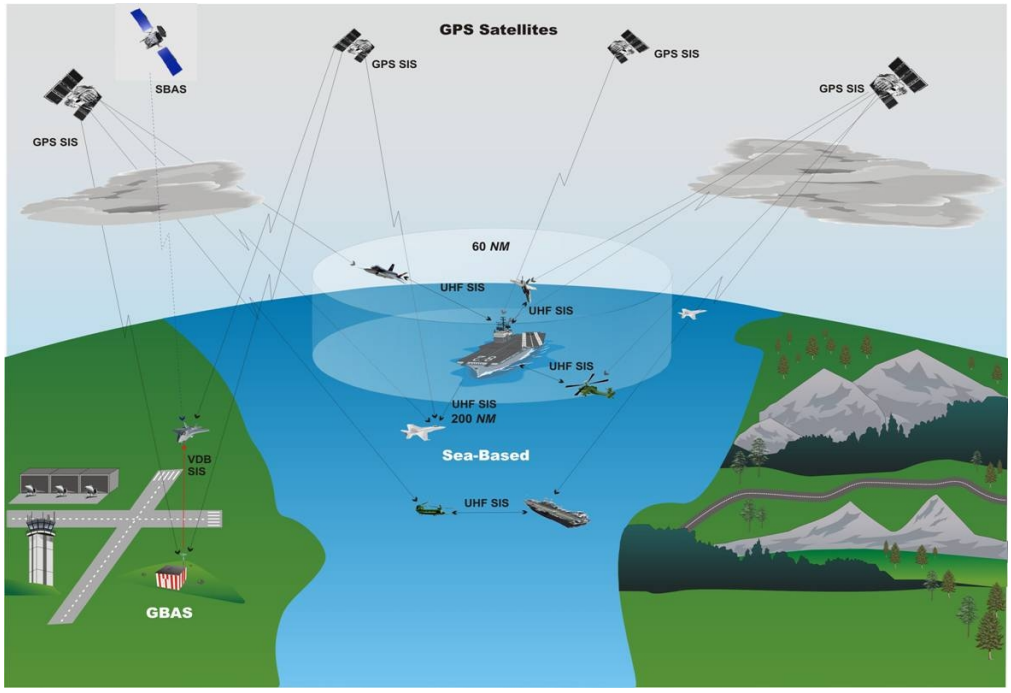
Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-238



Joint Precision Approach and Landing System Increment 1A (JPALS Inc 1A)

As of FY 2016 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Common Acronyms and Abbreviations for MDAP Programs

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(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

Program Information

Program Name

Joint Precision Approach and Landing System Increment 1A (JPALS Inc 1A)

DoD Component

Navy

Responsible Office

CAPT D. D. Lack
Program Executive Officer (T) (PMA213)
46579 Expedition Drive
Expedition IV, 3rd Floor, Suite 301
Lexington Park, MD 20653

Darrell.Lack@navy.mil

Phone: 301-737-2091
Fax: 301-737-2100
DSN Phone:
DSN Fax:
Date Assigned: July 25, 2011

References

SAR Baseline (Development Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated December 19, 2008

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated December 19, 2008

Mission and Description

Precision approach and landing is a critical enabler for joint, coalition, combined, and inter-agency aviation assets to complete approaches and landings in limited visibility conditions. Today, the DoD relies heavily on a more expeditionary and agile joint force, which in turn places increased emphasis on aviation assets for deployment, employment, sustainment, and redeployment. To be readily available to the Joint Force Commander (JFC), aviation assets need to be able to operate into and out of all civil and military air facilities (airfields, landing areas, and air capable ships at sea) across the range of military operations in a fully automatic landing (auto-land) mode. A key to joint operational success is the ability of aviation assets to land anywhere, at any time. However, a standard precision approach and landing system with auto-land capability does not exist for joint forces, nor is there a standard system to fully support unmanned aircraft Precision Approach and Landing Capability (PALC) requirements.

Sea-Based Joint Precision Approach and Landing System (JPALS), in conjunction with the F-35B/C 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 Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) to Nuclear Aircraft Carriers (CVN). JPALS will also support the F-35B/C and UCLASS interim PALC.

When delivered, the sea-based JPALS program will secure the minimum acceptable capability to support the joint military requirement and safeguard the future PALC requirements of any JPALS-equipped aircraft (e.g., F-35B/C and UCLASS) during operations at sea in virtually any weather condition within platform limitations. These enhancements will support the 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

In 2013, 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, which would have been separate ACAT I programs, into the JPALS program. Under this concept, the JPALS ship system will continue to be developed for auto-land and procured for use on Nuclear Aircraft Carriers (CVN) and Amphibious Assault (LH) type ships in support of the F-35B/C and Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) programs. The Navy also determined that legacy aircraft would no longer be retrofit with JPALS, but will use current legacy landing systems.

All of the changes culminated in a critical Nunn-McCurdy unit cost breach to the PAUC and APUC in the JPALS Inc 1A APB. A program deviation report was signed by the PM on January 28, 2014, and was endorsed by the Navy Acquisition Executive and forwarded to the MDA on March 12, 2014. The Secretary of the Navy notified Congress of the breach on March 19, 2014.

On June 15, 2014, USD(AT&L) signed the Nunn-McCurdy ADM for the restructured JPALS program, 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 the 3rd Quarter of FY 2016; and return to the DAB for Milestone B approval for the restructured JPALS program not later than the 3rd Quarter of FY 2016.

JPALS has released a Request for Proposals (RFP) to extend the current contract to enable the program to continue requirements derivation and system development through Preliminary Design Review to meet all Milestone B requirements. The contract award will be five months later than planned to absorb the FY 2014 and FY 2015 final Congressional rescission and reductions. In anticipation of the post Milestone B contract for EMD, JPALS is on track for the USD(AT&L) Decision Review for the final RFP release in the 4th Quarter of FY 2015.

Reporting in this SAR reflects the original JPALS Inc 1A program. The restructured JPALS program will be initiated at Milestone B in the 3rd Quarter of FY 2016, after which time reporting will commence for the restructured program.

JPALS Inc 1A demonstrated 20 centimeter vertical accuracy in the first quarter of FY 2014. For Global Positioning System precision location, vertical accuracy is significantly more challenging than horizontal accuracy due to satellite geometry. This three-month at-sea effort resulted in over 70 coupled approaches using F/A-18 aircraft flying against a JPALS Inc 1A ship system installed on the USS Theodore Roosevelt (CVN 71). This vertical accuracy demonstration was one of the culminating phases of the current JPALS Inc 1A ship system EMD contract and has accrued significant risk reduction benefits. This effort also provided valuable data that demonstrated the potential to provide an objective, certifiable auto-land capability.

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

Threshold Breaches

APB Breaches		
Schedule		☑
Performance		☐
Cost	RDT&E	☑
	Procurement	☑
	MILCON	☐
	Acq O&M	☐
O&S Cost		☑
Unit Cost	PAUC	☑
	APUC	☑

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	Critical
	APUC	Critical
Original UCR Baseline		
	PAUC	Critical
	APUC	Critical

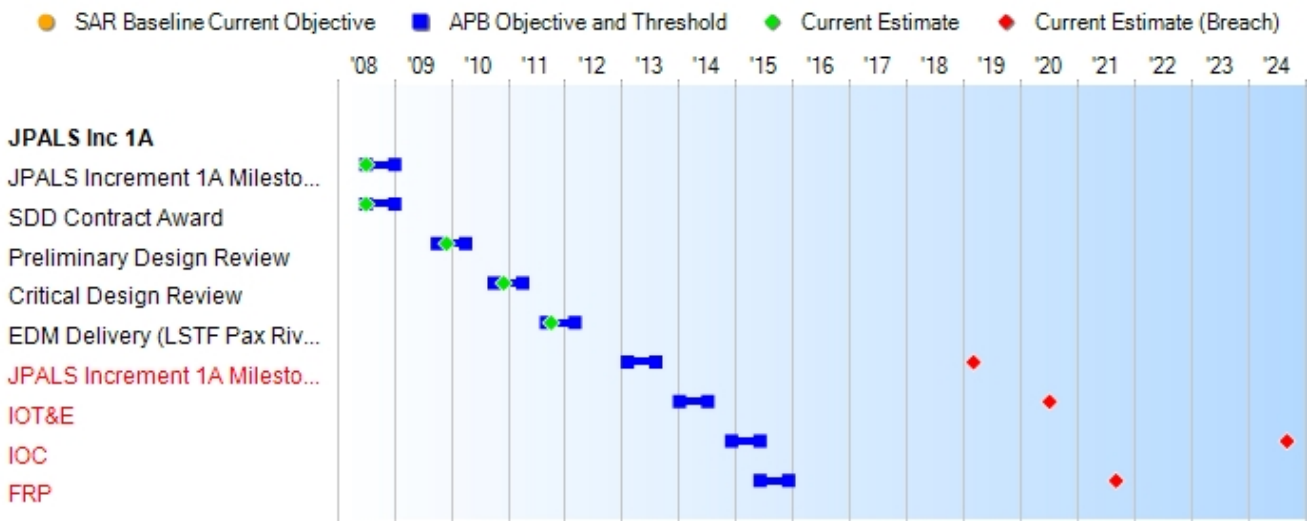
Explanation of Breach

The schedule breach, RDT&E and procurement cost breaches, and Nunn-McCurdy unit cost breaches were previously reported in the December 2013 SAR.

As previously reported in the December 2013 SAR, JPALS Inc 1A experienced critical Nunn-McCurdy breaches. The June 2014 Nunn-McCurdy ADM certified the restructured JPALS program in lieu of termination. A revised APB for the restructured JPALS program will be approved in conjunction with Milestone B approval by the 3rd Quarter of FY 2016.

The O&S cost breach resulted from the Nunn-McCurdy breaches.

Schedule



Schedule Events					
Events	**SAR Baseline Development Estimate**	**Current APB Development Objective/Threshold**		**Current Estimate**	
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 Increment 1A Milestone C	Feb 2013	Feb 2013	Aug 2013	**Mar 2019**[1]	(Ch-1)
IOT&E	Jan 2014	Jan 2014	Jul 2014	**Jul 2020**[1]	(Ch-1)
IOC	Dec 2014	Dec 2014	Jun 2015	**Sep 2024**[1]	(Ch-1)
FRP	Jun 2015	Jun 2015	Dec 2015	**Sep 2021**[1]	(Ch-1)

[1] *APB Breach*

Change Explanations

(Ch-1) The current estimates for Milestone C, IOT&E, IOC, and FRP have changed due to the restructure of the JPALS program.

Acronyms and Abbreviations

EDM - Engineering Development Model
IOT&E - Initial Operational Test and Evaluation
LSTF - Landing Systems Test Facility
Pax - Patuxent
SDD - System Development and Demonstration

Performance

Performance Characteristics				
SAR Baseline Development Estimate	**Current APB Development Objective/Threshold**		**Demonstrated Performance**	**Current Estimate**
Network Ready: The system must support Net-Centric military operations. The system must be able to enter and be managed in the network, and exchange data in a secure manner to enhance mission effectiveness. The system must continuously provide survivable, interoperable, secure, and operationally effective information exchanges to enable a Net-Centric military capability.				
The system must fully support execution of operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services, 4) IA requirements including availability, integrity, authenticat-ion, confidential-ity, and nonrepudiat-ion, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; mission critical performance and IA attributes; data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	The system must fully support execution of operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services, 4) IA requirements including availability, integrity, authenticat-ion, confidential-ity, and nonrepudiat-ion, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; mission critical performance and IA attributes; data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services, 4) IA requirements including availability, integrity, authenticat-ion, confidential-ity, and nonrepudiat-ion, and issuance of an IATO by the (DAA), and 5) Operationally effective information exchanges; mission critical performance and IA attributes; data correctness, data availability, and consistent data processing specified in the applicable joint	TBD	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services, 4) IA requirements including availability, integrity, authentica-tion, confidential-ity, and nonrepudiati-on, and issuance of an IATO by the (DAA), and 5) Operationally effective information exchanges; mission critical performance and IA attributes; data correctness, data availability, and consistent data processing specified in the applicable joint

	architecture views.	and system integrated architecture views.		and system integrated architecture views.	
Guidance Quality					
Certification for operations in 0 ft ceiling and 0 NM visibility conditions.	Certification for operations in 0 ft ceiling and 0 NM visibility conditions.	Sufficient quality to allow the Service to certify the sea-based system for use in 200 ft ceiling and ½ NM visibility weather conditions.	Coupled approaches to the deck were demonstrated at -sea with test aircraft under test conditions.	Meeting Threshold with margin. Sufficient quality to allow the Service to certify the sea-based system for use in 200 ft ceiling and ½ NM visibility weather conditions.	(Ch-1)
Manpower					
Should reduce current manning levels when currently fielded systems are phased out. Should require no dedicated personnel. Should be reduced to no more than one qualified air traffic controller.	Should reduce current manning levels when currently fielded systems are phased out. Should require no dedicated personnel. Should be reduced to no more than one qualified air traffic controller.	The total number of dedicated maintenance and/or logistics personnel needed to support Sea-Based JPALS per shift shall be no more than one person. The number of qualified final controller positions per shift on CVN/LH ship classes shall be no more than two air traffic controllers.	TBD	Current manning level	
Operational Availability (Ao) in Clear Air					
JPALS Ao requirement in clear air for manned aircraft to 200 ft - ½ NM mins should be at least 99.7%.	JPALS Ao requirement in clear air for manned aircraft to 200 ft - ½ NM mins should be at least 99.7%.	JPALS Ao requirement in clear air for manned aircraft to 200 ft - ½ NM mins shall be at least 99.0%.	TBD	99.1%	

Requirements Reference

Capability Development Document (CDD) dated March 16, 2007

Change Explanations

(Ch-1) Updated demonstrated performance based on results observed during Technical Incentive testing.

Acronyms and Abbreviations

ATO - Approval to Operate
DAA - Designated Approval Authority
DISR - DOD Information Technology Standards and Profile Registry
ft - feet
GIG - Global Information Grid
IA - Information Assurance
IATO - Interim Approval to Operate
IT - Information Technology
KIP - Key Interface Profile
mins - minimums
NCOW RM - Net Centric Operations and Warfare Reference Model
NM - Nautical Mile
TV - Technical Standards View

Track to Budget

RDT&E

Appn	BA	PE
Navy 1319	04	0603860N

Project	Name
2329	JPALS

Procurement

Appn	BA	PE
Navy 1810	02	0305014N

Line Item	Name
2867	Joint Precision Approach and Landing System

Appn	BA	PE
Navy 1810	08	0305014N

Line Item	Name
9020	Spares and Repair Parts

MILCON

Appn	BA	PE
Navy 1205	01	0805376N

Project	Name	
P977	Facilities Restoration and Modification - RDT&E	(Sunk)

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2008 $M			BY 2008 $M	TY $M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	753.7	753.7	829.1	**981.1**[1]	781.4	781.4	1041.9
Procurement	202.9	202.9	223.0	**422.7**[1]	243.7	243.7	549.5
Flyaway	--	--	--	321.2	--	--	416.9
Recurring	--	--	--	321.2	--	--	416.9
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	101.5	--	--	132.6
Other Support	--	--	--	84.4	--	--	110.7
Initial Spares	--	--	--	17.1	--	--	21.9
MILCON	6.6	6.6	7.3	6.6	6.8	6.8	6.8
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	963.2	963.2	N/A	1410.4	1031.9	1031.9	1598.2

[1] ***APB Breach***

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	12	12	10
Procurement	25	25	17
Total	37	37	27

Quantity Notes

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

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2016 President's Budget / December 2014 SAR (TY$ M)									
Appropriation	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
RDT&E	805.4	41.9	91.5	75.9	24.0	1.8	1.4	0.0	1041.9
Procurement	0.0	0.0	0.0	0.5	4.7	58.7	69.1	416.5	549.5
MILCON	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2016 Total	812.2	41.9	91.5	76.4	28.7	60.5	70.5	416.5	1598.2
PB 2015 Total	946.2	54.9	92.5	76.9	90.1	78.3	45.4	218.2	1602.5
Delta	-134.0	-13.0	-1.0	-0.5	-61.4	-17.8	25.1	198.3	-4.3

Quantity Summary										
FY 2016 President's Budget / December 2014 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
Development	10	0	0	0	0	0	0	0	0	10
Production	0	0	0	0	0	0	2	3	12	17
PB 2016 Total	10	0	0	0	0	0	2	3	12	27
PB 2015 Total	10	0	0	0	0	2	2	2	11	27
Delta	0	0	0	0	0	-2	0	1	1	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2001	--	--	--	--	--	--	7.4
2002	--	--	--	--	--	--	13.2
2003	--	--	--	--	--	--	15.3
2004	--	--	--	--	--	--	17.7
2005	--	--	--	--	--	--	25.9
2006	--	--	--	--	--	--	32.4
2007	--	--	--	--	--	--	36.0
2008	--	--	--	--	--	--	66.7
2009	--	--	--	--	--	--	74.1
2010	--	--	--	--	--	--	134.5
2011	--	--	--	--	--	--	118.8
2012	--	--	--	--	--	--	64.0
2013	--	--	--	--	--	--	72.6
2014	--	--	--	--	--	--	126.8
2015	--	--	--	--	--	--	41.9
2016	--	--	--	--	--	--	91.5
2017	--	--	--	--	--	--	75.9
2018	--	--	--	--	--	--	24.0
2019	--	--	--	--	--	--	1.8
2020	--	--	--	--	--	--	1.4
Subtotal	10	--	--	--	--	--	1041.9

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2008 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2001	--	--	--	--	--	--	8.5
2002	--	--	--	--	--	--	15.0
2003	--	--	--	--	--	--	17.2
2004	--	--	--	--	--	--	19.3
2005	--	--	--	--	--	--	27.6
2006	--	--	--	--	--	--	33.4
2007	--	--	--	--	--	--	36.3
2008	--	--	--	--	--	--	66.0
2009	--	--	--	--	--	--	72.4
2010	--	--	--	--	--	--	129.5
2011	--	--	--	--	--	--	111.7
2012	--	--	--	--	--	--	59.1
2013	--	--	--	--	--	--	66.1
2014	--	--	--	--	--	--	114.3
2015	--	--	--	--	--	--	37.2
2016	--	--	--	--	--	--	79.8
2017	--	--	--	--	--	--	65.0
2018	--	--	--	--	--	--	20.1
2019	--	--	--	--	--	--	1.5
2020	--	--	--	--	--	--	1.1
Subtotal	10	--	--	--	--	--	981.1

Annual Funding 1810 | Procurement | Other Procurement, Navy							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2017	--	--	--	--	--	0.5	0.5
2018	--	--	--	--	--	4.7	4.7
2019	2	46.3	--	--	46.3	12.4	58.7
2020	3	55.7	--	--	55.7	13.4	69.1
2021	3	71.0	--	--	71.0	20.4	91.4
2022	4	89.8	--	--	89.8	25.9	115.7
2023	4	88.0	--	--	88.0	25.5	113.5
2024	1	49.5	--	--	49.5	12.7	62.2
2025	--	16.6	--	--	16.6	3.8	20.4
2026	--	--	--	--	--	13.3	13.3
Subtotal	17	416.9	--	--	416.9	132.6	549.5

Annual Funding 1810 | Procurement | Other Procurement, Navy							
Fiscal Year	Quantity	BY 2008 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2017	--	--	--	--	--	0.4	0.4
2018	--	--	--	--	--	3.9	3.9
2019	2	37.7	--	--	37.7	10.1	47.8
2020	3	44.4	--	--	44.4	10.7	55.1
2021	3	55.5	--	--	55.5	16.0	71.5
2022	4	68.9	--	--	68.9	19.8	88.7
2023	4	66.2	--	--	66.2	19.1	85.3
2024	1	36.5	--	--	36.5	9.4	45.9
2025	--	12.0	--	--	12.0	2.7	14.7
2026	--	--	--	--	--	9.4	9.4
Subtotal	17	321.2	--	--	321.2	101.5	422.7

Cost Quantity Information 1810 | Procurement | Other Procurement, Navy		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2008 $M**
2017	--	--
2018	--	--
2019	2	48.8
2020	3	52.5
2021	3	50.0
2022	4	74.6
2023	4	61.5
2024	1	33.8
2025	--	--
2026	--	--
Subtotal	17	321.2

Annual Funding 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	**TY $M** **Total Program**
2008	6.8
Subtotal	6.8

Annual Funding 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	**BY 2008 $M**
	Total Program
2008	6.6
Subtotal	6.6

Low Rate Initial Production

There are currently no LRIP quantities for the JPALS Inc 1A program.

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost $M	Description
United Kingdom	6/1/2012	1	3.9	This is a technical services case.

Notes

There is a technical services case with the United Kingdom (UK) which allows for the exchange of technical information and services for both the AN/SPN-41 instrument carrier landing system and the JPALS ship system. There are no Technology Security/Foreign Disclosure issues related to the technical services case with the UK.

Nuclear Costs

None

Unit Cost

Unit Cost Report

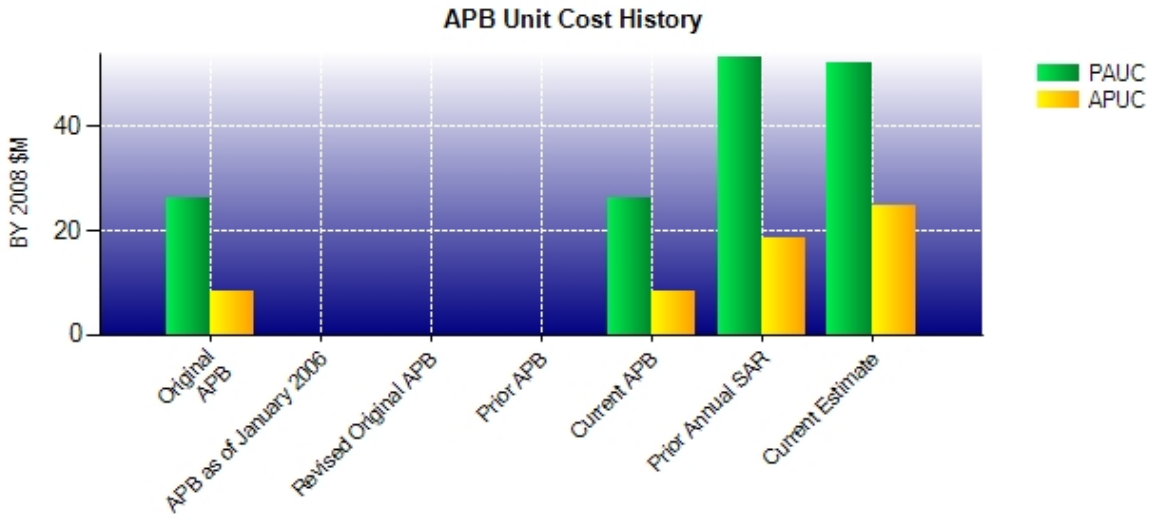
Item	BY 2008 $M Current UCR Baseline (Dec 2008 APB)	BY 2008 $M Current Estimate (Dec 2014 SAR)	% Change
Program Acquisition Unit Cost			
Cost	963.2	1410.4	
Quantity	37	27	
Item	26.032	52.237	**+100.66**[1]
Average Procurement Unit Cost			
Cost	202.9	422.7	
Quantity	25	17	
Unit Cost	8.116	24.865	**+206.37**[1]

Item	BY 2008 $M Original UCR Baseline (Dec 2008 APB)	BY 2008 $M Current Estimate (Dec 2014 SAR)	% Change
Program Acquisition Unit Cost			
Cost	963.2	1410.4	
Quantity	37	27	
Unit Cost	26.032	52.237	**+100.66**[1]
Average Procurement Unit Cost			
Cost	202.9	422.7	
Quantity	25	17	
Unit Cost	8.116	24.865	**+206.37**[1]

[1] *Nunn-McCurdy Breach*

JPALS Inc 1A previously reported critical Nunn-McCurdy breaches and provided detailed Unit Cost reporting in the December 2013 SAR. The Department certified a restructured program to Congress on June 15, 2014. This section will be updated when an APB is approved at Milestone B.

Unit Cost History



Item	Date	BY 2008 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	Dec 2008	26.032	8.116	27.889	9.748
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	N/A	N/A	N/A	N/A	N/A
Current APB	Dec 2008	26.032	8.116	27.889	9.748
Prior Annual SAR	Dec 2013	53.178	18.582	59.352	23.794
Current Estimate	Dec 2014	52.237	24.865	59.193	32.324

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)									
Initial PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
27.889	-0.426	7.878	10.052	8.148	2.867	0.000	2.785	31.304	59.193

Current SAR Baseline to Current Estimate (TY $M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
9.748	-0.606	1.017	1.682	0.000	16.059	0.000	4.424	22.576	32.324

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	Jul 2008	N/A	Jul 2008
Milestone C	N/A	Feb 2013	N/A	Mar 2019
IOC	N/A	Dec 2014	N/A	Sep 2024
Total Cost (TY $M)	N/A	1031.9	N/A	1598.2
Total Quantity	N/A	37	N/A	27
PAUC	N/A	27.889	N/A	59.193

Cost Variance

Summary TY $M				
Item	**RDT&E**	**Procurement**	**MILCON**	**Total**
SAR Baseline (Development Estimate)	781.4	243.7	6.8	1031.9
Previous Changes				
Economic	+3.8	-6.7	--	-2.9
Quantity	-5.5	-60.7	--	-66.2
Schedule	+242.8	+24.1	--	+266.9
Engineering	+220.0	--	--	+220.0
Estimating	-51.3	+183.1	--	+131.8
Other	--	--	--	--
Support	--	+21.0	--	+21.0
Subtotal	+409.8	+160.8	--	+570.6
Current Changes				
Economic	-5.0	-3.6	--	-8.6
Quantity	--	--	--	--
Schedule	--	+4.5	--	+4.5
Engineering	--	--	--	--
Estimating	-144.3	+89.9	--	-54.4
Other	--	--	--	--
Support	--	+54.2	--	+54.2
Subtotal	-149.3	+145.0	--	-4.3
Total Changes	+260.5	+305.8	--	+566.3
CE - Cost Variance	1041.9	549.5	6.8	1598.2
CE - Cost & Funding	1041.9	549.5	6.8	1598.2

Summary BY 2008 $M				
Item	**RDT&E**	**Procurement**	**MILCON**	**Total**
SAR Baseline (Development Estimate)	753.7	202.9	6.6	963.2
Previous Changes				
Economic	--	--	--	--
Quantity	-5.1	-49.1	--	-54.2
Schedule	+214.5	+7.8	--	+222.3
Engineering	+191.6	--	--	+191.6
Estimating	-41.4	+141.6	--	+100.2
Other	--	--	--	--
Support	--	+12.7	--	+12.7
Subtotal	+359.6	+113.0	--	+472.6
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-132.2	+67.0	--	-65.2
Other	--	--	--	--
Support	--	+39.8	--	+39.8
Subtotal	-132.2	+106.8	--	-25.4
Total Changes	+227.4	+219.8	--	+447.2
CE - Cost Variance	981.1	422.7	6.6	1410.4
CE - Cost & Funding	981.1	422.7	6.6	1410.4

Previous Estimate: December 2013

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-5.0
Adjustment for current and prior escalation. (Estimating)	+2.0	+2.2
Revised estimate due to removal of funding associated with JPALS Inc 1B and Inc 2, which are no longer being executed. (Estimating)	-96.5	-104.6
Revised estimate to reflect FY 2014 budget rescission and FY 2015 budget reduction. (Estimating)	-38.0	-42.4
Revised estimate to reflect the application of new outyear escalation indices. (Estimating)	+0.3	+0.5
RDT&E Subtotal	-132.2	-149.3

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-3.6
Stretch-out of procurement buy profile due to ship availability constraints. (Schedule)	0.0	+4.5
Revised estimate due to transfer of costs from production to development. (Estimating)	-32.5	-40.1
Revised estimate to reflect a change in the cost estimating methodology for Shipbuilding and Conversion, Navy, funded units. (Estimating)	+91.6	+120.5
Revised estimate to reflect costs resulting from changes in schedule and quantity. (Estimating)	+7.9	+9.5
Increase in Other Support due to requirement for Other Procurement, Navy, to cover fixed costs for systems engineering and program management. (Support)	+45.3	+61.0
Decrease in Initial Spares due to reduction in quantity being procured. (Support)	-5.5	-6.8
Procurement Subtotal	+106.8	+145.0

Contracts

Contract Identification

Appropriation: RDT&E
Contract Name: JPALS Development Contract
Contractor: Raytheon Company
Contractor Location: 1801 Hughes Drive
Fullerton, CA 92833-2200
Contract Number: N00019-08-C-0034
Contract Type: Cost Plus Award Fee (CPAF), Cost Plus Incentive Fee (CPIF), Firm Fixed Price (FFP)
Award Date: September 15, 2008
Definitization Date: September 15, 2008

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
232.8	N/A	12	375.6	N/A	10	341.2	342.6

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to EMD contract completion and the Phase I 19-month JPALS Inc 1A EMD contract extension being awarded for risk reduction activities in support of manned and unmanned auto-land capability improvements. There was also a Technical Incentive Fee payout of $6.3M and a cost overrun of $1.3M.

Current Contract Price includes all CLINs. This includes FFP CLIN for proposal costs, award fee and schedule incentive payout out on separate CLINs, travel costs CLIN, and separate CLINs for the integration work and availability in Jamming.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2014)	-27.0	+0.2
Previous Cumulative Variances	-21.0	-1.0
Net Change	-6.0	+1.2

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to the Sea-Based System, Systems Engineering, and Program Management Work Breakdown Structures (WBS). The cost overrun was from May 2014 to September 2014 and is related to the final reconciliation of the subcontractor Technical Incentive Fee under the Program Management WBS.

The favorable net change in the schedule variance is due to early receipt of materials.

Deliveries and Expenditures

Deliveries				
Delivered to Date	**Planned to Date**	**Actual to Date**	**Total Quantity**	**Percent Delivered**
Development	8	8	10	80.00%
Production	0	0	17	0.00%
Total Program Quantity Delivered	8	8	27	29.63%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	1598.2	Years Appropriated	15
Expended to Date	758.5	Percent Years Appropriated	57.69%
Percent Expended	47.46%	Appropriated to Date	854.1
Total Funding Years	26	Percent Appropriated	53.44%

The above data is current as of February 02, 2015.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	December 31, 2014
Source of Estimate:	POE
Quantity to Sustain:	25
Unit of Measure:	System
Service Life per Unit:	26.00 Years
Fiscal Years in Service:	FY 2020 - FY 2046

The JPALS system is a ship relative Global Positioning System (GPS)-based system configured as four electronic racks with eight external GPS sensors and a Ultra-High Frequency (UHF) data-link designed with military integrity that will provide precision guidance to manned and unmanned aircraft, with automatic precision landing capability in any weather and mission environment.

The O&S estimate has been updated to reflect the program quantity, schedule, and scope changes associated with the program restructure resulting from the Nunn-McCurdy certification process. There will be a total of 25 units supported during the sustainment of the JPALS system which includes 2 LRIP, 17 FRP, and 6 Shipbuilding and Conversion, Navy (SCN) units. The estimate is for 20 years after the last install/certification and does not include a sundown period for the installed systems based on the assumption JPALS will remain until the decommission of the ship. This decommissioning schedule is based on a 50-year service life of the ship. The estimate includes the cost to de-install the JPALS system from a decommissioned ship and install the JPALS system on a similar ship type. The operational tempo for the ship systems is 4,000 hours per ship and 3,500 hours for the Naval Air Technical Training Center (NATTC) shore unit.

It is assumed all units will be in operation until FY 2046 and remain on the ship until decommission. The service life per unit is dependent on the installation of the JPALS system. Initial installation is expected to occur between FY 2020 - FY 2026.

Sustainment Strategy

The sustainment strategy is being refined. The sustainment strategy is currently planned to be Organizational Level Maintenance to Depot Level Maintenance, with the possibility of using a Performance Based Logistics (PBL) strategy for continuing support. The Level of Repair Analysis is ongoing and will determine the optimal support strategy for the JPALS system. The total operating years represent the cumulative sum of operating systems between FY 2020 - FY 2046 with an initial ramp up period to a steady state through the end of the estimate.

Antecedent Information

The AN/SPN-46(V)3 is not captured in the Naval Visibility and Management of Operating and Support Costs (VAMOSC) database as a whole. The O&S estimate was developed based on AN/SPN-46(V)3 actual components combined with analogous parts of other systems which are located within the VAMOSC database.

The AN/SPN-46(V)3 will remain in service on the ships as the landing system for legacy aircraft. This estimate will be updated in conjunction with the Milestone B decision.

Annual O&S Costs BY2008 $K		
Cost Element	**JPALS Inc 1A Average Annual Cost Per System**	**AN/SPN-46(V)3 (Antecedent) Average Annual Cost Per System**
Unit-Level Manpower	0.000	0.716
Unit Operations	0.000	0.000
Maintenance	0.507	0.051
Sustaining Support	0.199	0.027
Continuing System Improvements	0.131	0.408
Indirect Support	0.000	0.000
Other	0.000	0.000
Total	0.837	1.202

Item	Total O&S Cost $M			
	JPALS Inc 1A			AN/SPN-46(V)3 (Antecedent)
	Current Development APB Objective/Threshold		Current Estimate	
Base Year	338.6	372.5	**512.0**[1]	N/A
Then Year	520.6	N/A	848.8	N/A

[1] *APB O&S Cost Breach*

JPALS Inc 1A experienced critical Nunn-McCurdy unit cost breaches, which caused an O&S cost breach. The details of the O&S breach are shown in the O&S Cost Variance section. The O&S cost estimate has been updated to reflect quantity, schedule, and scope changes as a result of the Nunn-McCurdy certification process. While quantity and schedule are the major reasons for the Nunn-McCurdy breaches, there were significant scope changes from the previous estimate. These scope changes include the hardware configuration and associated pricing and reliability rates, software maintenance calculations, installation, de-installation of decommissioned ships, program management support, the required common and peculiar support equipment, and the required unit level manpower.

Equation to Translate Annual Cost to Total Cost

$0.837M JPALS Total Unit O&S Cost * 612 operating system years = $512M Total JPALS O&S Cost

Total Operating Systems by Year: 4 + 8 + 12 + 17 + 22 + 24 + (25 * 21 steady state years) = 612 operating years

The above equation represents a ramp up period of when the JPALS systems are being installed on the ships beginning in FY 2020. The estimate is for 20 years after the last install/certification and does not include a sundown period for the installed systems based on the assumption JPALS will remain until the decommission of the ship.

O&S Cost Variance		
Category	**BY 2008 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2013 SAR	362.6	

Programmatic/Planning Factors	270.4	Increase in operating years, slip of the program schedule, and no planned sundown period
Cost Estimating Methodology	-94.2	Adjustment to Cost Growth Above Inflation (CGAI), Systems Engineering and Program Management (SEPM), and software manyear calculation
Cost Data Update	-51.9	Adjustment to unit pricing, inflation rates, de-install/install decommissioned/commissioned ships
Labor Rate	1.5	Updating to FY 2015 Naval Air Warfare Center, Aircraft Division (NAWCAD) rates
Energy Rate	0.0	
Technical Input	23.6	Adjustment to hardware configuration, software configuration, and Reliability and Maintainability (R&M) inputs
Other	0.0	
Total Changes	149.4	
Current Estimate	512.0	

Disposal Estimate Details

Date of Estimate:

Source of Estimate:

Disposal/Demilitarization Total Cost (BY 2008 $M):

Disposal costs have not been identified at this time.