



## 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 2019 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:** NAVAIR//PMA-201//LRASM

**Organization Email:**

**Organization Phone:** 301-737-8902

## 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**

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 June 30, 2016

## 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) Increment 1 weapon as an early operational capability in the required timeframe. OASuW Increment 1 will deliver the Long Range Anti-Ship Missile (LRASM) developed in the demonstration program as an early operational capability (EOC) to meet the most urgent air-launched requirement, significantly reducing Joint Force warfighting risks, and positioning the Department of Defense to address evolving surface warfare threats.

Based on the February 3, 2014 ADM, the OASuW Increment 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 Increment 1 program. The LDO 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. The LDO awarded a sole-source contract for Integration and Test in April 2016 to Lockheed Martin, 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 provides an offensive air launched Anti-Surface Warfare (ASuW) capability. The LRASM weapon is the force application component of this capability servicing threat capital ships. The 21st Century war fighting environment and offshore rebalancing compels the Joint Force to significantly improve its ability to counter ships and piracy while increasing our littoral mobility. LRASM will conduct pre-planned and variable strikes against heavily defended surface combatants.

## Executive Summary

### Program Highlights Since Last Report

LRASM continues on the accelerated acquisition path to Early Operational Capability on the B-1B in FY 2018 and on the F/A-18E/F in FY 2019. The program is currently executing an Integration and Test contract with Lockheed Martin. The weapon will be procured in five lots for a total of 161 units (115 U.S. Navy and 46 U.S. Air Force).

The LRASM Deployment Office uses unique Knowledge Point decision meetings with an Executive Steering Board chaired by Assistant Secretary to the Navy (Research, Development & Acquisition) 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.

March 2017 - Presented the Laureate Award by Aviation Week and Space Technology magazine.

June 2017 - Presented the Secretary of the Navy Safety Excellence Award for Safety Integration in Acquisition.

July 2017 - Contract awarded for first 23 missiles of LRIP Lot 1.

August 2017 - Completed first Integrated Test Event (ITE-1) with the employment of a Free Flight Evaluation Missile (FFEM) from a B-1.

September 2017 - Completed final Flying Test Bed event to mature sensor algorithms and verify performance.

August 2017 - Completed first salvo release of two FFEMs during ITE-3.

3rd/4th Quarter FY 2017 - Completed F/A-18 captive carry and jettison test events.

September 2017 - Completed System Engineering Technical Review 6.0 to ensure readiness for commencement of operational test events.

December 2017 - Contract award quantity increased by 7 to 30 missiles for LRIP Lot 1.

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

**History of Significant Developments Since Program Initiation**

History of Significant Developments Since Program Initiation	
Date	Significant Development Description
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.

## Threshold Breaches

### APB Breaches

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

### Explanation of Breach

The procurement breach is driven by an increased missile procurement quantity of 25 units in FY 2020 and 25 units in FY 2021. This breach will be addressed at the Assistant Secretary of the Navy (Research, Development and Acquisition) Executive Steering Board.

### Nunn-McCurdy Breaches

#### Current UCR Baseline

PAUC	None
APUC	None

#### Original UCR Baseline

PAUC	None
APUC	None

## Schedule



Schedule Events				
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate
SETR 2.0	Sep 2014	Sep 2014	Sep 2014	Sep 2014
SETR 3.0	Sep 2015	Sep 2015	Sep 2015	Sep 2015
Knowledge Point 3	Feb 2016	Feb 2016	Feb 2016	Feb 2016
SETR 4.0	Jun 2016	Jun 2016	Dec 2016	Jun 2016
B-1 Early Operational Capability	Sep 2018	Sep 2018	Sep 2019	Sep 2018
F/A-18E/F Early Operational Capability	Sep 2019	Sep 2019	Sep 2020	Sep 2019

### Change Explanations

None

### Acronyms and Abbreviations

SETR - System Engineering Technical Review

## Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
Key Cost Parameter				
USG Only	USG Only	USG Only	TBD	USG Only
Material Availability				
more than or equal to 90% availability	more than or equal to 90% availability	More than or equal to 80% availability	TBD	more than or equal to 90% availability
Operational Availability				
more than or equal to 98% availability	more than or equal to 98% availability	more than or equal to 90% availability	TBD	more than or equal to 98% availability
Weapon System Reliability				
greater than or equal to 190 hrs	greater than or equal to 190 hrs	more than or equal to 30 hrs	TBD	greater than or equal to 190 hrs
Key Schedule Parameter (B-1 / F/A-18E/F)				
4QFY18/19	4QFY18/19	4QFY19/20	TBD	4QFY18/19
Operations and Support (O&S) Cost				
Threshold = Objective	Threshold = Objective	Less than or equal to \$413M	TBD	Threshold = Objective
Service Life				
30 years	30 years	15 years	TBD	30 years
Weapon Load-Out (B-1/F/A-18 E-F)				
Threshold = Objective	Threshold = Objective	24/4	TBD	Threshold = Objective

Classified Performance information is provided in the classified annex to this submission.

### Requirements Reference

CDD for OASuW Weapon System Increment approved by JROCM 033-15 March 25, 2015

### Change Explanations

None

### Acronyms and Abbreviations

USG - United States Government

## Track to Budget

### RDT&E

Appn	BA	PE
Navy	1319 04	0604786N

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

### Procurement

Appn	BA	PE
Navy	1507 02	0204167N

Line Item	Name
2291	LRASM

Air Force	3020 02	0207325F
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Line Item	Name
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	1175.0	1292.5	1284.8	1238.0	1238.0	1351.2
Procurement	292.3	292.3	321.5	468.6 <sup>1</sup>	327.7	327.7	519.8
Flyaway	--	--	--	462.2	--	--	512.8
Recurring	--	--	--	459.9	--	--	510.1
Non Recurring	--	--	--	2.3	--	--	2.7
Support	--	--	--	6.4	--	--	7.0
Other Support	--	--	--	6.4	--	--	7.0
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	1467.3	N/A	1753.4	1565.7	1565.7	1871.0

<sup>1</sup> APB Breach

#### Current APB Cost Estimate Reference

Joint Component Cost Estimate in support of KP-3 dated February 19, 2016.

#### Cost Notes

In accordance with Section 842 of the National Defense Authorization Act for FY 2017, which amended title 10 U.S.C. § 2334, the Director of Cost Assessment and Program Evaluation, and the Secretary of the military department concerned or the head of the Defense Agency concerned, must issue guidance requiring a discussion of risk, the potential impacts of risk on program costs, and approaches to mitigate risk in cost estimates for MDAPs and major subprograms. The information required by the guidance is to be reported in each SAR. This guidance is not yet available; therefore, the information on cost risk is not contained in this SAR.

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	14	14	13
Procurement	110	110	161
Total	124	124	174

#### Quantity Notes

The total quantity of LRASM weapons required is 161 units (115 U.S. Navy and 46 U.S. Air Force).

There was an increase in RDT&E quantity due to the procurement of one additional test missile. The increase was a result of a contractual conversion of a system qualification test asset into a fully representative and reported test article. No additional RDT&E funding was required for the missile.

## Cost and Funding

### Funding Summary

Appropriation Summary									
FY 2019 President's Budget / December 2017 SAR (TY\$ M)									
Appropriation	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
RDT&E	996.3	160.7	143.1	51.1	0.0	0.0	0.0	0.0	1351.2
Procurement	125.7	119.5	125.4	74.2	75.0	0.0	0.0	0.0	519.8
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 2019 Total	1122.0	280.2	268.5	125.3	75.0	0.0	0.0	0.0	1871.0
PB 2018 Total	1095.0	280.1	184.1	75.0	0.0	0.0	0.0	0.0	1634.2
Delta	27.0	0.1	84.4	50.3	75.0	0.0	0.0	0.0	236.8

Quantity Summary										
FY 2019 President's Budget / December 2017 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
Development	13	0	0	0	0	0	0	0	0	13
Production	0	34	40	37	25	25	0	0	0	161
PB 2019 Total	13	34	40	37	25	25	0	0	0	174
PB 2018 Total	12	30	40	40	25	0	0	0	0	147
Delta	1	4	0	-3	0	25	0	0	0	27

## 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	--	--	--	--	--	--	160.7
2019	--	--	--	--	--	--	143.1
2020	--	--	--	--	--	--	51.1
Subtotal	13	--	--	--	--	--	1351.2

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	--	--	--	--	--	--	177.3
2016	--	--	--	--	--	--	334.6
2017	--	--	--	--	--	--	284.6
2018	--	--	--	--	--	--	149.1
2019	--	--	--	--	--	--	130.3
2020	--	--	--	--	--	--	45.6
Subtotal	13	--	--	--	--	--	1284.8

PB 2019 budget increase in FY 2019 and FY 2020. FY 2019 \$79M; FY 2020 \$51M

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	54.1	--	0.2	54.3	--	54.3
2018	25	71.4	--	0.6	72.0	2.8	74.8
2019	25	79.7	--	0.6	80.3	0.9	81.2
2020	25	72.8	--	0.6	73.4	0.8	74.2
2021	25	72.6	--	0.7	73.3	1.7	75.0
Subtotal	115	350.6	--	2.7	353.3	6.2	359.5

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	50.4	--	0.2	50.6	--	50.6
2018	25	65.3	--	0.5	65.8	2.6	68.4
2019	25	71.5	--	0.5	72.0	0.9	72.9
2020	25	64.1	--	0.5	64.6	0.7	65.3
2021	25	62.7	--	0.6	63.3	1.4	64.7
Subtotal	115	314.0	--	2.3	316.3	5.6	321.9

PB 2019 budget increase in FY 2021 - \$75M add for 25 additional units.

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	15	44.3	--	--	44.3	0.4	44.7
2019	12	43.8	--	--	43.8	0.4	44.2
Subtotal	46	159.5	--	--	159.5	0.8	160.3

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	66.3	--	--	66.3	--	66.3
2018	15	40.4	--	--	40.4	0.4	40.8
2019	12	39.2	--	--	39.2	0.4	39.6
Subtotal	46	145.9	--	--	145.9	0.8	146.7

PB 2019 budget decreased United States Air Force quantities in FY 2019; from 15 units to 12 units.

## Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
<b>Approval Date</b>	3/31/2016	2/12/2018
<b>Approved Quantity</b>	110	161
<b>Reference</b>	OASuW Increment 1 Knowledge Point # 3, ADM	PB 2019 Budget Exhibit
<b>Start Year</b>	2017	2017
<b>End Year</b>	2019	2021

The Current Total LRIP Quantity is more than 10% of the total production quantity because LRASM is an Accelerated Acquisition Program with no intention of moving beyond Milestone B or moving in to FRP.

Referenced the incorrect ADM in the December 2016 SAR. This has been corrected in this reporting period.

Adjustments have been made to the quantity of initial LRIP from 110 to 161 All Up Rounds (AUR). An increase of 25 additional AUR was approved in PB 2018 bringing LRIP quantities to 135 AUR. PB 2019 approved an additional quantity increase of 26 AUR bringing current LRIP total to 161 AUR.

**Foreign Military Sales**

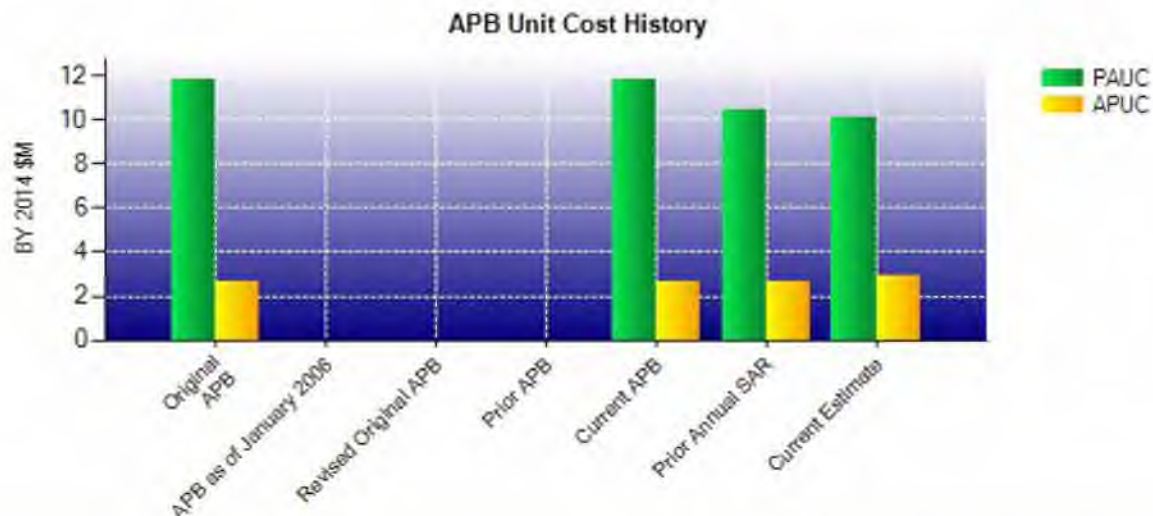
None

**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 (Jun 2016 APB)	Current Estimate (Dec 2017 SAR)	
Program Acquisition Unit Cost			
Cost	1467.3	1753.4	
Quantity	124	174	
Unit Cost	11.833	10.077	-14.84
Average Procurement Unit Cost			
Cost	292.3	468.6	
Quantity	110	161	
Unit Cost	2.657	2.911	+9.56
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 2017 SAR)	
Program Acquisition Unit Cost			
Cost	1467.3	1753.4	
Quantity	124	174	
Unit Cost	11.833	10.077	-14.84
Average Procurement Unit Cost			
Cost	292.3	468.6	
Quantity	110	161	
Unit Cost	2.657	2.911	+9.56



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	N/A	N/A	N/A	N/A	N/A
Current APB	Jun 2016	11.833	2.657	12.627	2.979
Prior Annual SAR	Dec 2016	10.456	2.684	11.117	2.985
Current Estimate	Dec 2017	10.077	2.911	10.753	3.229

### 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	-0.099	-2.477	-0.004	0.744	-0.079	0.000	0.041	-1.874	10.753

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	-0.050	0.301	-0.004	0.000	-0.041	0.000	0.044	0.250	3.229

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	1871.0
Total Quantity	N/A	124	N/A	174
PAUC	N/A	12.627	N/A	10.753

**Cost Variance**

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	1238.0	327.7	--	1565.7
Previous Changes				
Economic	-7.0	-4.9	--	-11.9
Quantity	--	+72.1	--	+72.1
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+0.2	-8.0	--	-7.8
Other	--	--	--	--
Support	--	+16.1	--	+16.1
Subtotal	-6.8	+75.3	--	+68.5
Current Changes				
Economic	-2.2	-3.1	--	-5.3
Quantity	--	+128.2	--	+128.2
Schedule	--	-0.7	--	-0.7
Engineering	+129.5	--	--	+129.5
Estimating	-7.3	+1.4	--	-5.9
Other	--	--	--	--
Support	--	-9.0	--	-9.0
Subtotal	+120.0	+116.8	--	+236.8
Total Changes	+113.2	+192.1	--	+305.3
CE - Cost Variance	1351.2	519.8	--	1871.0
CE - Cost & Funding	1351.2	519.8	--	1871.0

Summary BY 2014 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	1175.0	292.3	--	1467.3
Previous Changes				
Economic	--	--	--	--
Quantity	--	+62.9	--	+62.9
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-0.3	-7.4	--	-7.7
Other	--	--	--	--
Support	--	+14.5	--	+14.5
Subtotal	-0.3	+70.0	--	+69.7
Current Changes				
Economic	--	--	--	--
Quantity	--	+113.1	--	+113.1
Schedule	--	--	--	--
Engineering	+117.0	--	--	+117.0
Estimating	-6.9	+1.3	--	-5.6
Other	--	--	--	--
Support	--	-8.1	--	-8.1
Subtotal	+110.1	+106.3	--	+216.4
Total Changes	+109.8	+176.3	--	+286.1
CE - Cost Variance	1284.8	468.6	--	1753.4
CE - Cost & Funding	1284.8	468.6	--	1753.4

Previous Estimate: December 2016

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-2.2
Additional funding for LRASM capability improvements. (Engineering)	+104.6	+115.6
Additional funding for new LRASM advanced capability wholeness requirements. (Engineering)	+12.4	+13.9
Revised estimate for Small Business Innovative Research adjustment. (Estimating)	-9.0	-9.5
Adjustment for current and prior escalation. (Estimating)	+1.7	+1.8
Revised estimate to reflect application of new out year escalation indices. (Estimating)	+0.4	+0.4
RDT&E Subtotal	+110.1	+120.0

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-3.1
Quantity variance resulting from an increase of 30 All-Up-Rounds (AURs) from 85 to 115 (Navy). (Quantity)	+74.9	+86.5
Additional Quantity Variance resulting from an increase of 30 AURs from 85 to 115 (Navy). (Quantity)	+22.8	+24.9
Quantity variance resulting from a decrease of 4 AURs from 50 to 46 (Air Force). (Subtotal)	-10.1	-11.3
Quantity variance resulting from a decrease of 4 AURs from 50 to 46 (Air Force). (Quantity)	(-10.2)	(-11.4)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(+0.1)	(+0.1)
Additional Quantity Variance resulting from a decrease of 4 AURs from 50 to 46 (Air Force). (Quantity)	+25.6	+28.2
Schedule variance resulting from procurement buy profile rephasing between FY 2017 and FY 2020 (Navy). (Schedule)	0.0	-0.8
Schedule Variance resulting from procurement buy profile rephasing between FY 2017 and FY 2019 (Air Force). (Schedule)	0.0	+0.1
Adjustment for current and prior escalation. (Estimating)	+1.2	+1.3
Adjustment for current and prior escalation. (Support)	+0.2	+0.1
Decrease in Other Support due to decreased personnel requirement in production (Navy). (Support)	-3.5	-3.9
Decrease in Other Support due to refinement of estimates (Air Force). (Support)	-4.8	-5.2
Procurement Subtotal	+106.3	+116.8

(QR) Quantity Related

### Change Explanations Notes

There was an increase in RDT&E quantity due to the procurement of one additional test missile. The increase was a result of a contractual conversion of a system qualification test asset into a fully representative and reported test article. No additional RDT&E funding was required for the missile. Therefore, there is no Quantity Related RDT&E cost variance.

~~(U//FOUO)~~ Contracts~~(U//FOUO)~~ Contract Identification

**Appropriation:** RDT&E  
**Contract Name:** LRASM Integration & Test  
**Contractor:** Lockheed Martin Corporation  
**Contractor Location:** 5600 W Sand Lake Road  
Orlando, FL 32819-8907  
**Contract Number:** N00019-16-C-0035  
**Contract Type:** Cost Plus Incentive Fee (CPIF)  
**Award Date:** April 01, 2016  
**Definitization Date:** May 01, 2016

~~(U//FOUO)~~ Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
321.8	N/A	32	321.8	N/A	32	321.8	321.8

~~(U//FOUO)~~ Contract Variance

Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/24/2017)	-10.9	-17.3
Previous Cumulative Variances	+3.5	-12.9
Net Change	-14.4	-4.4

~~(U//FOUO)~~ Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to an increase in failure analysis and rework to the (b)(5) (b)(5) module, (b)(5) and Test Equipment.

The unfavorable net change in the schedule variance is due to delays in (b)(5) (b)(5) and test (b)(5) (b)(5) Test Equipment Material and AP Test Equipment.

## Notes

Administrative update has been made to Contract Definitization Date, it was incorrectly reported in the December 2016 SAR as April 01, 2016. It now reflects the correct Definitization Date of May 01, 2016.

**(b)(5) Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** LRASM Production Contract  
**Contractor:** Lockheed Martin Corporation  
**Contractor Location:** 5600 W Sand Lake Rd  
Orlando, FL 32819-8907  
**Contract Number:** FA8682-17-C-0037  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** July 25, 2017  
**Definitization Date:** July 25, 2017

**Contract Price**

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
80.5	100.8	23	97.2	121.8	30	121.8	121.8

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to additional procurement of 7 All up Rounds from 23 to 30.

**Contract Variance**

Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/24/2017)	+0.3	-1.1
Previous Cumulative Variances	--	--
Net Change	+0.3	-1.1

**Cost and Schedule Variance Explanations**

(b)(5)

**Notes**

This is the first time this contract is being reported.

## Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	5	5	13	38.46%
Production	0	0	161	0.00%
Total Program Quantity Delivered	5	5	174	2.87%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	1871.0	Years Appropriated	6
Expended to Date	933.6	Percent Years Appropriated	66.67%
Percent Expended	49.90%	Appropriated to Date	1402.2
Total Funding Years	9	Percent Appropriated	74.94%

The above data is current as of February 12, 2018.

The 13 assets procured under the development phase are not fleet representative assets, and are not reflected in the LRASM sustainment strategy.

## Operating and Support Cost

### Cost Estimate Details

<b>Date of Estimate:</b>	February 08, 2018
<b>Source of Estimate:</b>	POE
<b>Quantity to Sustain:</b>	161
<b>Unit of Measure:</b>	Missile
<b>Service Life per Unit:</b>	15.00 Years
<b>Fiscal Years in Service:</b>	FY 2018 - FY 2036

The O&S Costs reported in this report are reflective of an increased quantity of 26 units, for a total of 161 units. There is no intention of sustaining the 13 developmental units.

LRASM is a war reserve 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. 4% of population are projected to fail BIT every other year (will be refined prior to Knowledge Point 5 using an improved dataset). 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 \$K			
Cost Element	OASuW Inc 1 (LRASM) Average Annual Cost Per Missile	NA (Antecedent) NA	
Unit-Level Manpower	0.000		--
Unit Operations	0.000		--
Maintenance	4.368		--
Sustaining Support	68.870		--
Continuing System Improvements	16.552		--
Indirect Support	5.579		--
Other	--		--
Total	95.369		--

Item	Total O&S Cost \$M			
	OASuW Inc 1 (LRASM)			NA (Antecedent)
	Current Development APB Objective/Threshold	Current Estimate		
Base Year	213.7	235.1	230.3	N/A
Then Year	269.0	N/A	292.9	N/A

#### Equation to Translate Annual Cost to Total Cost

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

$$\$95.369K = \$230.315M / 15 / 161$$

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 2036).

#### O&S Cost Variance

Category	BY 2014 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2016 SAR	213.9	
Programmatic/Planning Factors	16.4	The O&S Cost variance results from an increase of 26 All-Up-Rounds from 135 to 161.
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	16.4	
Current Estimate	230.3	

#### Disposal Estimate Details

**Date of Estimate:** February 08, 2018  
**Source of Estimate:** POE  
**Disposal/Demilitarization Total Cost (BY 2014 \$M):** Total costs for disposal of all Missile are 4.5

The assumption for Disposal/Demilitarization costs is that no missiles have been expended/fired through the life of the program. Therefore, all 161 units will be disposed.