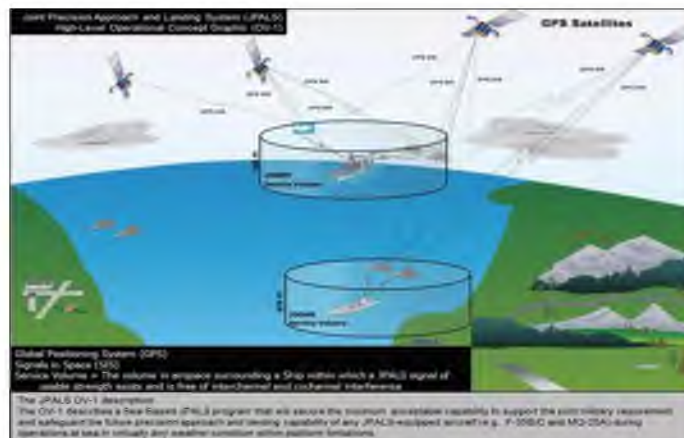




JOINT PRECISION APPROACH AND LANDING SYSTEM (JPALS)

December 2021 Selected Acquisition Report (SAR)



DECEMBER 31, 2021
DEPARTMENT OF THE NAVY

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Common Acronyms and Abbreviations

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
\$B - Billions of Dollars
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
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
\$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
\$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
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
UCR - Unit Cost Reporting
U.S. - United States
USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

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Program Manager

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Mission and Description

Joint Precision Approach and Landing System (JPALS) provides precision guidance in support of coupled flights to 200 feet height above touchdown for the F-35B on Amphibious Assault (LH) type ships, and precision guidance in support of auto-land for the F-35C and MQ-25A Unmanned Aerial Vehicle on Nuclear Aircraft Carriers (CVN). JPALS also supports the F-35B/C and MQ-25A interim Precision Approach and Landing Capability (PALC). JPALS provides the capability to support all future PALC requirements of 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 support the Joint Force Commander'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 supports Distributed Maritime Operations in all operational environments. 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 provides this capability by being rapidly deployable, survivable, and interoperable with U.S. allies. JPALS will support all future manned and unmanned tactical carrier aircraft and can operate during restricted emission control conditions.

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Executive Summary

The JPALS EMD contract, awarded in September 2016, procured 10 Engineering Development Model (EDM) units. Of the 10 EDM units, two remain on Landing Helicopter Assault (LHA) and Landing Helicopter Dock (LHD) class ships. The last two EDM units are scheduled for replacement with LRIP units beginning in 3Q FY 2022.

The JPALS LRIP contract, awarded in May 2019, procured the entire quantity of 23 units. A modification to the LRIP contract, awarded in May 2020, added interim sustainment efforts to provide JPALS system support pending organic Government sustainment to meet the Material Support Date in FY 2023. The fire aboard and subsequent decommissioning of LHD-6 reduced the total number of installations by one. In September 2020, the United States Ship (USS) Carl Vinson Carrier Vessel, Nuclear (CVN 70), received the first LRIP installation and was certified safe for operational use. In February 2021 CVN 70 completed JPALS Block 1 Initial Operational Test and Evaluation (IOT&E) for CVN class ships. In May 2021, N98 declared JPALS IOC. The program plans to complete IOT&E for JPALS Block 1 capability on LHA and LHD class ships in May 2022.

Italy submitted a Directed Source Letter to procure an EDM unit through the F-35 Joint Program Office. The JPALS EDM unit was installed on the Cavour Aircraft Carrier in April 2020.

Additionally, the U.S. Government temporarily installed a JPALS EDM unit onboard the United Kingdom's (UK) Her Majesty's Ship (HMS) Queen Elizabeth, to support an 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. In August 2020, Japan responded to a letter of request for Pricing and Availability with a plan to request a quantity of two JPALS in their FY 2022 budget. Japan currently plans to procure two JPALS units in FY 2022 and in FY 2023.

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

Significant Accomplishments:

JPALS IOC

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History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	Significant Development Description
1st Quarter FY 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.
1st Quarter FY 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.
1st Quarter FY 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.
1st Quarter FY 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.
1st Quarter FY 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.
1st Quarter FY 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.

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	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.
1st Quarter FY 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.
1st Quarter FY 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.
1st Quarter FY 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.
1st Quarter FY 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.
1st Quarter FY 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.
1st Quarter FY 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

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	<p>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.</p>
1st Quarter FY 2021	<p>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.</p>

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Schedule

Schedule Events

Schedule Events					
Events	Development APB Objective	Current APB Development Objective/Threshold		Current Estimate/Actual	Deviation
JPALS Increment 1A Milestone B	Jul 2008	Jul 2008	Jan 2009	Jul 2008	
SDD Contract Award	Jul 2008	Jul 2008	Jan 2009	Jul 2008	
Preliminary Design Review	Oct 2009	Oct 2009	Apr 2010	Dec 2009	
Critical Design Review	Oct 2010	Oct 2010	Apr 2011	Dec 2010	
EDM Delivery (LSTF Pax River)	Sep 2011	Sep 2011	Mar 2012	Oct 2011	
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	Mar 2017	May 2017	May 2017	May 2017	
JPALS Milestone C	Mar 2019	Apr 2019	Apr 2019	Apr 2019	
JPALS Initial Operational Test and Evaluation	Jan 2020	Sep 2020	Mar 2022	Jan 2022	
JPALS Initial Operational Capability	Sep 2020	Sep 2020	Mar 2022	May 2021	
JPALS Full-Rate Production	N/A	N/A	N/A	N/A	

Acronyms and Abbreviation

SDD-System Development and Demonstration

LSTF-Landing Systems Test Facility

Schedule Notes:

The current JPALS Initial Operational Test and Evaluation estimate changed from November 2020 to May 2022 due to ship availability to conduct sea testing on CVN and LH class ships.

The current JPALS IOC estimate changed from November 2020 to May 2021 due to ship availability.

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Significant Schedule Risks

Significant Schedule Risks	
Current Estimate (December 2021)	
I.	None

Performance

Performance Characteristics					Deviation
Development APB Objective	Current APB Development Objective/Threshold	Demonstrated Performance (include Date of Demonstration)	Current Estimate/Actual		
(U//FOUO) 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.					
(T=O) ≥ 99%	(T=O) ≥ 99%	≥ 99%	TBD	(T=O) ≥ 99%	
(U//FOUO) 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.					
(T=O) ≥ 70%	(T=O) ≥ 70%	≥ 70%	TBD	(T=O) ≥ 70%	
Energy Sea-Based JPALS shall use ship's electrical power rated at 115 VAC +/- 10% and 60 Hz) +/- 3% for all system components.					
(T=O) ≤ 7000 Watts	(T=O) ≤ 7000 Watts	≤ 7000 Watts	TBD	(T=O) ≤ 7000 Watts	
System Training. Air Traffic Control Maintainer					
(T=O) > 99% of Critical Tasks derived from the TTL & > 80% of Noncritical Tasks derived from the TTL	(T=O) > 99% of Critical Tasks derived from the TTL & > 80% of Non-critical Tasks derived from the TTL	> 99% of Critical Tasks derived from the TTL & > 80% of Non-critical Tasks derived from the TTL	TBD	(T=O) > 99% of Critical Tasks derived from the TTL & > 80% of Noncritical Tasks derived from the TTL	

Acronyms and Abbreviations

TTL-Training Task List

Requirements Source: CPD dated May 16, 2018

Acquisition Budget Estimate

Total Acquisition Cost

Category	Base Year	Original APB 6/20/2016	Production APB (Current) 4/26/2019		Budget Estimate PB 2023		Deviation
		Objective (BY\$)	Objective (BY\$)	Threshold (BY\$)	BY\$	TY\$	
RDT&E	2016	1424.0	1384.7	1523.2	1371.8	1338.7	0.0
Procurement	2016	395.7.4	343.4	377.7	304.5	351.3	0.0
MILCON	2016	7.4	7.4	8.1	7.4	6.8	0.0
Acq. O&M	2016	0.0	0.0	0.0	0.0	0.0	0.0
Total	2016	1827.1	1735.5	N/A	1683.7	1696.8	0.0
PAUC	2016	55.37	52.59	57.85	51.02	51.42	0.0
APUC	2016	17.20	14.93	16.42	13.24	15.27	0.0

Total End Item Quantity

Quantity Category	Current APB Quantity	Current Estimate Quantity
Development	10	10
Procurement	23	23

Budget Notes:

- Estimating Methodology Updates:
 - FY 2021: -\$10.4M decrease due to revised equipment cost to meet new ship construction and major overhaul requirements. Program impact is a reduction in procurement requirements.
 - FY 2021: -\$14.1M decrease due to reductions in other support driven by Government labor efficiencies. Program impact is a reduction in procurement requirements.
- Remaining decreases in procurement resulted from a combination of small-dollar Cost Variances and President's Budget updates over program execution since FY 2019.
- History of Acquisition Cost and Unit Cost since December 2001:
 - 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.

Quantity Notes:

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

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Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Procurement Cost (December 2021)	
1.	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.
2.	None
Original Baseline Estimate (December 2008)	
1.	The DAE conducted a DAB review for the JPALS Increment 1A program on June 21, 2008 and designated JPALS Increment 1A as a MDAP ACAT ID and approved Milestone B for Increment 1A. The original baseline estimate was developed in support of the JPALS Milestone B APB for Increment 1A and was approved by USD AT&L in December 2008.
Revised Original Estimate (June 2016)	
Same as the Current Baseline Estimate (June 2016)	
Current Baseline Estimate (April 2019)	
1.	The current baseline estimate reflects the service cost position 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.
2.	None

Unit Cost

Current Baseline Compared with Current Estimate

Category (\$M)	Current APB	Current Estimate	% Change	NMC Breach
PAUC				
Cost	1735.5	1683.7	-	-
Quantity	33	33	-	-
Unit Cost	52.59	51.02	-2.99%	-
APUC				
Cost	343.4	304.5	-	-
Quantity	23	23	-	-
Unit Cost	14.93	13.24	-11.34%	-

Original Baseline Compared with Current Estimate

Category (\$M)	Original APB	Current Estimate	% Change	NMC Breach
PAUC				
Cost	1827.1	1683.7	-	-
Quantity	33	33	-	-
Unit Cost	55.37	51.02	-7.85%	-
APUC				
Cost	395.7	304.5	-	-
Quantity	23	23	-	-
Unit Cost	17.20	13.24	-23.06%	-

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Contracts

Contract Data (\$TYM)		
Contract Number	N00019-19-C-0020	
Effort Number	1	
Modification Number	P00013	
Award Date	November 17, 2021	
Definitization Date	May 22, 2019	
Order Number		
CAGE Code/CAGE Legal Name	07KA5	
Contract Title	JPALS LRIP	
Contract Address	1801 Hughes Drive, Fullerton, CA 92833-2200	
Contracts/Effort Price, Quantity, and Performance (\$M)		
Initial Target Price 49.13	Current Target Price 251.41	
Initial Ceiling Price 49.73	Current Ceiling Price 254.31	
Contract's EAC 164.47	PM's EAC 171.99	
Initial Quantity 4	Current Quantity 23	Delivered Quantity 13
BAC 178.89	BCWP 112.78	ACWP 96.83
BCWS 103.79	Cost Variance 15.95	Schedule Variance 8.99

Contract Notes:

N00019-19-C-0020 data is based on December 2021 month end. P00013 LRIP Sustainment modification increased the contract by \$27,982,071.00 from \$223,432,310.00 to \$251,414,381.00. This amount is not reflected in the data as the modification is not yet included in the EVM baseline.

Cost Variance:

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

Schedule Variance:

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

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Technologies and Systems Engineering

Significant Technical Risks

Significant Technical Risks	
Current Estimate (December 2021)	
1.	None

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	10	10	10	100.00%
Production	12	13	23	56.52%
Total Program Quantity Delivered	22	23	33	69.70%

Expended and Appropriated (TY \$M)

Total Acquisition Cost: 1696.8

Expended to Date: 1515.59

Percent Expended: 89.32%

Total Funding Years: 22

Years Appropriated: 22

Percent Years Appropriated: 100%

Appropriated to Date: 1651.30

Percent Appropriated: 97.32%

The above data is current as of April 18, 2022.

Deliveries and 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.

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Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	June 27, 2016	December 4, 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 Current Total LRIP Quantity exceeds 10% of the total Procurement quantities:

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.

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Operating and Support Costs

Total Program O&S Cost Compared with Baseline

	Current APB Objective (BY \$2016)	Current APB Threshold (BY\$2016)	Current Estimate (BY\$2016)	Current Estimate (TY\$)	Deviation
Total O&S (\$M)	747.3	822.0	644.8	917.3	0.0

O&S Cost Breakdown

Allocate O&S estimate by each weapon system (or system variants) acquired by the program) into the CAPE Cost Categories. Add a fresh column for each variant/system.

Category (BY\$2016 Million)	JPALS
Unit-Level Manpower	0.0
Unit Operations	0.0
Maintenance	98.3
Sustaining Support	431.2
Continued System Improvements	115.3
Other	0.0
Total O&S	644.8

Cost Estimate Source: POE, February 8, 2022

O&S Cost Notes:

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

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- 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.

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