

CLEARED
For Open Publication

May 08, 2023

Department of Defense
OFFICE OF PREPUBLICATION AND SECURITY REVIEW

Selected Acquisition Report (SAR)



Joint Precision Approach and Landing System (JPALS)

FY 2024 President's Budget

**Defense Acquisition Visibility Environment
(DAVE)**

Table of Contents

Acronyms and Abbreviations 3

Program Information 5

Responsible Office 5

Mission and Description 6

Executive Summary 7

Schedule 9

Performance 11

Acquisition Budget Estimate 13

Unit Cost 15

Risks 16

Low Rate Initial Production 17

Contracts 18

Deliveries and Expenditures 21

Operating and Support Costs 22

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

Joint Precision Approach and Landing System

DoD Component

Navy

Responsible Office

Program Manager

Name: CAPT Kevin Watkins

Phone: (301) 863-0022

Email: kevin.j.watkins.mil@us.navy.mil

Mission and Description

Joint Precision Approach and Landing System (JPALS), in conjunction with the F-35B/C Joint Strike Fighter program, will provide precision guidance in support of coupled flight to 200 feet height above touchdown for the F-35B to Amphibious Assault (LH) type ships and precision guidance in support of auto-land for the F-35C and MQ-25A Unmanned Aerial Vehicle to Nuclear Aircraft Carriers (CVN). JPALS will also support the F-35B/C and MQ-25A interim Precision Approach and Landing Capability (PALC). When delivered, the JPALS program will secure the minimum acceptable capability to support the military requirement and safeguard the future PALC requirements of any JPALS-equipped aircraft (e.g., F-35B/C and MQ-25A) during operations at sea in virtually any weather condition within platform limitations. These enhancements will support the Joint Force Commander's (JFC's) vital sea-based combat capabilities across a broad range of military operations in an uncertain future. JPALS is a Global Positioning System-based precision approach and landing system that will function in more operational environments, and support all DoD sea-based applications. The National Defense Strategy of the United States of America calls for highly mobile forces that can rapidly respond to crises worldwide. Success in meeting this challenge requires the ability to land aviation assets virtually anywhere, at any time. JPALS will provide this capability by being rapidly deployable, survivable, and interoperable with U.S. allies. JPALS will support manned and unmanned aircraft and will be able to operate during restricted emission control conditions.

Executive Summary

JPALS

Program Highlights Since Last Report

This is the last report for the JPALS program. The JPALS Block 1 EMD contract, awarded in September 2016, procured four Engineering Development Model (EDM) units. Of the four EDM units, one was delivered to PMA-268 for MQ-25A support, one was delivered to the Italian Navy and is installed onboard ITS Cavour (C 550) and two will be sold to the UK for installation onboard United Kingdom's (UK) Her Majesty's Ship (HMS) Queen Elizabeth (R08) and HMS Prince of Wales (R09). Eight EDM units were procured previously under the initial INC 1A JPALS contract with Raytheon, which were used to support a JPALS Block 0 Early Operational Capability in support of initial F-35B deployments aboard United States Navy Landing Helicopter ships, or were updated to serve as Block 1 EDMs for support of JPALS Block 1 Developmental Testing. The U.S. Government temporarily installed a JPALS EDM unit onboard the HMS Queen Elizabeth, to support U.S. Marine Corps/UK Carrier Strike Group (CSG) 21 F-35B embedded deployment. Because of the interoperability provided by JPALS, F-35B squadrons from both the U.S. and UK were able to conduct cross-deck operations on HMS Queen Elizabeth demonstrating for the first time this important allied capability. The JPALS Block 1 LRIP contract, awarded in May 2019, procured the entire inventory objective of 23 units. A modification to the LRIP contract, awarded in May 2020, added interim sustainment efforts to provide JPALS system support, pending the standup of organic Government sustainment at the Material Support Date in FY 2023. The fire aboard LHD-6 and subsequent decommissioning reduced the total number of required JPALS units by one. In September 2020, the United States Ship (USS) Carl Vinson (CVN 70) received the first JPALS Block 1 LRIP installation and the JPALS Block 1 one-way Ultra High Frequency Data Broadcast capability completed precision approach and landing capability certification in November 2020. In February 2021 Commander, Operational Test and Evaluation Force (COMOPTEVFOR) completed JPALS Block 1 Initial Operational Test and Evaluation (IOT&E) testing for CVN class ships aboard CVN 70. In May 2021, N98 declared JPALS Block 1 IOC. OPTEVFOR completed IOT&E for JPALS Block 1 capability on LHA and LHD class ships in January 2022. The Operational Test Agency Evaluation Report dated June 29, 2022 evaluated the JPALS Block 1 one-way data link capability aboard CVN and LH ships to be operationally effective, operationally suitable and cyber survivable. In a separate OPTEVFOR Operational Assessment report, the JPALS Block 1 two-way data link capability was assessed as low risk to the completion of Follow-on Operational Test and Evaluation that will be conducted when this capability is integrated into the Fleet F-35B/C and MQ-25 aircraft. In March 2022, JPALS successfully completed a Gate 6 review. In August 2020, PMA-213 responded to a letter of request from the Government of Japan for Pricing and Availability for two JPALS systems in their FY 2022 budget. Japan purchased one JPALS unit in FY 2023 and plans to procure one system in FY 2024. There are no significant software-related issues with the program at this time.

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	Significant Development Description
Dec - 2022	JPALS Block 1 IOT&E testing was completed in January 2022 aboard LHA-7 and the Operational Agency Evaluation report dated 29 June 2022 evaluated the JPALS one-way data link capability aboard CVN and LH ships to be operationally effective, operationally suitable and cyber survivable. In March 2022, JPALS successfully completed a Gate 6 review. Letter of Offer and Acceptance (LOA) received in October 2022 from the Government of Japan. In December 2022, JPALS LRIP contract awarded for Japan's first unit.

Dec - 2021	In July 2020, fire on USS Bonhomme Richard (LHD 6) destroyed JPALS EDM unit. Decision to decommission LHD 6 reduced the total procurement and sustainment quantity by one. Completed first installation and certification of a LRIP unit onboard USS Carl Vinson (CVN 70) in September 2020. Installed and certified JPALS onboard the Italian aircraft carrier Cavour in March 2021. Additionally, in March 2021, installed and flight certified JPALS EDM unit on the HMS Queen Elizabeth aircraft carrier to support deployment of United Kingdom Carrier Strike Group CSG 21. Because of the interoperability provided by JPALS, F-35B squadrons from both the United States and United Kingdom were able to conduct cross-deck operations on HMS Queen Elizabeth, demonstrating for the first time this important allied capability. In May 2021, a JPALS Electronic Gate 6/Configuration Steering Board was successfully conducted with no resulting action items. IOC declared in May 2021.
Dec - 2019	Completed Milestone C review with annual CSB in March 2019. ADM signed April 2019 authorized JPALS to enter LRIP phase and SVR 2 to be conducted within six months of IT-B2 completion. Conducted IT-B2 on CVN-69 April 2019 and conducted an Operational Assessment. JPALS LRIP contract awarded May 2019. SVR 2 conducted November 2019. LRIP Option 1 awarded December 2019.
Dec - 2018	JPALS APB was signed March 2018. Block 1 TRR was conducted in April 2018. Class J&A was signed June 2018. Declared EOC June 2018. Completed M-Demo in September 2018. Conducted SVR-1 and PRR December 2018. Completed IT-B3 and IT-B1 hardware and Software validation efforts. F-35 with JPALS UDB capability was flown against CVN-72 at sea for Block 1 regression test in December 2018.
Dec - 2017	The JPALS IBR was conducted in March and CDR was conducted in May. An OTRR was completed in August and IOT&E Phase 1 began in September with the completion of the JPALS Block 0 M-demo and Cyber testing. JPALS certification efforts aboard LHD-1 (USS WASP) and CVN-72 (USS Abraham Lincoln) were completed in December to support F-35 Block 3F fleet release and JPALS EOC. ASN(RD&A) increased the approved LRIP quantity to 23 units in December 2017.
Dec - 2016	A successful PDR was conducted in March. The USD(AT&L) approved the JPALS APB, delegated the MDA for the JPALS program to the Navy, and designated the program as ACAT IC in June. ASN(RDA) signed the ADM approving Milestone B authorizing the JPALS program to enter the EMD phase and to award the EMD contract. In September, the JPALS EMD contract was awarded to Raytheon.
Dec - 2015	In 2015, Developmental Test (DT) for the restructured program was completed and a Letter of Observation (LOO) was signed by Commander, Operational Test and Evaluation Force (COTF). The auto-land trade studies were also completed and defined the path forward to meet the auto-land requirements for manned and unmanned air vehicles. All JPALS ship system requirements were developed and a successful Government-led SRR was completed in March. A successful SFR was conducted in November. In support of the Nunn-McCurdy ADM and in preparation for returning to the DAB for Milestone B approval, a contract extension was awarded in July. The program completed a successful Navy Gate 4 Review in June. The Navy Gate 5 Review with the Assistant Secretary of the Navy for Research, Development & Acquisition (ASN(RDA)) and the DAB Readiness Meeting (DRM) were conducted in October. USD(AT&L) conducted a JPALS Development Request For Proposal (RFP) Release Decision Point (DRRDP) DAB review in November. A signed ADM authorizing the release of the EMD RFP was released in November.
Dec - 2014	In 2014, USD(AT&L) signed the Nunn-McCurdy ADM for the restructured JPALS program in June, which certified the program in lieu of termination. Accordingly, the JPALS Milestone B decision of July 2008 was rescinded. JPALS was directed to continue auto-land trade studies and risk reduction efforts through Third Quarter FY 2016; and return to the DAB for Milestone B approval for the restructured JPALS program no later than Third Quarter FY 2016.

Dec - 2013	In 2013, the schedule necessitated a decrease in one unit from RDT&E and an increase in one unit to Other Procurement, Navy (OPN) resulting in a new procurement quantity of 27 units. In addition to the increase of one unit to the procurement profile, the program realized fixed cost increases as a result of extending the production schedule. The combination of the increase to the procurement units and the increase in fixed costs caused the program to realize a breach to procurement cost in the approved JPALS Increment 1A APB. The Navy performed an internal analysis of the overall Department of the Navy Precision Approach and Landing Capability (PALC) requirements. The result of the internal analysis was a Navy proposal to accelerate the incorporation of capabilities planned for future increments into the JPALS program. The Navy also determined that legacy aircraft would no longer be retrofit with JPALS, but would use current legacy landing systems. All of the changes culminated in a critical Nunn-McCurdy unit cost breach to the PAUC and APUC. The Secretary of the Navy notified Congress of the breach in March 2014.
Dec - 2012	In 2012, the program conducted a successful Test Readiness Review (TRR) and commenced Integrated Test (IT) in May. As a result of several shifts in CVN-77 installation availability between 2009 and 2012, the shipboard IT and Operational Assessment (OA) were delayed. A schedule breach to Milestone C in the JPALS Increment 1A APB was reported.
Dec - 2011	In 2011, all CDR Requests for Action (RFA) were completed and the product baseline was stable. There were no CDD requirements changes. The program office used the should-cost initiative process to offset cost growth within the existing program budget.
Dec - 2010	In 2010, as part of the Gate 6 Post-PDR review in May, a Configuration Steering Board (CSB) was completed. The JPALS Increment 1A Critical Design Review (CDR) was conducted in December. There were no CDD requirement changes. The Naval Air Systems Command (NAVAIR) Technical Review Board determined the JPALS Increment 1A Technical Baseline was stable and performance, cost, and schedule risks were acceptable.
Dec - 2009	In 2009, the JPALS Increment 1A program completed the following System Engineering Technical Review (SETR) events: System Requirements Review (SRR) in January, Integrated Baseline Review (IBR) in April, System Functional Review (SFR) in June, and Preliminary Design Review (PDR) in December. The system allocated baseline was reviewed and approved at PDR.
Dec - 2008	In 2008, the JPALS Increment 1A program completed Milestone B and was designated a MDAP ACAT ID. The ADM, APB, Acquisition Strategy (AS), and Section 2366a of Title 10 Milestone B Certification were approved and signed by the USD (AT&L) in July 2008. Also in July, a full and open competition was conducted and the JPALS Increment 1A EMD contract was awarded to Raytheon. Following the award, the Government Accountability Office received a bid protest against the award. In September 2008, a contract restart letter was issued and the ADM included the revised dates. In December 2008, the APB was approved.

Schedule

JPALS

Events	Milestone Baseline Objective	Current Baseline Objective/Threshold		Current Estimate/Actual	Deviation
SDD Contract Award	Jul 2008	Jul 2008	Jan 2009	Jul 2008	
JPALS Increment 1A Milestone B	Jul 2008	Jul 2008	Jan 2009	Jul 2008	
Preliminary Design Review	Oct 2009	Oct 2009	Apr 2010	Dec 2009	

EDM Delivery (LSTF Pax River)	Sep 2011	Sep 2011	Mar 2012	Oct 2011	
Critical Design Review	Oct 2010	Oct 2010	Apr 2011	Dec 2010	
JPALS Preliminary Design Review	Mar 2016	Mar 2016	Mar 2016	Mar 2016	
JPALS Milestone B Re-approval	Jun 2016	Jun 2016	Jun 2016	Jun 2016	
JPALS Critical Design Review	May 2017	May 2017	May 2017	May 2017	
JPALS Milestone C	Apr 2019	Apr 2019	Apr 2019	Apr 2019	
JPALS Full-Rate Production					
JPALS Initial Operational Test and Evaluation	Sep 2020	Sep 2020	Mar 2022	May 2022	
JPALS Initial Operational Capability	Sep 2020	Sep 2020	Mar 2022	May 2021	

Notes

Deviation Explanation

Performance

JPALS

Performance Characteristics				
Milestone Baseline	Current Baseline Objective/Threshold	Demonstrated Performance	Current Estimate/Actual	Deviation
(KPP) - Energy Sea-Based JPALS shall use ship's electrical power rated at 115 VAC +/- 10% and 60 Hz) +/- 3% for all system components.				
	This data has been marked as CUI and has been removed	This data has been marked as CUI and has been removed	5126 watts	(T=O) <= 7000 Watts
(KPP) - Sustainment (Availability) (Am) Probability that sea-based JPALS shall be available fleetwide to suitably equipped aircraft on approach to CVN and/or LHA/D-type ships.				
	This data has been marked as CUI and has been removed	This data has been marked as CUI and has been removed	0.99	(T=O) >= 70%
(KPP) - Sustainment (Availability) (Ao) Probability that sea-based JPALS shall be operationally available to suitably equipped aircraft on approach to a specific CVN and/or LHA/D type ships.				
	This data has been marked as CUI and has been removed	This data has been marked as CUI and has been removed	0.999	(T=O) >= 99%
(KPP) - System Training. Air Traffic Control Maintainer				
	This data has been marked as CUI and has been removed	This data has been marked as CUI and has been removed	1	(T=O) > 99% of Critical Tasks derived from the TTL & > 80% of Noncritical Tasks derived from the TTL

Requirement Reference

Validated:

CPD dated May 16, 2018

Deviation Explanation

No deviations for this program/subprogram

Notes

Acronyms and Abbreviations TTL-Training Task List Requirements Source: CPD dated May 16, 2018

Acquisition Budget Estimate

JPALS

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	1,384.7	1,384.7	1,523.2	1,368.1	1,336.9	
Procurement	2016	343.4	343.4	377.7	299.1	352.2	
MILCON	2016	7.4	7.4	8.1	7.4	6.8	
Acq. O&M	2016	0	0	0	0	0	
Total		1,735.5	1,735.5		1,674.6	1,695.9	
PAUC	2016	52.591	52.591	57.850	50.745	51.391	
APUC	2016	14.930	14.930	16.423	13.004	15.313	

Appropriation Category Deviation Explanations

PAUC Deviation Explanation

APUC Deviation Explanation

Budget Notes

- Changes in development and production resulted from small-dollar Cost Variances in execution of FY 2022.
- Acquisition Budget Estimate incorporates PB-24 Inflation Indices.
- History of Acquisition Cost and Unit Cost since December 2001:
 - o In FY 2014, JPALS Increment 1A declared a critical Nunn-McCurdy breach. As a result, JPALS Increment 1A was re-baselined to complete the development phase and add manned and unmanned auto-land capability.

Total End Item Quantity

Quantity Category	Current APB Quantity	Current Estimate Quantity
Development	10	10
Procurement	23	23
O&M-Acquired		0

Quantity Notes

Unit of Measure: The physical architecture of JPALS consists of multiple equipment racks, processing equipment, sensors, radios, and antennas.

Unit Cost

JPALS

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Category (\$M) Base Year:2016	Current UCR Baseline	Current Estimate	% Change

Program Acquisition Unit Cost			
Cost	1,735.5	1,674.6	
Quantity	33	33	
Unit Cost	52.591	50.745	-3.51%

Average Procurement Unit Cost			
Cost	343.4	299.1	
Quantity	23	23	
Unit Cost	14.930	13.004	-12.90%

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Category (\$M) Base Year:2016	Original UCR Baseline	Current Estimate	% Change

Program Acquisition Unit Cost			
Cost	1,827.1	1,674.6	
Quantity	33	33	
Unit Cost	55.367	50.745	-8.35%

Average Procurement Unit Cost			
Cost	395.7	299.1	
Quantity	23	23	
Unit Cost	17.204	13.004	-24.41%

Cost Growth Details

Current Baseline PAUC Breach Explanation

Current Baseline APUC Breach Explanation

Original Baseline PAUC Breach Explanation

Original Baseline APUC Breach Explanation

Impacts of Schedule Changes on Unit Cost

Impacts of Performance Changes on Unit Cost

Actions Taken or Proposed to Control Future Cost Growth

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

The Current Baseline Estimate is the most recent Risk and Sensitivity assessment completed on the program. An updated Risk and Sensitivity assessment was completed to support Milestone C.

Revised Original Estimate (June - 2016)**Current Baseline Estimate (April - 2019)**

The current baseline estimate reflects the SCP that was approved in support of the JPALS Milestone B and used as the basis for the Milestone B APB. The current baseline is based upon a cost risk adjusted model that reflects costs at the 50% Confidence level to account for schedule uncertainty, production uncertainty and other risks and uncertainties.

Schedule Risk		
Technical Risks		

Low Rate Initial Production

JPALS

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	06/27/2016	12/04/2017
Approved Quantity	12	23
Reference	Assistant Secretary of the Navy(Research, Development & Acquisition	Assistant Secretary of the Navy(Research, Development & Acquisition
Start Year	2019	2019
End Year	2021	2022

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 establish an initial production base for the system to support operational deployment schedules. On December 4, 2017, Assistant Secretary of the Navy (Research, Development & Acquisition) signed an ADM increasing the LRIP quantity to 23 JPALS units with Variation in Quantity flexibility based on budget availability; therefore, current End Year changed from 2023 to 2022. On April 26, 2019 an ADM approved entry into LRIP phase.

Notes

Contracts & Efforts

Contract Data	
Contract Number	N00019-19-C-0020
Effort Number	1
Modification Number	P00020
Award Date	11/17/2021
Definitization Date	05/22/2019
Order Number	
CAGE Code/CAGE Legal Name	07KA5/
Contract Title	JPALS LRIP
Contract Address	Fullerton, CA
Contracting Office	
Supported Phase	Production
Contract Strategy	
Contract Type	Multiple Types
Modification Date	December 19, 2022
Work Start Date	
Technical Data Rights	
Work Completed	83.52%

Contracts/Effort Price, Quantity, and Performance (TY\$M)		
Initial Target Price	Current Target Price	
\$49.1	\$260.8	
Initial Ceiling Price	Current Ceiling Price	
\$49.7	\$262.9	
Contractor EAC	PM EAC	
\$158.2	\$193.1	
Initial Quantity	Current Quantity	Delivered Quantity
4	23	22
BAC	BCWP	ACWP
\$179.1	\$149.6	\$125.4

BCWS	Cost Variance	Schedule Variance
\$149.4	\$24.2	\$0.2

Contract Notes:

N00019-19-C-0020 data is based on November 2022 month end. P00020 JPALS Japan modification increased the contract by \$8,600,955.00 from \$252,212,257.00 to \$260,813,212.00. DFARS Subpart 234.2 "Earned Value Management System" applies to a little over \$217,231,800.00 of this contract.

Factors Contributing to Cost Variance and Projected Effects on Program Costs

The favorable net change in the cost variance is due to efficiencies realized, reflected in units and materials delivering ahead of time.

Factors Contributing to Schedule Variance and Projected Effects on Program Schedule

The favorable net change in the schedule variance is due to materials and units being delivered ahead of schedule.

External Government Activities

Activity Title		Government Entity	Supported Phase
CAGE		Work Start Date	
City		State/Province:	
Notes			

Deliveries and Expenditures

JPALS

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	10	10	10	100.00%
Production	22	22	23	95.65%
Total Program Quantity Delivered	32	32	33	96.97%

Expended and Appropriated (TY \$M)

Years Appropriated to date: 23

Total Years Appropriated Funding (Current Baseline): 23

Percent Years Appropriated: 100.00%

Then-Year Funding Appropriated as Percentage of Total Acquisition Estimate: 99.06%

Then-Year Funding Expended as Percentage of Total Acquisition Estimate: 96.53%

Total Acquisition Cost: 1,695.9

Deliveries & Expenditures Notes:

RDT&E costs include 10 ship system Engineering Development Model (EDM) units. Procurement/Production costs data includes 20 Other Procurement, Navy (OPN) and 3 Naval Sea Systems Command (NAVSEA), Shipbuilding Conversion, Navy (SCN) funded ship system units. 13 LRIP units have been delivered to date. LRIP13 delivered 8 weeks ahead of schedule. LRIP14 is undergoing FAT activities, LRIP15 Cabinets are undergoing final touch-up. There were material delays due to capacity restrictions at Largo, this impacted LRIP17 -21 activities. No long term impact.

Operating and Support Costs

JPALS

O&S Cost Breakdown:

Category (BY\$ Million)	JPALS
Unit-Level Manpower	.0
Unit Operations	.0
Maintenance	98.3
Sustaining Support	431.2
Continued System Improvements	115.3
Other	.0
Total	644.8

Cost Estimate Source: POE dated January 10, 2023

O&S Cost Notes:

Total Program O&S Cost Compared with Baseline

	Current Baseline		Current Estimate (BY\$M)	Current Estimate (TY\$M)	Deviation
	Objective (BY\$M)	Threshold (BY\$M)			
Total O&S	747.3	822	644.8	917.3	

Note:

a.) Disposal/Demilitarization Cost Estimate: Source: POE Estimate: The TY\$ value is \$21.7M. The BY\$ value is \$13.0M.
b.) Sustainment Strategy: JPALS will be installed on *22 Navy ships and 1 JPALS will be installed at Naval Air Technical Training Center (NATTC). The sustainment quantity of 23 systems is based on the following: 19 production units funded by Other Procurement, Navy (OPN); and 4 production units funded by Shipbuilding and Conversion, Navy (SCN). Annual Operation Tempo: 4,000 hours per ship system and 2,080 hours per shore system Fiscal Years in Service: FY 2021-FY 2048 Total Operating Years: 460. This includes an initial ramp up period when the units are installed on the ships from FY 2021-FY 2029. A ramp down schedule was included for each unit after 20 years of service. JPALS will be supported by two levels of maintenance: Organizational and Depot. The Depot Source of Repair (DSOR) will be commercial, as specified in the Joint DSOR Decision. Supply support for the system's Depot Level Repairable items will transition to the Naval Supply Systems Command at the system Material Support Date in Second Quarter FY 2023. *Note: The Quantity to Sustain for Milestone C (March 2019) was 26 JPALS units.

The total reduction from 26 JPALS to 23 JPALS for the Current Estimate is based on the following adjustments:

- 1) Removal of the CVN-69 JPALS unit, due to minimal Operational Usage before Decommissioning
- 2) Removal of 1 NATTC JPALS unit
- 3) Removal of LHD-6 JPALS unit, due to fire
- 4) CVN-70 JPALS unit will be re-purposed after the decommissioning of CVN-70 and installed on CVN-81.

c.) For Each Acquired System or System Variant:

- i. Quantity to Sustain - 23
- ii. First Operational Fiscal Year - 2021
- iii. Final Operational Fiscal Year - 2048
- iv. FY 2021-FY 2048 Total Operating Years: 460

Antecedent System(s) O&S Costs: The antecedent system associated with this estimate is the AN/SPN-46(V)3. The AN/SPN-46(V)3 will remain in service on the ships as the landing system for legacy aircraft. AN/SPN-46(V)3 continues to experience service life adjustments and system modifications that make the total O&S costs volatile. In addition, the capture of O&S data in available reporting systems changed significantly over time. The Visibility and Management of Operating and Support costs database, the Navy's official system for collecting and reporting O&S costs, provides costs from 1997 to present. The cost data for platforms in existence prior to 1997 is either unavailable or incomplete. Sufficient historical data and resources do not exist to create comparable prior Total O&S Costs.

O&S Cost Deviation Explanation

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

Sustainment Factors	System Name: JPALS	Antecedent System Name: SPN-46(V) 3
Quantity to Sustain	23	
Unit of Measure	System	
Unit Expected Service Life	20	

Base Year:

Annual Unitized O&S Cost by Category Base Year \$ Unit:(\$M)	System Name: JPALS	Antecedent System Name: SPN-46(V) 3
Unit-Level Manpower	0.0	0.7
Unit Operations	0.0	0.0
Maintenance	0.2	0.1
Sustaining Support	0.9	0.0
Continued System Improvements	0.3	0.4
Other	0.0	0.0
Total O&S	1.4	1.2

Disposal/Demilitarization Cost Estimate

(Base Year \$Millions)	System Name: JPALS	Antecedent System Name: SPN-46(V) 3
Total Disposal	13.0	

Cost Estimate Source - Disposal	
Type:	Program Office Estimate
Approval Authority and Date:	MDA 01/10/2023
Note:	
N/A	
Disposal Cost Notes:	
The TY\$ value is \$21.7M. The BY\$ value is \$13.0M.	
Additional O&S Estimate Assumptions:	
N/A	

Sustainment Strategy:

JPALS will be installed on *22 Navy ships and 1 JPALS will be installed at Naval Air Technical Training Center (NATTC). The sustainment quantity of 23 systems is based on the following: 19 production units funded by Other Procurement, Navy (OPN); and 4 production units funded by Shipbuilding and Conversion, Navy (SCN). Annual Operation Tempo: 4,000 hours per ship system and 2,080 hours per shore system Fiscal Years in Service: FY 2021-FY 2048 Total Operating Years: 460. This includes an initial ramp up period when the units are installed on the ships from FY 2021-FY 2029. A ramp down schedule was included for each unit after 20 years of service. JPALS will be supported by two levels of maintenance: Organizational and Depot. The Depot Source of Repair (DSOR) will be commercial, as specified in the Joint DSOR Decision. Supply support for the system's Depot Level Repairable items will transition to the Naval Supply Systems Command at the system Material Support Date in Second Quarter FY 2023. *Note: The Quantity to Sustain for Milestone C (March 2019) was 26 JPALS units. The total reduction from 26 JPALS to 23 JPALS for the Current Estimate is based on the following adjustments: 1) Removal of the CVN-69 JPALS unit, due to minimal Operational Usage before Decommissioning 2) Removal of 1 NATTC JPALS unit 3) Removal of LHD-6 JPALS unit, due to fire 4) CVN-70 JPALS unit will be re-purposed after the decommissioning of CVN-70 and installed on CVN-81.

Antecedent Estimate Assumptions:

The antecedent system associated with this estimate is the AN/SPN-46(V)3. The AN/SPN-46(V)3 will remain in service on the ships as the landing system for legacy aircraft. AN/SPN-46(V)3 continues to experience service life adjustments and system modifications that make the total O&S costs volatile. In addition, the capture of O&S data in available reporting systems changed significantly over time. The Visibility and Management of Operating and Support costs database, the Navy's official system for collecting and reporting O&S costs, provides costs from 1997 to present. The cost data for platforms in existence prior to 1997 is either unavailable or incomplete. Sufficient historical data and resources do not exist to create comparable prior Total O&S Costs.