



Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-449



Offensive Anti-Surface Warfare Increment 1 (Long Range Anti-Ship Missile) (OASuW Inc 1 (LRASM))

As of FY 2020 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

This document contains information that may be exempt from mandatory disclosure under the FOIA.

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Sensitivity Originator

Organization: Program Executive Office (PEO), Unmanned Aviation & Strike Weapons (U&W) Program
Manager Air (PMA)

Organization Email:

Organization Phone: 301-757-7477

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)
USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)

Program Information

Program Name

Offensive Anti-Surface Warfare Increment 1 (Long Range Anti-Ship Missile) (OASuW Inc 1 (LRASM))

DoD Component

Responsible Office

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Date Assigned: March 23, 2016

References

SAR Baseline (Development Estimate)

Assistant Secretary of the Navy (Research, Development & Acquisition) (ASN(RDA)) Approved Acquisition Program Baseline (APB) dated June 30, 2016

Approved APB

Assistant Secretary of the Navy (Research, Development & Acquisition) (ASN(RDA)) Approved Acquisition Program Baseline (APB) dated February 7, 2019

Mission and Description

The U.S. Navy is leveraging Defense Advanced Research Projects Agency (DARPA) demonstration efforts to deliver an air-launched Offensive Anti-Surface Warfare (OASuW) Inc 1 weapon as an early operational capability (EOC) in the required timeframe. OASuW Inc 1 will deliver the Long Range Anti-Ship Missile (LRASM) developed in the demonstration program as an EOC to meet the most urgent air-launched requirement, significantly reducing Joint Force warfighting risks and positioning the DoD to address evolving surface warfare threats. LRASM will remain a viable interim capability pending the determination of the long-term OASuW solution by evolving capability necessary to outpace a dynamic threat.

Based on the February 3, 2014 ADM, the OASuW Inc 1/LRASM program is structured using an accelerated model because of the urgency of need. The program leverages DoDI 5000.02 Model 4 to structure the acquisition approach which includes a highly integrated developmental and operational test program in order to meet EOC objectives. Additionally, the ADM directed establishment of a DARPA/Navy/Air Force LRASM Deployment Office (LDO) to manage the OASuW Inc 1 program. LDO, later renamed the Effects Deployment Office (FXDO), uses Knowledge Point decision meetings with an Executive Steering Board chaired by the Service Acquisition Executive to provide focused support and oversight to address the risk of technical or acquisition inefficiencies in order to achieve the fielded capability by the required date. A sole-source contract for Integration and Test was awarded in April 2016 to Lockheed Martin, the prime integrator for the LRASM demonstration and the legacy Joint Air-to-Surface Standoff Missile-Extended Range system, for development and delivery of the LRASM EOC. The urgency of the requirement is the basis for the streamlined approach to accelerate the process.

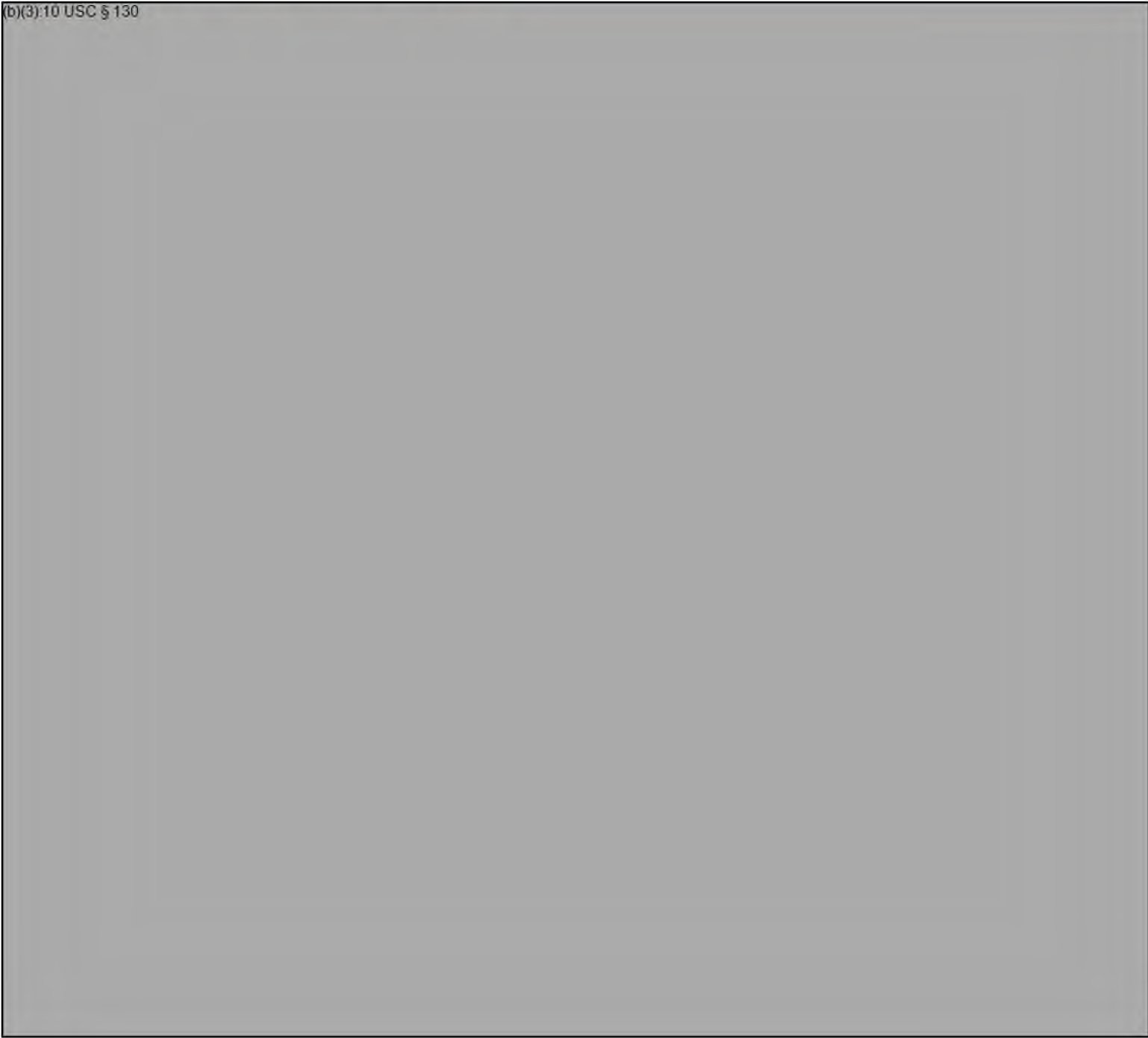
The LRASM weapon system is the force application component of the Anti-Surface Warfare (ASuW) capability servicing threat capital ships. LRASM is integral to realizing the National Defense Strategy of combat-credible military forces to deter war, protect the security of our nation and to enable the Joint Force to win should deterrence fail. The development and acquisition of LRASM has been structured to be fielded at a pace relevant to maintain overmatch against long-term strategic competition. Specifically, LRASM directly contributes to building a more lethal force and is a critical enabler for joint lethality in contested environments; deterring adversaries from aggression; ensuring common domains remain open and maintaining favorable regional balances of power.

LRASM will conduct pre-planned and variable strikes against heavily defended surface combatants.

(U//~~FOUO~~) Executive Summary

(U//~~FOUO~~) Program Highlights Since Last Report

(b)(3):10 USC § 130



History of Significant Developments Since Program Initiation	
History of Significant Developments Since Program Initiation	
Date	Significant Development Description
February 2014	Joint Memorandum from Office of the USD(AT&L) delegated MDA for the OASuW/ Inc 1 a pre-MDAP effort for the Navy. Program was structured as Model 4 accelerated acquisition.
June 2014	Original Acquisition Strategy approved at Knowledge Point (KP) 1.
February 2016	KP 3 was held satisfying Milestone B certification and approved update to the Acquisition Strategy.
April 2016	Contract awarded for Integration and Test.
June 2016	Assistant Secretary of the Navy for Research, Development and Acquisition Joint Memorandum for USD(AT&L) certified as required by section 2366b(a)(3)(L) of title 10, United States Code concurring with cost, schedule, technical feasibility, and performance trade-offs have been made with regard to LRASM.
December 2016	KP 4 satisfying Production Readiness Review requirements and authorizing procurement of Lot 1 Early Operational Capability units.
March 2018	KP 5 was approved, authorizing the contract award of Lot 2 Early Operational Capability (EOC) weapons production contract.
September 2018	KP 6 was approved as a result of meeting the weapon system EOC fielding threshold. The entrance criteria for KP 7 and 8 were also approved.
December 2018	B-1B EOC was achieved.

Threshold Breaches

APB Breaches

Schedule		<input type="checkbox"/>
Performance		<input type="checkbox"/>
Cost	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
O&S Cost		<input type="checkbox"/>
Unit Cost	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

Explanation of Breach

Although there are no breaches reflected here, as noted in the executive summary, the program has resolved a Nunn McCurdy significant breach during this reporting period. A combination of changes in procurement quantities, and increased cost associated with the enhanced capabilities resulted in a Nunn-McCurdy significant breach of the procurement unit cost against the original baseline. The breach was reported to the MDA during the LRASM Executive Steering Board, and subsequently resolved through a revision to the APB approved in Feb 2019. The Department of Navy is notifying the Congressional Committees of the Nunn-McCurdy breach in accordance with U.S.C. § 2366 to ensure complete transparency.

Nunn-McCurdy Breaches

Current UCR Baseline

PAUC	None
APUC	None

Original UCR Baseline

PAUC	None
APUC	None

(U//~~FOUO~~) Schedule

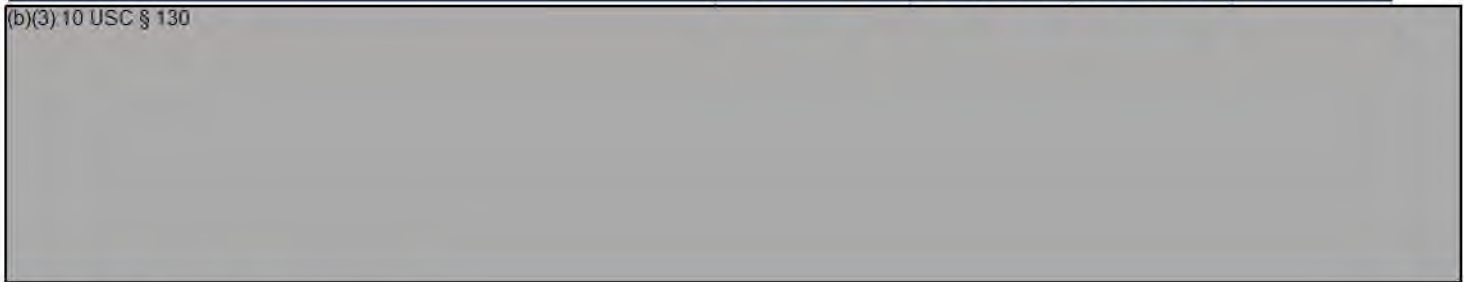
(b)(3) 10 USC § 130



Schedule Events

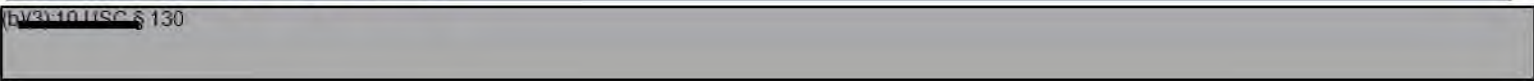
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold	Current Estimate
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(b)(3) 10 USC § 130



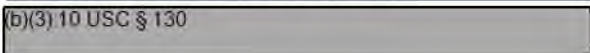
(U//~~FOUO~~) Change Explanations

(b)(3) 10 USC § 130



Acronyms and Abbreviations

(b)(3) 10 USC § 130



Acronyms and Abbreviations

EOC - Early Operational Capability
USG - United States Government

Track to Budget**RDT&E**

Appn	BA	PE
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Navy 1319 04 0604786N

Project	Name
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3337 Offensive Anti-Surface Warfare (OASuW)
Weapon

9999 Operational Test Requirement for Additional
Capabilities

Procurement

Appn	BA	PE
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Navy 1507 02 0204167N

Line Item	Name
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2291 LRASM

Air Force 3020 02 0207325F

Line Item	Name
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LRASM0 LRASM

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2014 \$M			BY 2014 \$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	1175.0	1364.3	1500.7	1349.4	1238.0	1442.1	1429.8
Procurement	292.3	1227.1	1349.8	1022.0	327.7	1411.3	1182.5
Flyaway	--	--	--	1014.1	--	--	1173.5
Recurring	--	--	--	1010.1	--	--	1168.8
Non Recurring	--	--	--	4.0	--	--	4.7
Support	--	--	--	7.9	--	--	9.0
Other Support	--	--	--	7.9	--	--	9.0
Initial Spares	--	--	--	0.0	--	--	0.0
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1467.3	2591.4	N/A	2371.4	1565.7	2853.4	2612.3

Current APB Cost Estimate Reference

Joint Component Cost Estimate in support of KP-3 dated February 19, 2016, updated with Lot 1 and 2 actuals.

Cost Notes

The program cost estimate in the current APB, approved February 7, 2019, was updated for development of LRASM v1.1 planned improvements and procurement of additional LRASM weapons in the more effective LRASM v1.1 configuration. However, due to the timing of the APB approval, the PB 2020 budget request does not capture the latest pricing information.

Additionally, the LRASM team uses an iterative risk management process and provides monthly risk status to the Executive Steering Board.

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	14	16	16
Procurement	110	374	374
Total	124	390	390

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2020 President's Budget / December 2018 SAR (TY\$ M)									
Appropriation	Prior	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
RDT&E	1160.1	139.3	65.4	40.4	24.6	0.0	0.0	0.0	1429.8
Procurement	297.7	165.6	143.2	144.0	144.0	144.0	144.0	0.0	1182.5
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2020 Total	1457.8	304.9	208.6	184.4	168.6	144.0	144.0	0.0	2612.3
PB 2019 Total	1402.2	268.5	125.3	75.0	0.0	0.0	0.0	0.0	1871.0
Delta	55.6	36.4	83.3	109.4	168.6	144.0	144.0	0.0	741.3

Quantity Summary										
FY 2020 President's Budget / December 2018 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Development	16	0	0	0	0	0	0	0	0	16
Production	0	84	50	48	48	48	48	48	0	374
PB 2020 Total	16	84	50	48	48	48	48	48	0	390
PB 2019 Total	13	74	37	25	25	0	0	0	0	174
Delta	3	10	13	23	23	48	48	48	0	216

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
2013	--	--	--	--	--	--	77.6
2014	--	--	--	--	--	--	86.7
2015	--	--	--	--	--	--	181.7
2016	--	--	--	--	--	--	348.7
2017	--	--	--	--	--	--	301.6
2018	--	--	--	--	--	--	163.8
2019	--	--	--	--	--	--	139.3
2020	--	--	--	--	--	--	65.4
2021	--	--	--	--	--	--	40.4
2022	--	--	--	--	--	--	24.6
Subtotal	16	--	--	--	--	--	1429.8

Annual Funding							
1319 RDT&E Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2014 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2013	--	--	--	--	--	--	77.7
2014	--	--	--	--	--	--	85.6
2015	--	--	--	--	--	--	177.2
2016	--	--	--	--	--	--	334.1
2017	--	--	--	--	--	--	283.8
2018	--	--	--	--	--	--	151.0
2019	--	--	--	--	--	--	125.9
2020	--	--	--	--	--	--	58.0
2021	--	--	--	--	--	--	35.1
2022	--	--	--	--	--	--	21.0
Subtotal	16	--	--	--	--	--	1349.4

The development of the LRASM v1.1, which brings greater capability to the Fleet, was the driving factor in the RDT&E cost increases in FY 2019 - FY 2022.

Annual Funding 1507 Procurement Weapons 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	15	56.5	--	0.2	56.7	0.2	56.9	
2018	34	106.8	--	0.5	107.3	0.4	107.7	
2019	35	109.8	--	0.5	110.3	0.9	111.2	
2020	48	141.6	--	0.7	142.3	0.9	143.2	
2021	48	142.4	--	0.7	143.1	0.9	144.0	
2022	48	142.3	--	0.7	143.0	1.0	144.0	
2023	48	142.3	--	0.7	143.0	1.0	144.0	
2024	48	142.3	--	0.7	143.0	1.0	144.0	
Subtotal	324	984.0	--	4.7	988.7	6.3	995.0	

Annual Funding 1507 Procurement Weapons Procurement, Navy								
Fiscal Year	Quantity	BY 2014 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2017	15	52.3	--	0.2	52.5	0.2	52.7	
2018	34	96.9	--	0.4	97.3	0.4	97.7	
2019	35	97.6	--	0.4	98.0	0.9	98.9	
2020	48	123.4	--	0.6	124.0	0.8	124.8	
2021	48	121.7	--	0.6	122.3	0.8	123.1	
2022	48	119.2	--	0.6	119.8	0.8	120.6	
2023	48	116.9	--	0.6	117.5	0.8	118.3	
2024	48	114.6	--	0.6	115.2	0.8	116.0	
Subtotal	324	842.6	--	4.0	846.6	5.5	852.1	

The table reflects the PB 2020 budget. Due to the increase unit cost of the LRASM v1.1 capability, there will be an impact to the quantities reflecting in the PB 2020 budget.

Annual Funding								
3020 Procurement Missile Procurement, Air Force								
Fiscal Year	Quantity	TY \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2017	19	71.4	--	--	71.4	--	71.4	
2018	16	59.0	--	--	59.0	2.7	61.7	
2019	15	54.4	--	--	54.4	--	54.4	
Subtotal	50	184.8	--	--	184.8	2.7	187.5	

Annual Funding								
3020 Procurement Missile Procurement, Air Force								
Fiscal Year	Quantity	BY 2014 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2017	19	65.9	--	--	65.9	--	65.9	
2018	16	53.4	--	--	53.4	2.4	55.8	
2019	15	48.2	--	--	48.2	--	48.2	
Subtotal	50	167.5	--	--	167.5	2.4	169.9	

Foreign Military Sales

None

Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2014 \$M	BY 2014 \$M	% Change
	Current UCR Baseline (Feb 2019 APB)	Current Estimate (Dec 2018 SAR)	
Program Acquisition Unit Cost			
Cost	2591.4	2371.4	
Quantity	390	390	
Unit Cost	6.645	6.081	-8.49
Average Procurement Unit Cost			
Cost	1227.1	1022.0	
Quantity	374	374	
Unit Cost	3.281	2.733	-16.70

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2014 \$M	BY 2014 \$M	% Change
	Original UCR Baseline (Jun 2016 APB)	Current Estimate (Dec 2018 SAR)	
Program Acquisition Unit Cost			
Cost	1467.3	2371.4	
Quantity	124	390	
Unit Cost	11.833	6.081	-48.61
Average Procurement Unit Cost			
Cost	292.3	1022.0	
Quantity	110	374	
Unit Cost	2.657	2.733	+2.86

Unit Cost PAUC Changes

Not applicable; there was no breach to the PAUC.

Unit Cost APUC Changes

The APUC breach occurred as a result of purposeful design changes made to address capability gaps with the understanding that per-unit costs would increase. The current APB incorporates the higher unit cost associated with procuring the more capable LRASM v1.1 configuration. However, the warfighter will now observe significant improvements in mission effectiveness resulting in lower overall costs per mission engagement.

Additionally, a Secretary of Defense Program Decision Memorandum (PDM) increased procurement quantities from 184 (PB 2019) to 374 (PB 2020). PB 2020 is not aligned with the updated unit cost, which will impact the quantity to be procured.

Impact of Performance and Schedule Changes

Not applicable. The program is meeting all other APB metrics, has delivered Early Operational Capability (EOC) to support

the U.S. Air Force's B-1B platform 10 months ahead of schedule and is expected to also achieve EOC on the U.S. Navy's F/A-18 in 2019 ahead of schedule.

Program Management or Control and Cost Control Actions

An updated acquisition program baseline was approved February 2019.

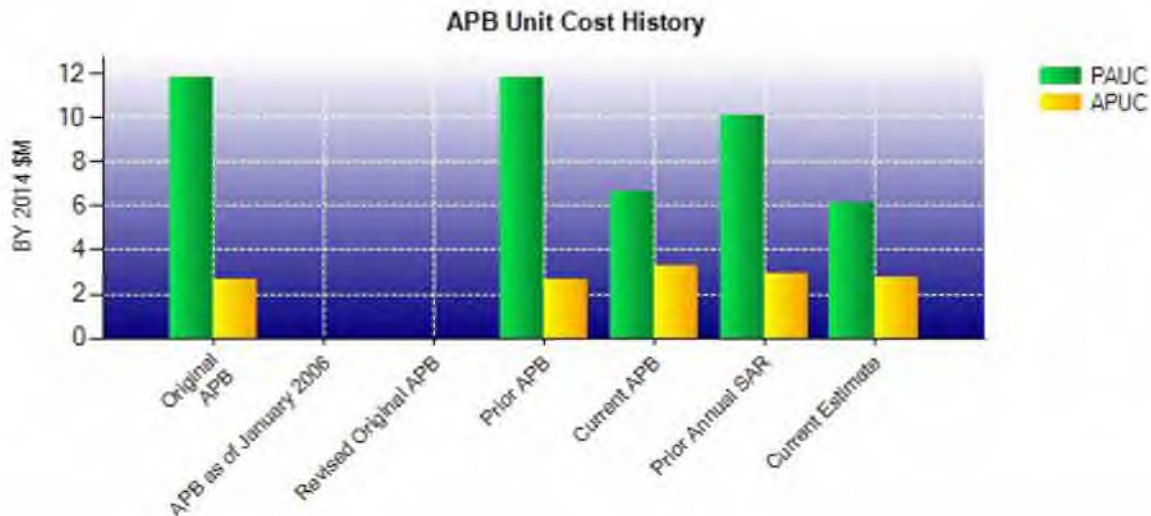
Nunn-McCurdy Comments

The Department of Navy (DoN) notified Congress of plans to develop LRASM v1.1 in an effort to counter increasing threats. Subsequently, the Service Acquisition Executive received, in accordance with subsection (c) of Section 2433, reasonable cause documentation via an LRASM Executive Steering Board brief from the Effects Deployment Office (FXDO) Director stating that the program would breach the Nunn-McCurdy significant cost growth threshold.

The program manager's brief noted that the breach occurred as a result of purposeful design changes made to address capability gaps with the understanding that per-unit costs would increase. However, the warfighter will now observe significant improvements in mission effectiveness resulting in lower overall cost per mission engagement. Additionally, there was a realization of actual costs in Lots 1-3 and a Secretary of Defense Program Decision Memorandum that increased procurement quantities from 184 (PB 2019) to 374 (PB 2020). The combination of design changes associated with the enhanced capabilities, the realization of actual costs in Lots 1-3 and the change in procurement quantities resulted in the Nunn-McCurdy breach. An updated APB was approved on February 7, 2019.

The timing of the PDM and ensuing APB update approval precluded making procurement quantity updates to PB 2020 budget exhibits aligned with the latest cost estimates. It is noteworthy that the DoN anticipates reductions in procurement quantities in future budget submittals for Lots 4-8 (FY 2020-2024) since PB 2020 is not fully aligned with updated unit costs, which will impact the quantity being procured.

The DoN is notifying the Congressional Committees of the Nunn-McCurdy breach in accordance with U.S.C. § 2366 to ensure complete transparency. The program office provided more information during FY 2020 staffer briefs and will provide at the request of the committees.



APB Unit Cost History					
Item	Date	BY 2014 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Jun 2016	11.833	2.657	12.627	2.979
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	Jun 2016	11.833	2.657	12.627	2.979
Current APB	Feb 2019	6.645	3.281	7.316	3.774
Prior Annual SAR	Dec 2017	10.077	2.911	10.753	3.229
Current Estimate	Dec 2018	6.081	2.733	6.698	3.162

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY \$M)									
PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
12.627	-0.022	-6.411	0.018	0.521	-0.058	0.000	0.023	-5.929	6.698

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.979	-0.009	0.181	0.018	0.000	-0.031	0.000	0.024	0.183	3.162

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	Feb 2016	N/A	Feb 2016
Milestone C	N/A	N/A	N/A	N/A
IOC	N/A	N/A	N/A	N/A
Total Cost (TY \$M)	N/A	1565.7	N/A	2612.3
Total Quantity	N/A	124	N/A	390
PAUC	N/A	12.627	N/A	6.698

Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	1238.0	327.7	--	1565.7
Previous Changes				
Economic	-9.2	-8.0	--	-17.2
Quantity	--	+200.3	--	+200.3
Schedule	--	-0.7	--	-0.7
Engineering	+129.5	--	--	+129.5
Estimating	-7.1	-6.6	--	-13.7
Other	--	--	--	--
Support	--	+7.1	--	+7.1
Subtotal	+113.2	+192.1	--	+305.3
Current Changes				
Economic	+3.9	+4.6	--	+8.5
Quantity	+5.0	+653.4	--	+658.4
Schedule	--	+7.6	--	+7.6
Engineering	+73.6	--	--	+73.6
Estimating	-3.9	-4.9	--	-8.8
Other	--	--	--	--
Support	--	+2.0	--	+2.0
Subtotal	+78.6	+662.7	--	+741.3
Total Changes	+191.8	+854.8	--	+1046.6
CE - Cost Variance	1429.8	1182.5	--	2612.3
CE - Cost & Funding	1429.8	1182.5	--	2612.3

Summary BY 2014 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	1175.0	292.3	--	1467.3
Previous Changes				
Economic	--	--	--	--
Quantity	--	+176.0	--	+176.0
Schedule	--	--	--	--
Engineering	+117.0	--	--	+117.0
Estimating	-7.2	-6.1	--	-13.3
Other	--	--	--	--
Support	--	+6.4	--	+6.4
Subtotal	+109.8	+176.3	--	+286.1
Current Changes				
Economic	--	--	--	--
Quantity	+4.5	+548.4	--	+552.9
Schedule	--	+6.9	--	+6.9
Engineering	+63.7	--	--	+63.7
Estimating	-3.6	-3.4	--	-7.0
Other	--	--	--	--
Support	--	+1.5	--	+1.5
Subtotal	+64.6	+553.4	--	+618.0
Total Changes	+174.4	+729.7	--	+904.1
CE - Cost Variance	1349.4	1022.0	--	2371.4
CE - Cost & Funding	1349.4	1022.0	--	2371.4

Previous Estimate: December 2017

RDT&E	\$M	
	Base Year	Then Year
Current Change Explanations		
Revised escalation indices. (Economic)	N/A	+3.9
Additional funding for LRASM v1.1 capability improvements. (Engineering)	+63.7	+73.6
Quantity Variance resulting from the procurement of one additional test asset associated with LRASM v1.1 capability improvements. (Quantity)	+4.5	+5.0
Adjustment for current and prior escalation. (Estimating)	-3.3	-3.6
Revised estimate to reflect application of new out year escalation indices. (Estimating)	-0.3	-0.3
RDT&E Subtotal	+64.6	+78.6

Procurement	\$M	
	Base Year	Then Year
Current Change Explanations		
Revised escalation indices. (Economic)	N/A	+4.6
Total Quantity variance resulting from an increase of 209 All-Up-Rounds (AURs) from 115 to 324 (Navy). (Subtotal)	+501.0	+601.2
Quantity variance resulting from an increase of 209 AURs from 115 to 324 (Navy). (Quantity)	(+506.3)	(+607.8)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(-0.5)	(-0.6)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(-4.8)	(-6.0)
Additional Quantity variance resulting from an increase of 209 AURs from 115 to 324 (Navy). (Quantity)	+29.9	+31.9
Quantity variance resulting from an increase of 4 AURs from 46 to 50 (Air Force). (Quantity)	+10.6	+12.0
Additional Quantity variance resulting from an increase of 4 AURs from 46 to 50 (Air Force). (Quantity)	+1.6	+1.7
Schedule variance resulting from procurement buy profile rephasing between FY 2018 and FY 2021 (Navy). (Schedule)	0.0	-3.1
Additional Schedule variance resulting from procurement buy profile rephasing between FY 2018 and FY 2021 (Navy). (Schedule)	+7.4	+11.3
Adjustment for current and prior escalation. (Estimating)	-2.8	-3.0
Revised estimate to reflect application of new out year escalation indices. (Estimating)	-6.1	-7.4
Revised estimate to reflect realized negotiated AUR costs. (Estimating)	+10.3	+11.5
Adjustment for current and prior escalation. (Support)	-0.1	-0.2
Decrease in Other Support due to decreased personnel requirement in production (Navy). (Support)	-0.1	+0.2
Increase in Other Support due to refinement of estimates (Air Force). (Support)	+1.7	+2.0
Procurement Subtotal	+553.4	+662.7

(QR) Quantity Related



Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	10	10	16	62.50%
Production	10	10	374	2.67%
Total Program Quantity Delivered	20	20	390	5.13%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	2612.3	Years Appropriated	7
Expended to Date	1189.4	Percent Years Appropriated	58.33%
Percent Expended	45.53%	Appropriated to Date	1762.7
Total Funding Years	12	Percent Appropriated	67.48%

The above data is current as of March 11, 2019.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	January 08, 2019
Source of Estimate:	POE
Quantity to Sustain:	374
Unit of Measure:	Missile
Service Life per Unit:	15.00 Years
Fiscal Years in Service:	FY 2018 - FY 2039

The O&S Costs reported in this report are reflective of an increased quantity of 213 units, for a total of 374 units. There is no intention of sustaining the 16 developmental units.

LRASM is a war-reserved weapon with limited Operational and Intermediate level maintenance, and it is anticipated that the weapon will not be captive carried. Should any system failures occur, the weapon will be shipped back to the Original Equipment Manufacturer (OEM) for repairs.

Cost analysis assumes a unit repair costs as follows: Joint Air-to-Surface Standoff Missile (JASSM) historical repair hours per repair were used, adjusted with a complexity factor from U.S. Air Force subject matter experts and Lockheed Martin labor rates. Depot Material Cost (not Replenishment Spares) are based on JASSM historical repair data.

Cost analysis assumes a depot replenishment spare cost as follows: JASSM historical repair data and LRASM production estimate costs were used to estimate cost of Replenishment Spares per repair.

For failure rates, the cost analysis assumes failures based on expected Operational Availability (Ao) percent applied to population undergoing biannual Built-in Test (BIT) check. This will drive a high depot repair rate. Failures are based on expected Storage Mean Time Between Failures (MTBF) and metrics from Reliability and Maintainability engineers. The estimate used Benign Storage MTBF for U.S. Air Force weapons. The estimate used Benign Storage with Vibe MTBF for Navy weapons (ships have vibration when underway). Metrics are similar to JASSM historical experience, and yield far fewer expected failures than applying Ao to every BIT check cycle.

Sustainment Strategy

The LRASM is a war-reserved asset and does not require periodic or scheduled depot maintenance. The initial JASSM product support strategy was to employ a warranty for the life of the weapon. The current JASSM/JASSM-Extended Range (ER) product support strategy has no warranty and a two-level maintenance concept will address parts, labor, failure analysis and correction, disposal of failed missiles or components, and all transportation within the continental United States. Organic depot repair capability does not exist within DoD, and the assets' specialized coating can only be repaired by the manufacturer.

Leveraging off of the current JASSM/JASSM-ER strategy, the weapon system will be maintained under a two-level maintenance concept defined above: organizational and depot levels. Qualified maintenance personnel perform pre-flight and post-flight inspections in accordance with verified manuals and checklists. Missiles are maintained in a serviceable condition at the organizational level through storage monitoring inspections, returned munitions inspections and limited corrective maintenance. Organizational corrective repair actions are limited to minor repairs such as container desiccant replacement, missile surface paint touch up, container latch replacement, and initiation of BIT and missile software reprogramming using the Common Munitions BIT Reprogramming Equipment, AN-GYQ/79 test set with Ethernet. Limited provisioning will be conducted to include container parts and several external components on the missile. All deficiencies beyond the scope of technical manuals will be reported through All Weapons Information System for Navy

and the Tactical Munitions Reporting System for the Air Force. Final disposition instructions will be provided by the Program Office.

Under the anticipated sustainment strategy, unplanned depot level maintenance of LRASM will be performed by the contractor as necessary. The service life requirement is 15 years. The LRASM Deployment Office will determine the most efficient way to handle supportability after the 15-year expires. The requirement to conduct periodic BIT (every 24 months) will be performed in the field and reported to the program office for reliability assessment purposes.

Antecedent Information

No Antecedent. JASSM is not considered to be an Antecedent to LRASM as the internal components are substantially different.

Annual O&S Costs BY2014 \$M			
Cost Element	OASuW Inc 1 (LRASM) Average Annual Cost Per Missile	NA (Antecedent) NA	
Unit-Level Manpower	0.000		--
Unit Operations	0.000		--
Maintenance	0.002		--
Sustaining Support	0.034		--
Continuing System Improvements	0.008		--
Indirect Support	0.002		--
Other	--		--
Total	0.046		--

Item	Total O&S Cost \$M			
	OASuW Inc 1 (LRASM)			NA (Antecedent)
	Current Development APB Objective/Threshold		Current Estimate	
Base Year	270.2	297.2	261.0	N/A
Then Year	352.6	N/A	338.9	N/A

Equation to Translate Annual Cost to Total Cost

Average Annual Cost Per Missile = Total O&S Cost / Inventory Service Life / Quantity

$$\$46.523K = \$260.994M / 15 / 374$$

The unitized costs shown above are the Base Year O&S totals shown above, divided by the expected 15 years of inventory service life (FY 2018 - FY 2039).

O&S Cost Variance		
Category	BY 2014 \$M	Change Explanations

Prior SAR Total O&S Estimates - Dec 2017 SAR	230.3	
Programmatic/Planning Factors	30.7	The O&S Cost variance results from an increase of 213 All-Up-Rounds from 161 to 374.
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	30.7	
Current Estimate	261.0	

Disposal Estimate Details

Date of Estimate:	February 08, 2018
Source of Estimate:	POE
Disposal/Demilitarization Total Cost (BY 2014 \$M):	9.2

The assumption for Disposal/Demilitarization costs is that no missiles have been expended/fired through the life of the program. Therefore, all 374 units will be disposed.