, THEN the program will experience significant cost growth, negatively impact F-15 aircraft availability, and delay FOC.
2. If the AF does not fund FY 2024-2025 procurement disconnects, THEN the program will be forced to "buy-to-budget" in those years, driving an overall program delay to Full Operational Capability (FOC) and cost increase.
3. If the electronic warfare kit supplier is unable to meet EPAWSS manufacturing expectations due to commitments across multiple defense programs and/or challenges with suppliers, THEN the aircraft modification schedule and IOC may be delayed.
4. If the program is unsuccessful in ongoing mitigations for DMS, the number/frequency of DMS issues becomes unmanageable, or the program fails to award a purchase order on-time, THEN there may be insufficient hardware for production, resulting in delayed IOC.
5. If the system experiences performance shortfalls during final developmental flight testing, THEN the program may be unable to start Initial Operational Test & Evaluation (IOT&E) on-time in April 2023.

***Technologies and Systems Engineering*****Significant Technical Risks****Current Estimate (December - 2022)**

If the electronic warfare kit supplier discovers significant hardware issues during remaining hardware qualification testing, retrofits may be required in the production program, driving cost increases. (Note -qualification testing is complete. The program expects to retire this risk with delivery of the final qualification report, completion of the Functional/Physical Configuration Audits, and System Verification Review #2 in July 2022.



## Low Rate Initial Production

### F-15 EPAWSS

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	12/01/2020	12/01/2020
Approved Quantity	43	43
Reference	Acq. Decision Memo	Acq. Decision Memo
Start Year	2020	2020
End Year	2026	2026

#### Rationale if quantity exceeds 10% of the total number of articles to be procured:

The Current Total LRIP Quantity is more than 10% of the total production quantity in order to meet IOC requirement of 24 aircraft (based on original 2014 CDD) while providing spares and continued production until the FRP Decision.

**Contracts & Efforts**

Contract Data	
Contract Number	FA8634-17-C-2650
Effort Number	
Modification Number	P00073
Award Date	11/03/2016
Definitization Date	12/16/2016
Order Number	
CAGE Code/CAGE Legal Name	76301/The Boeing Company
Contract Title	EPAWSS EMD
Contract Address	WPAFB, OH
Contracting Office	
Supported Phase	Development
Contract Strategy	
Contract Type	Firm-Fixed-Price
Modification Date	December 01, 2022
Work Start Date	
Technical Data Rights	
Work Completed	

**Contracts/Effort Price, Quantity, and Performance (TY\$M)**

Initial Target Price	Current Target Price	
\$619.5	\$666.5	
Initial Ceiling Price	Current Ceiling Price	
\$619.5	\$666.5	
Contractor EAC	PM EAC	
\$609.2	\$648.6	
Initial Quantity	Current Quantity	Delivered Quantity
8	8	8

**Contract Note:**

Initial Target Price reflects contract restructure P00043. EMD contract converted to mostly FFP on August 28, 2020. Cost and Schedule Variance reporting is not required for this FFP type contract.

Contract Data	
Contract Number	FA8634-21-C-2702
Effort Number	
Modification Number	P00028
Award Date	12/16/2020
Definitization Date	09/28/2021
Order Number	
CAGE Code/CAGE Legal Name	76301/The Boeing Company
Contract Title	EPAWSS LRIP
Contract Address	St. Louis, MO
Contracting Office	AFLCMC/WAQ
Supported Phase	Production
Contract Strategy	
Contract Type	Cost-Plus-Incentive-Fee
Modification Date	January 10, 2023
Work Start Date	December 16, 2020
Technical Data Rights	Unlimited Rights to Technical Data--Noncommercial Items & Software
Work Completed	37.63%

Contracts/Effort Price, Quantity, and Performance (TY\$M)		
Initial Target Price	Current Target Price	
\$276.5	\$333.6	
Initial Ceiling Price	Current Ceiling Price	
\$276.5	\$333.6	
Contractor EAC	PM EAC	
\$319.1	\$329.2	
Initial Quantity	Current Quantity	Delivered Quantity
45	43	0
BAC	BCWP	ACWP
\$319.2	\$120.1	\$122

BCWS	Cost Variance	Schedule Variance
\$123.2	-\$1.9	-\$3.1

**Contract Note:**

The LRIP contract is approximately 1/3 CPFF, 1/3 FFP, and 1/3 FPIF contract types. The total negotiated contract price including all options is \$954.8M of which \$547.9M is awarded. The FFP CLINs do not have an EVM requirement.

**Factors Contributing to Cost Variance:**

At the end of January 2023, the Cumulative Cost Variance is .985 (-\$1,843K), driven by the top three variances of CLIN 1009 San Antonio Cert/ Ver Bulk (-\$2,400K), CLIN 5022 BAE ICS CY22 (+\$1,220K), and CLIN 0022 BAE SEPM (+\$1,208K).

**Factors Contributing to Schedule Variance:**

At the end of January 2023, the Cumulative Schedule Variance is .975 (-\$3,066K), and the top three variances were CLIN 5027 BAE ICS Repair Line Standup (-\$3,908K), CLIN 0037 BAE DMS Redesigns (-\$820K), and CLIN 4002 Full Mod Line Standup Material (+\$2,188K).

## Deliveries and Expenditures

### F-15 EPAWSS

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	3	3	3	100.00%
Production	0	0	203	0.00%
Total Program Quantity Delivered	3	3	206	1.46%

### Expended and Appropriated (TY \$M)

Years Appropriated to date: 8

Total Years Appropriated Funding (Current Baseline): 13

Percent Years Appropriated: 61.54%

Then-Year Funding Appropriated as Percentage of Total Acquisition Estimate: 45.61%

Then-Year Funding Expended as Percentage of Total Acquisition Estimate: 25.09%

Total Acquisition Cost: \$3,575.1

### F gk&gt lgu'c pf 'Gzr gpf kw t gu'P qvg

Procurement quantity includes five Development aircraft that will receive Production level configuration/upgrade at the end of the Production phase.

## Operating and Support Costs

### F-15 EPAWSS

#### *O&S Cost Breakdown:*

Category (BY2016\$ Million)	F-15 EPAWSS
Unit-Level Manpower	\$0.0
Unit Operations	\$0.0
Maintenance	\$292.8
Sustaining Support	26.7
Continued System Improvements	\$53.9
Other	\$447.6
<b>Total</b>	<b>\$821.0</b>

**Cost Estimate Source:** POE dated September 28, 2022

**O&S Cost Notes:** Based on 2022 Program Office Estimate

Total Program O&S Cost Compared with Baseline					
	Current Baseline				
Base Year: 2016	Objective (BY\$M)	Threshold (BY\$M)	Current Estimate (BY\$M)	Current Estimate (TY\$M)	Deviation
<b>Total O&amp;S</b>	\$1,312.8	\$1,444.1	\$821.0	\$14,949.9	

**Note:** Then Year Cost estimate is \$1510.6M. The APB estimate is based on 217 F-15E and 144 F-15EX. The current estimate is based on 99 F-15E and 104 F-15 EX - calculated by apportioning 2022 Program Office Estimate to reflect revised quantities for both F-15E and F-15 EX (assumes life-cycle remains unchanged). The longer F-15EX lifecycle drives greater growth between BY and TY.

***Operating and Support Costs - Disposal and Unitized Costs*****F-15 EPAWSS****Annual Unitized O&S Cost Definition and Calculation Relative to Total O&S Cost:**

Sustainment Factors	System Name: F-15 EPAWSS	Antecedent System Name: F-15 TEWS
Quantity to Sustain	203	
Unit of Measure	Aircraft	
Unit Expected Service Life	40	

**Base Year: 2016**

Annual Unitized O&S Cost by Category Base Year \$ Unit:(\$M)	System Name: F-15 EPAWSS	Antecedent System Name: F-15 TEWS
Unit-Level Manpower	\$0.0	
Unit Operations	\$0.0	
Maintenance	\$0.036	
Sustaining Support	\$0.003	
Continued System Improvements	\$0.007	
Other	\$0.055	
Total O&S	\$0.101	\$0.0

**Disposal/Demilitarization Cost Estimate**

(BY2016\$M)	System Name: F-15 EPAWSS	Antecedent System Name: F-15 TEWS
Total Disposal	\$0.0	

Cost Estimate Source - Disposal	
Type:	Program Office Estimate
Approval Authority and Date:	AFLCMC/FZC 09/29/2022
Note:	
None	
Disposal Cost Note:	
No additional disposal cost apart from the F-15 aircraft.	
Additional O&S Estimate Assumptions:	
The "Other" category accounts for 104 F-15 EX aircraft.	

Sustainment Strategy:

EPAWSS will employ a two-level maintenance concept - organic at both the Organizational Level (O-Level) and the Depot Level (D-Level). EPAWSS contractors will provide Interim Contractor Support (ICS) until the Government transitions to an organic capability, anticipated at IOC plus 4 years. During ICS, the contractor will perform all required D-level repairs on the system; provide Field Service Representatives to support O-Level repairs; interim supply support; and product support integrator activities. Additionally, during LRIP, the contractor will provide initial O-level training on how to operate, maintain and support EPAWSS-equipped aircraft.

Antecedent Estimate Assumptions:

None