



## Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-333



### **LHA 6 America Class Amphibious Assault Ship (LHA 6)**

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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**(U//FOUO) Sensitivity Originator**

**Organization:** PEO SHIPS - PMS377

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The Aggregate Report Sensitivity has been defined as (U//FOUO) with the following explanation: This document contains information exempt from mandatory disclosure under the FOIA. Exemption 5 U.S.C. 552 (b) (4) applies.

## 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**

LHA 6 America Class Amphibious Assault Ship (LHA 6)

**DoD Component**

Navy

## Responsible Office

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**Date Assigned:** September 28, 2015

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## References

### SAR Baseline (Development Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated January 12, 2006

### Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated October 20, 2016

## Mission and Description

The LHA(R) Program replaces the Tarawa Class (LHA 1) Amphibious Assault Ships and the retiring Wasp Class (LHD 1) Amphibious Assault Class Ships.

The LHA (R) will be the key platform in the Expeditionary Strike Group (ESG)/Amphibious Ready Group (ARG) of the future and will provide the Joint Force Commander options to project expeditionary power. The LHA 6 America Class, the first ship of the LHA (R) Program, will embark and support all of the Short Take-off Vertical Landing (STOVL) and Vertical Take-off Landing Marine expeditionary aviation assets in the ESG/ARG, including the MV-22 and the F-35B, the STOVL model of the Joint Strike Fighter. The LHA 6 America Class is an LHD 8 gas turbine variant with enhanced aviation capability. The Flight 0 ships will embark over 1,600 Marines and transport them and their equipment ashore by rotary-wing aircraft when the situation requires. The Flight I ships maintains an aviation centric capability with the addition of a well deck that will accommodate two Landing Craft, Air Cushion. The Flight I ship will embark over 1,400 Marines and transport them and their equipment ashore by rotary-wing or surface connector.



## Executive Summary

### Program Highlights Since Last Report

The LHA (R) program completed another successful year, with each of the three ships of the LHA (R) Program achieving significant milestones.

LHA Flight 0 is composed of two ships: LHA 6 (USS America) and LHA 7 (TRIPOLI). LHA Flight 1 is composed of one ship LHA 8 (BOUGAINVILLE).

LHA 6 returned from her very successful maiden West Pacific deployment and is currently in a post deployment availability on the west coast.

LHA 7 production continued at Huntington Ingalls Industries (HII), Ingalls Shipbuilding. The following key events have been completed over the past year: Loading Flushing Fuel and Combat Systems Light Off in March 2018; Electrical Generator Light Off in May 2018; and Main Engine Light Off in October 2018. HII and the Navy are completing production and testing events to support ship trials in early CY 2019. The projected delivery date has been revised to June 17, 2019.

Detail Design, advance planning and procurement of material continued on LHA 8 to support sustained production. The LHA 8 Integrated Baseline Review to assess the adequacy of the Performance Measurement Baseline and overall construction schedule completed in March 2018. The LHA 8 Production Readiness Review to assess adequacy to begin sustained production was held in June 2018 and start of sustained production occurred in October 2018. Fabrication has started on 60 of 215 production units.

FY 2019 Defense Appropriations added \$6.0M RDT&E for LHA 9 Design Support and \$350M Advance Procurement (AP) for LHA 9 to support an accelerated procurement starting in FY 2021. In the Navy's 30 Year Shipbuilding Plan, LHA 9 is targeted as an FY 2024 ship, as reflected in PB FY 2020 and will be the second Flight 1 ship. \$170.6M for LHA 9 AP is still included in the FYDP in FY 2023 to support the FY 2024 ship. The Navy is currently exploring the optimal use of the \$350M appropriated in FY 2019 for LHA 9 AP so that these funds can be obligated in the most advantageous manner to meet Navy's overarching shipbuilding requirements. As noted in the Navy's "Report to Congress on LHA 9 Acceleration" submitted on April 4, 2018, if funding were available within the FYDP the Navy would consider accelerating LHA 9 to avoid a break in production between LHA 8 and LHA 9 of seven years.

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
March 2001	Mission Need Statement for the LHA (R) program was approved by JROC.
September 2002	Analysis of Alternatives was completed.
February 2005	CDD was validated by JROC. Subsequent validations/revalidations occurred which added Survivability and Force Protection KPPs in December 2005.
January 2006	Milestone B was completed. The ADM was signed and the LHA 6 contract was awarded in June 2007.
May 2012	The LHA 7, a repeat of the LHA 6 design configuration with fact of life updates for equipment obsolescence, Detail Design and Construction (DD&C) contract was awarded to Huntington Ingalls Industries(HII) Ingalls Shipbuilding in May 2012. LHA 7 began sustained production on July 15, 2013 and the Keel Laying Ceremony was held on June 20, 2014. A contract modification was awarded in October 2014 to incorporate flight deck strengthening and other design changes necessary for the F-35B as part of the initial production rather than after delivery as discussed on LHA 6 above. This contract modification included a six month schedule extension, with a revised delivery date of December 4, 2018.
February 2014	The LHA (R) CDD was updated to include LHA (R) Flight 1 capabilities. These include the reincorporation of the well deck, increased vehicle stowage square footage, provide for a surface connector lift capability, and to increase overall operational flexibility.
April 2014	On April 10, 2014 HII successfully delivered the LHA 6 to the Navy, marking the completion of the first ship in the LHA (R) program. The ship completed its post-delivery availability efforts on July 10, 2014 and commenced transit to her homeport of San Diego on July 11, 2014. During the transit, the LHA 6 traveled 15,300 miles on their journey around South America. Port visits included Colombia, Guantanamo Bay, Cuba, Brazil, and Peru. Various exercises and operations with foreign navies helped to bolster cooperative maritime security and partnerships. Additional training evolutions throughout the transit strengthened the crew's readiness and understanding of the ship's systems and capabilities. LHA 6 arrived in San Diego on September 15, 2014 and was commissioned on October 11, 2014 in San Francisco, CA. After completing Fitting Out Availability, Final Contract Trials and Post Shakedown Availability the ship was transferred to the Fleet in March 2016 and achieved IOC.
May 2016	The LHA (R) program's delegation was changed from ACAT ID to ACAT IC.
June 2016	On June 30, 2016, HII was awarded the contract for Planning, Advanced Engineering and Procurement of Long Lead Time Material (LLTM) with option for DD&C. The second increment of Advanced Procurement of LLTM was added to the contract on October 3, 2016. The contract option for the execution of DD&C of LHA 8 was awarded on June 16, 2017.
July 2017	LHA 6 (USS AMERICA) is the first new construction ship with full F-35B capability, Cornerstone and Environmental Effect alterations. She completed her Initial Operational Test and Evaluation in Q4 FY 2017 and deployed as the centerpiece of the AMERICA Amphibious Ready Group/Marine Expeditionary Unit.

### 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 checked="" 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

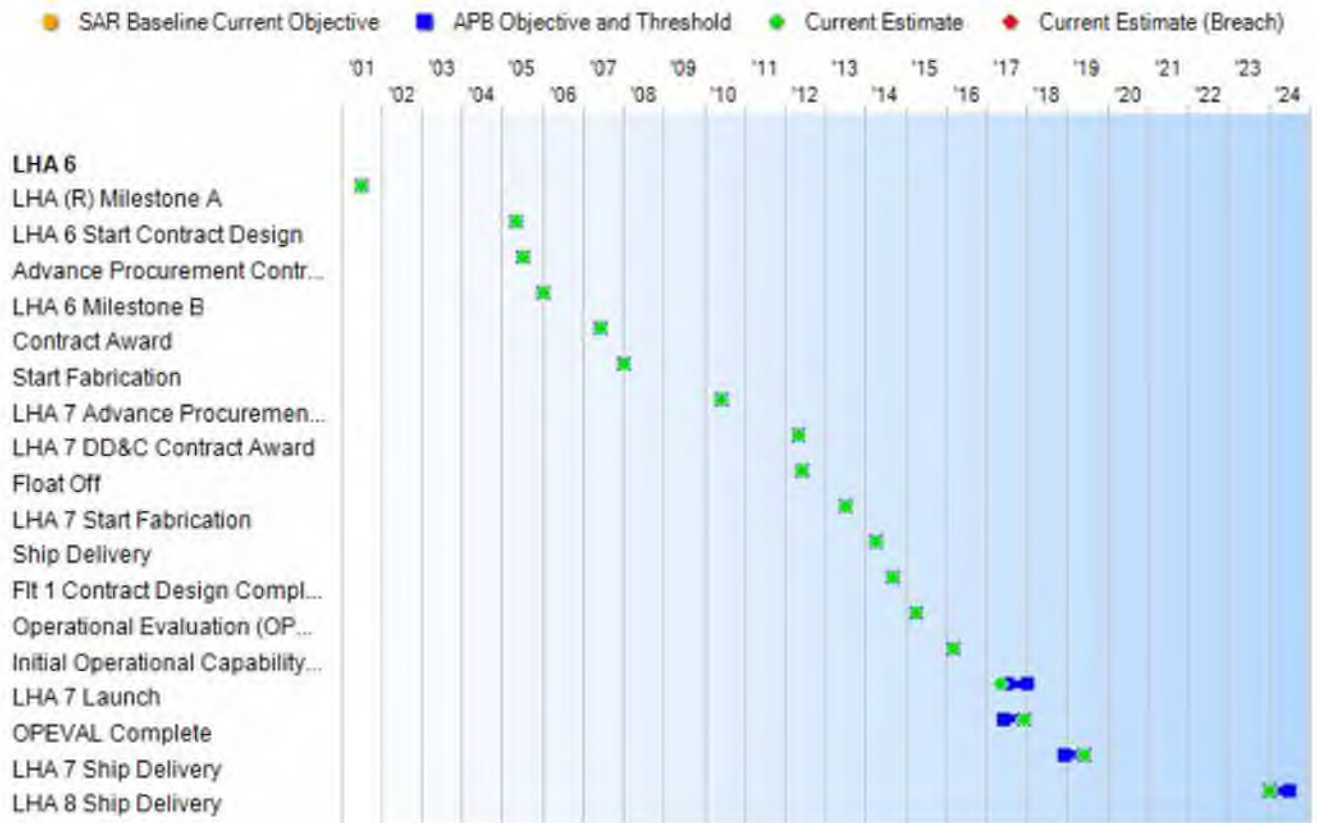
The Procurement cost breach is due to the inclusion of LHA 9 funding. The current APB only contains the costs for the LHA 6, LHA 7, and LHA 8. The APB will be updated by FY 2023.

Cost Breach of Acq O&M was previously reported in December 2017 SAR.

#### Nunn-McCurdy Breaches

<b>Current UCR Baseline</b>		
	PAUC	None
	APUC	None
<b>Original UCR Baseline</b>		
	PAUC	None
	APUC	None

### Schedule



Schedule Events				
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate
LHA (R) Milestone A	Jul 2001	Jul 2001	Jul 2001	Jul 2001
LHA 6 Start Contract Design	May 2005	May 2005	May 2005	May 2005
Advance Procurement Contract	Jul 2005	Jul 2005	Jul 2005	Jul 2005
LHA 6 Milestone B	Jan 2006	Jan 2006	Jan 2006	Jan 2006
Contract Award	Dec 2006	Jun 2007	Jun 2007	Jun 2007
Start Fabrication	Nov 2007	Jan 2008	Jan 2008	Jan 2008
LHA 7 Advance Procurement Contract Award	N/A	Jun 2010	Jun 2010	Jun 2010
LHA 7 DD&C Contract Award	N/A	May 2012	May 2012	May 2012
Float Off	Aug 2010	Jun 2012	Jun 2012	Jun 2012
LHA 7 Start Fabrication	N/A	Jul 2013	Jul 2013	Jul 2013
Ship Delivery	Dec 2011	Apr 2014	Apr 2014	Apr 2014
Flt 1 Contract Design Complete	N/A	Sep 2014	Sep 2014	Sep 2014
Operational Evaluation (OPEVAL) Start	Aug 2012	Apr 2015	Apr 2015	Apr 2015
Initial Operational Capability (IOC)	Sep 2013	Mar 2016	Mar 2016	Mar 2016
LHA 7 Launch	N/A	Jul 2017	Jan 2018	May 2017
OPEVAL Complete	Sep 2013	Jun 2017	Dec 2017	Dec 2017
LHA 7 Ship Delivery	N/A	Dec 2018	Jun 2019	Jun 2019
LHA 8 Ship Delivery	N/A	Jan 2024	Jul 2024	Jan 2024

(Ch-1)

### Change Explanations

(Ch-1) LHA 7 Ship Delivery current estimate has changed from December 2018 to June 2019 due to Shipbuilder's scope of rework to Main Reduction Gear, Ship Service Diesel Generators and associated test delays.

### Notes

Obligation Work Limiting Date for:

LHA 7 - May 2021

LHA 8 - Aug 2025

### Acronyms and Abbreviations

DD&C - Detail Design and Construction

Flt - Flight

## Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Development Objective/Threshold	Demonstrated Performance	Current Estimate	
<b>Net Ready</b>				
100% of interfaces; services; policy-enforcement controls; and data correctness, availability and processing requirements in the joint integrated architecture	100% of interfaces; services; policy-enforcement controls; and data correctness, availability and processing requirements in the joint integrated architecture	100% of interfaces; services; policy-enforcement controls; and data correctness, availability and processing requirements designated as enterprise level or critical in the joint integrated architecture	LHA 6 has partially met the Net Ready KPP per Joint Interoperability Test Command Certification letter of January 23, 2018.	LHA 6 has partially met the Net Ready KPP per Joint Interoperability Test Command Certification letter of January 23, 2018.
<b>Vertical Take Off and Landing land/launch spots</b>				
9 CH-53E/MV-22	9 CH-53E/MV-22	(T=O) 9 CH-53E/MV-22	9 CH-53E/MV-22	9 CH-53E/MV-22
<b>F-35B capacity</b>				
23 Aircraft	23 Aircraft	20 Aircraft	TBD	23 Aircraft
<b>Aviation operations</b>				
6 Spots 12 hrs/day (Sustained) 6 Spots 24 hrs/day for six consecutive days (Surge)	6 Spots 10 hrs/day 12 hrs/day of flight quarters to support 10 hrs/day of flight operations	(T=O) 6 Spots 10 hrs/day 12 hrs/day of flight quarters to support 10 hrs/day of flight operations	6 spots 10 hrs/day 12 hrs/day of flight quarters to support 10 hrs/days of flight operations	6 spots 10 hrs/day 12 hrs/day of flight quarters to support 10 hrs/day of flight operations
<b>Vehicles Flt 0 (sq. ft.)</b>				
12,000 sq. ft.	12,000 sq. ft.	10,000 sq. ft.	12,055 sq. ft.	12,055 sq. ft.
<b>Vehicles Flt 1 (sq. ft.)</b>				
N/A	16,000 sq. ft.	(T=O) 16,000 sq. ft.	TBD	16,000 sq. ft.
<b>Total Manpower Flt 0 (includes Ship's Force and all embarked elements such as troops, staffs, detachments, etc.)</b>				
2,891 Persons	2,891 Persons	2,831 Persons	2,891 Persons	2,891 Persons
<b>Total Manpower Flt 1 (Includes Ship's Force and all embarked elements: troops, staffs, detachments, etc.)</b>				
N/A	2,666 (1,204 Navy + 1,462 Troop)	(T=O) 2,666 (1,204 Navy + 1,462 Troop)	TBD	2,666 (1,204 Navy + 1,462 Troop)
<b>Cargo (cu. ft.)</b>				

160,000 cu. ft.	160,000 cu. ft.	130,000 cu. ft.	155,153 cu. ft.	155,153 cu. ft.	
<b>Troop Accommodations Flt 0</b>					
1,686 Persons	1,686 Persons	1,626 Persons	1,686 Persons	1,686 Persons	
<b>Troop Accommodations Flt 1</b>					
N/A	1,462 Persons	(T=O) 1,462 Persons	TBD	1,462 Persons	
<b>Survivability: Navy Survivability Policy for Surface Ships</b>					
Equals threshold, implement recommendations of the NAVSEA USS COLE Survivability Review Group Phase II Analysis Report of Amphibious Ships, April 2003	In addition to threshold, implement recommendations of the NAVSEA COLE Survivability Review Group Phase II Analysis Report of Amphibious Ships, April 2003	Level II per OPNAV-INST 9070.1 of September 23, 1988 (LHA(R)) cargo magazine protection as stated in para. 6.b.17 of the CDD	T-plus some Cole Survivability Review Group mods	T-plus some Cole Survivability Review Group mods	(Ch-1)
<b>Force Protection: Collective Protection System (CPS)</b>					
Expanded CBR protection that provides a toxic-free environment (where it is not necessary to wear protective clothing or masks) for 40% of crew in berthing, messing, sanitary, and battle dressing facilities as well as key operational spaces that can be affordably integrated into ship design	Expanded CBR protection that provides a toxic-free environment (where it is not necessary to wear protective clothing or masks) for 40% of crew in berthing, messing, sanitary, and battle dressing facilities as well as key operational spaces that can be affordably integrated into ship design	CBR protection that provides a toxic-free environment (where it is not necessary to wear protective clothing or masks) for 40% of crew in berthing, messing, sanitary, and battle dressing facilities	CBR protection that provides a toxic-free environment (where it is not necessary to wear protective clothing or masks) for 40% of crew in berthing, messing, sanitary, and battle dressing facilities	CBR protection that provides a toxic-free environment (where it is not necessary to wear protective clothing or masks) for 40% of crew in berthing, messing, sanitary, and battle dressing facilities	
<b>Force Protection: Decontamination Stations</b>					
Four decontamination stations (two CPS, one casualty, and one conventional) providing a capability of decontamination an avg of ten people per hr per station	Four decontamination stations (two CPS, one casualty, and one conventional) providing a capability of decontamination an avg of ten people per hr per station	(T=O) Four decontamination stations (two CPS, one casualty, and one conventional) providing a capability of decontamination an avg of ten people per hr per station	Four decontamination stations (two CPS, one casualty, and one conventional) providing a capability of decontamination an avg of ten people per hr. per station	Four decontamination stations (two CPS, one casualty, and one conventional) providing a capability of decontamination an avg of ten people per hr. per station	

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

**Requirements Reference**

CDD dated February 26, 2014

**Change Explanations**

(Ch-1) The Survivability Current Estimate was revised to equal Demonstrated Performance.

**Acronyms and Abbreviations**

avg - average  
CBR - Chemical, Biological, and Radiological  
cu - cubic  
etc. - etcetera  
Flt - Flight  
ft. - feet  
hr. - hour  
hrs - hours  
INST. - Instruction  
JITC - Joint Interoperability Test Command  
NAVSEA - Naval Sea Systems Command  
O - Objective  
OPNAV - Office of the Chief of Naval Operations  
sq. - square  
T - Threshold



## Track to Budget

## RDT&amp;E

Appn	BA	PE		
Navy	1319	04	0603564N	
	<b>Project</b>		<b>Name</b>	
	0408		Ship Preliminary Design & Feasibility Studies/Ship Development	(Shared) (Sunk)
Navy	1319	05	0604567N	
	<b>Project</b>		<b>Name</b>	
	2465		Ship Contract Design/Live Fire T&E	
	9235		Ship Contract Design/Live Fire Test & Evaluation/LHA (R) DESIGN	(Shared) (Sunk)
	9236		Ship Contract Design/Live Fire Test & Evaluation/LHA(R) DESIGN	(Shared) (Sunk)
	9999		Congressional Add	(Sunk)
	C467		Planning to Support FY 2021 Award of LHA 9	

## Procurement

Appn	BA	PE		
Navy	1611	03	0204411N	
	<b>Line Item</b>		<b>Name</b>	
	3041		LHA Replacement	
			<b>Notes:</b> LHA Replacement End Cost	
Navy	1611	05	0204411N	
	<b>Line Item</b>		<b>Name</b>	
	5110		Outfitting	(Shared)
	5300		Completion of Prior Year Shipbuilding Programs	(Shared)
			<b>Notes:</b> Budget realigned to line item 3041 during year of execution.	

## Notes

Completion of Prior Year Shipbuilding Programs (Line Item 5300) for LHA 7 Procurement appropriation will transfer into LHA Replacement (Line Item 3041) in the year of execution.

## Acq O&amp;M

Appn	BA	PE		
Navy	1804	01	0204411N	
	<b>Subactivity Group</b>		<b>Name</b>	
	1C6C		Combat Support Forces	
			<b>Notes:</b> LHA(R) TADTAR	

## Cost and Funding

### Cost Summary

Total Acquisition Cost							
Appropriation	BY 2006 \$M			BY 2006 \$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	199.9	408.1	448.9	427.6	197.5	447.6	472.9
Procurement	2677.5	8025.6	8828.2	10462.4 <sup>1</sup>	2896.0	10539.0	14687.7
Flyaway	--	--	--	10462.4	--	--	14687.7
Recurring	--	--	--	10462.4	--	--	14687.7
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	0.0	--	--	0.0
Other Support	--	--	--	0.0	--	--	0.0
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	1.9	2.1	2.3 <sup>1</sup>	0.0	1.9	2.5
Total	2877.4	8435.6	N/A	10892.3	3093.5	10988.5	15163.1

<sup>1</sup> APB Breach

#### Current APB Cost Estimate Reference

Program Office Estimate (POE) for the LHA 8 dated May 09, 2016

#### Cost Notes

No Cost estimate for the program has been completed in the previous year.

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	0	0	0
Procurement	1	3	4
Total	1	3	4

## 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	380.0	12.8	2.3	13.5	6.1	6.2	6.3	45.7	472.9
Procurement	10403.8	407.7	11.4	0.0	0.0	170.6	1617.8	2076.4	14687.7
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	1.6	0.1	0.2	0.1	0.2	0.1	0.2	0.0	2.5
PB 2020 Total	10785.4	420.6	13.9	13.6	6.3	176.9	1624.3	2122.1	15163.1
PB 2019 Total	10785.6	64.7	21.5	6.1	6.3	198.3	109.3	65.4	11257.2
Delta	-0.2	355.9	-7.6	7.5	0.0	-21.4	1515.0	2056.7	3905.9

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	0	0	0	0	0	0	0	0	0	0
Production	0	3	0	0	0	0	0	1	0	4
PB 2020 Total	0	3	0	0	0	0	0	1	0	4
PB 2019 Total	0	3	0	0	0	0	0	0	0	3
Delta	0	0	0	0	0	0	0	1	0	1

## 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	--	--	--	--	--	--	15.2
2002	--	--	--	--	--	--	4.9
2003	--	--	--	--	--	--	38.1
2004	--	--	--	--	--	--	52.9
2005	--	--	--	--	--	--	43.0
2006	--	--	--	--	--	--	21.6
2007	--	--	--	--	--	--	12.9
2008	--	--	--	--	--	--	10.9
2009	--	--	--	--	--	--	7.6
2010	--	--	--	--	--	--	8.7
2011	--	--	--	--	--	--	10.0
2012	--	--	--	--	--	--	20.4
2013	--	--	--	--	--	--	24.3
2014	--	--	--	--	--	--	76.5
2015	--	--	--	--	--	--	7.1
2016	--	--	--	--	--	--	8.3
2017	--	--	--	--	--	--	9.5
2018	--	--	--	--	--	--	8.1
2019	--	--	--	--	--	--	12.8
2020	--	--	--	--	--	--	2.3
2021	--	--	--	--	--	--	13.5
2022	--	--	--	--	--	--	6.1
2023	--	--	--	--	--	--	6.2
2024	--	--	--	--	--	--	6.3
2025	--	--	--	--	--	--	17.1
2026	--	--	--	--	--	--	20.4
2027	--	--	--	--	--	--	4.2
2028	--	--	--	--	--	--	2.0
2029	--	--	--	--	--	--	2.0
Subtotal	--	--	--	--	--	--	472.9

Annual Funding							
1319   RDT&E   Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2006 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2001	--	--	--	--	--	--	16.6
2002	--	--	--	--	--	--	5.3
2003	--	--	--	--	--	--	40.7
2004	--	--	--	--	--	--	55.0
2005	--	--	--	--	--	--	43.5
2006	--	--	--	--	--	--	21.2
2007	--	--	--	--	--	--	12.4
2008	--	--	--	--	--	--	10.3
2009	--	--	--	--	--	--	7.1
2010	--	--	--	--	--	--	8.0
2011	--	--	--	--	--	--	8.9
2012	--	--	--	--	--	--	17.9
2013	--	--	--	--	--	--	21.1
2014	--	--	--	--	--	--	65.6
2015	--	--	--	--	--	--	6.0
2016	--	--	--	--	--	--	6.9
2017	--	--	--	--	--	--	7.8
2018	--	--	--	--	--	--	6.5
2019	--	--	--	--	--	--	10.1
2020	--	--	--	--	--	--	1.8
2021	--	--	--	--	--	--	10.2
2022	--	--	--	--	--	--	4.5
2023	--	--	--	--	--	--	4.5
2024	--	--	--	--	--	--	4.5
2025	--	--	--	--	--	--	11.9
2026	--	--	--	--	--	--	13.9
2027	--	--	--	--	--	--	2.8
2028	--	--	--	--	--	--	1.3
2029	--	--	--	--	--	--	1.3
Subtotal	--	--	--	--	--	--	427.6

Annual Funding 1611   Procurement   Shipbuilding and Conversion, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2005	--	149.2	--	--	149.2	--	149.2
2006	--	350.1	--	--	350.1	--	350.1
2007	1	1131.1	--	--	1131.1	--	1131.1
2008	--	1365.8	--	--	1365.8	--	1365.8
2009	--	190.7	--	--	190.7	--	190.7
2010	--	169.3	--	--	169.3	--	169.3
2011	1	937.6	--	--	937.6	--	937.6
2012	--	1942.1	--	--	1942.1	--	1942.1
2013	--	173.6	--	--	173.6	--	173.6
2014	--	66.0	--	--	66.0	--	66.0
2015	--	65.6	--	--	65.6	--	65.6
2016	--	489.2	--	--	489.2	--	489.2
2017	1	1633.5	--	--	1633.5	--	1633.5
2018	--	1740.0	--	--	1740.0	--	1740.0
2019	--	407.7	--	--	407.7	--	407.7
2020	--	11.4	--	--	11.4	--	11.4
2021	--	--	--	--	--	--	--
2022	--	--	--	--	--	--	--
2023	--	170.6	--	--	170.6	--	170.6
2024	1	1617.8	--	--	1617.8	--	1617.8
2025	--	2055.2	--	--	2055.2	--	2055.2
2026	--	21.2	--	--	21.2	--	21.2
Subtotal	4	14687.7	--	--	14687.7	--	14687.7

Annual Funding 1611   Procurement   Shipbuilding and Conversion, Navy							
Fiscal Year	Quantity	BY 2006 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2005	--	141.6	--	--	141.6	--	141.6
2006	--	321.0	--	--	321.0	--	321.0
2007	1	991.6	--	--	991.6	--	991.6
2008	--	1157.9	--	--	1157.9	--	1157.9
2009	--	156.9	--	--	156.9	--	156.9
2010	--	134.6	--	--	134.6	--	134.6
2011	1	721.7	--	--	721.7	--	721.7
2012	--	1461.7	--	--	1461.7	--	1461.7
2013	--	128.1	--	--	128.1	--	128.1
2014	--	47.8	--	--	47.8	--	47.8
2015	--	46.5	--	--	46.5	--	46.5
2016	--	339.8	--	--	339.8	--	339.8
2017	1	1111.6	--	--	1111.6	--	1111.6
2018	--	1160.7	--	--	1160.7	--	1160.7
2019	--	266.6	--	--	266.6	--	266.6
2020	--	7.3	--	--	7.3	--	7.3
2021	--	--	--	--	--	--	--
2022	--	--	--	--	--	--	--
2023	--	103.1	--	--	103.1	--	103.1
2024	1	958.3	--	--	958.3	--	958.3
2025	--	1193.5	--	--	1193.5	--	1193.5
2026	--	12.1	--	--	12.1	--	12.1
Subtotal	4	10462.4	--	--	10462.4	--	10462.4

Cost Quantity Information 1611   Procurement   Shipbuilding and Conversion, Navy		
Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned With Quantity) BY 2006 \$M
2005	--	--
2006	--	--
2007	1	2835.1
2008	--	--
2009	--	--
2010	--	--
2011	1	2547.5
2012	--	--
2013	--	--
2014	--	--
2015	--	--
2016	--	--
2017	1	2664.0
2018	--	--
2019	--	--
2020	--	--
2021	--	--
2022	--	--
2023	--	--
2024	1	2415.8
2025	--	--
2026	--	--
Subtotal	4	10462.4



Annual Funding 1804   Acq O&M   Operation and Maintenance, Navy	
Fiscal Year	TY \$M
	Total Program
2010	0.2
2011	0.2
2012	0.2
2013	0.1
2014	0.1
2015	0.2
2016	0.2
2017	0.2
2018	0.2
2019	0.1
2020	0.2
2021	0.1
2022	0.2
2023	0.1
2024	0.2
Subtotal	2.5

Annual Funding 1804   Acq O&M   Operation and Maintenance, Navy		
Fiscal Year	BY 2006 \$M	
	Total Program	
2010		0.2
2011		0.2
2012		0.2
2013		0.1
2014		0.1
2015		0.2
2016		0.2
2017		0.2
2018		0.2
2019		0.1
2020		0.2
2021		0.1
2022		0.1
2023		0.1
2024		0.1
Subtotal		2.3

## Low Rate Initial Production

There is no LRIP for this program.

## Foreign Military Sales

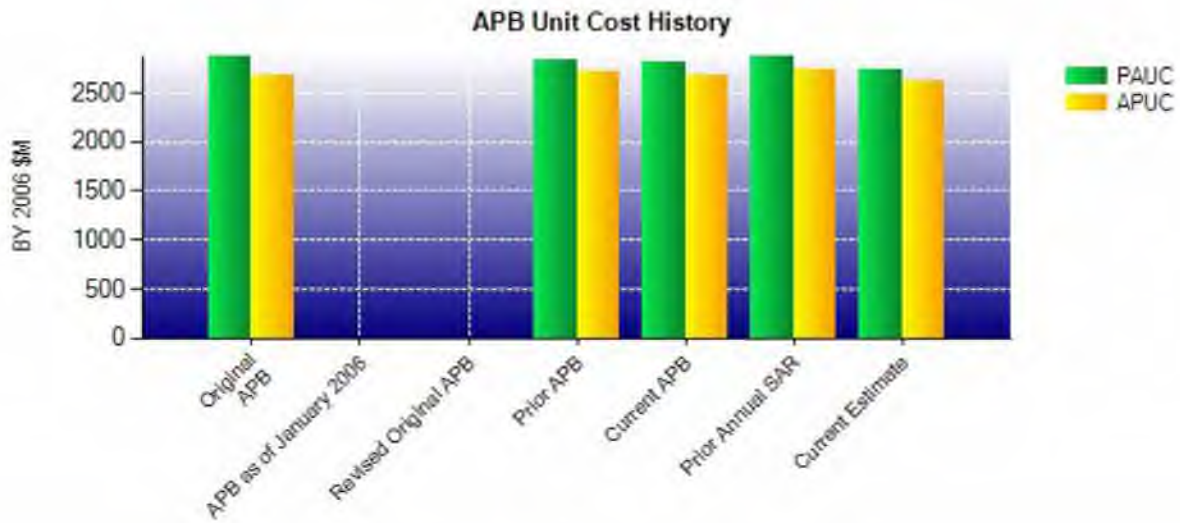
None

## Nuclear Costs

None

**Unit Cost**

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2006 \$M	BY 2006 \$M	% Change
	Current UCR Baseline (Oct 2016 APB)	Current Estimate (Dec 2018 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	8435.6	10892.3	
Quantity	3	4	
Unit Cost	2811.867	2723.075	-3.16
<b>Average Procurement Unit Cost</b>			
Cost	8025.6	10462.4	
Quantity	3	4	
Unit Cost	2675.200	2615.600	-2.23
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2006 \$M	BY 2006 \$M	% Change
	Original UCR Baseline (Jan 2006 APB)	Current Estimate (Dec 2018 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	2877.4	10892.3	
Quantity	1	4	
Unit Cost	2877.400	2723.075	-5.36
<b>Average Procurement Unit Cost</b>			
Cost	2677.5	10462.4	
Quantity	1	4	
Unit Cost	2677.500	2615.600	-2.31



APB Unit Cost History					
Item	Date	BY 2006 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Jan 2006	2877.400	2677.500	3093.500	2896.000
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	May 2012	2831.550	2710.450	3402.450	3281.700
Current APB	Oct 2016	2811.867	2675.200	3662.833	3513.000
Prior Annual SAR	Dec 2017	2875.300	2733.200	3752.400	3595.800
Current Estimate	Dec 2018	2723.075	2615.600	3790.775	3671.925

**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	
3093.500	211.775	784.725	3.850	14.625	-385.700	68.000	0.000	697.275	3790.775

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2896.000	211.850	932.850	2.350	0.000	-439.125	68.000	0.000	775.925	3671.925

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	Jul 2001	N/A	Jul 2001
Milestone B	N/A	Jan 2006	N/A	Jan 2006
Milestone C	N/A	N/A	N/A	N/A
IOC	N/A	Sep 2013	N/A	Mar 2016
Total Cost (TY \$M)	N/A	3093.5	N/A	15163.1
Total Quantity	N/A	1	N/A	4
PAUC	N/A	3093.500	N/A	3790.775

**Cost Variance**

Summary TY \$M					
Item	RDT&E	Procurement	MILCON	Acq O&M	Total
SAR Baseline (Development Estimate)	197.5	2896.0	--	--	3093.5
Previous Changes					
Economic	-1.1	+781.1	--	-0.1	+779.9
Quantity	--	+7886.7	--	--	+7886.7
Schedule	--	+9.4	--	--	+9.4
Engineering	+58.5	--	--	--	+58.5
Estimating	+212.3	-1057.8	--	+2.7	-842.8
Other	--	+272.0	--	--	+272.0
Support	--	--	--	--	--
Subtotal	+269.7	+7891.4	--	+2.6	+8163.7
Current Changes					
Economic	+0.7	+66.3	--	+0.2	+67.2
Quantity	--	+4532.7	--	--	+4532.7
Schedule	+6.0	--	--	--	+6.0
Engineering	--	--	--	--	--
Estimating	-1.0	-698.7	--	-0.3	-700.0
Other	--	--	--	--	--
Support	--	--	--	--	--
Subtotal	+5.7	+3900.3	--	-0.1	+3905.9
Total Changes	+275.4	+11791.7	--	+2.5	+12069.6
CE - Cost Variance	472.9	14687.7	--	2.5	15163.1
CE - Cost & Funding	472.9	14687.7	--	2.5	15163.1



Summary BY 2006 \$M					
Item	RDT&E	Procurement	MILCON	Acq O&M	Total
SAR Baseline (Development Estimate)	199.9	2677.5	--	--	2877.4
Previous Changes					
Economic	--	--	--	--	--
Quantity	--	+6142.3	--	--	+6142.3
Schedule	-0.1	-33.3	--	--	-33.4
Engineering	+49.5	--	--	--	+49.5
Estimating	+174.5	-836.6	--	+2.5	-659.6
Other	--	+249.7	--	--	+249.7
Support	--	--	--	--	--
Subtotal	+223.9	+5522.1	--	+2.5	+5748.5
Current Changes					
Economic	--	--	--	--	--
Quantity	--	+2685.0	--	--	+2685.0
Schedule	+4.5	--	--	--	+4.5
Engineering	--	--	--	--	--
Estimating	-0.7	-422.2	--	-0.2	-423.1
Other	--	--	--	--	--
Support	--	--	--	--	--
Subtotal	+3.8	+2262.8	--	-0.2	+2266.4
Total Changes	+227.7	+7784.9	--	+2.3	+8014.9
CE - Cost Variance	427.6	10462.4	--	2.3	10892.3
CE - Cost & Funding	427.6	10462.4	--	2.3	10892.3

Previous Estimate: December 2017

RDT&E	\$M	
	Base Year	Then Year
<b>Current Change Explanations</b>		
Revised escalation indices. (Economic)	N/A	+0.7
Additional funding for LHA 9 planning estimate in FY 2021. (Schedule)	+4.7	+6.0
Schedule variance due to LHA 6 F-35 test moved from FY2020 to FY2021 because asset required is not operationally available. (Schedule)	-0.2	0.0
Refined estimate for LHA 8 for FY 2024 and FY 2025. (Estimating)	-0.2	-0.3
Adjustment for current and prior escalation. (Estimating)	-0.2	-0.2
Revised estimate due to application of new outyear inflation indices. (Estimating)	-0.3	-0.5
<b>RDT&amp;E Subtotal</b>	<b>+3.8</b>	<b>+5.7</b>

Procurement	\$M	
	Base Year	Then Year
<b>Current Change Explanations</b>		
Revised escalation indices. (Economic)	N/A	+66.3
Total Quantity variance resulting from an increase of one ship (LHA 9) from three to four. (Quantity)	+2685.0	+4532.7
Revised estimate due to a change in estimating assumptions associated with the additional ship buy. (Estimating) (QR)	-625.0	-1017.0
Revised estimate to reflect rephasing LHA 7 Outfitting and Post Delivery requirements. (Estimating)	+10.0	+17.3
Revised estimate to reflect rephasing LHA 8 Outfitting and Post Delivery requirements. (Estimating)	+57.9	+100.0
Revised estimate for LHA Replacement Class Pricing Adjustment for LHA 9 Advance Procurement. (Estimating)	-12.0	-20.0
Refined estimate due to Contract Services Reform Reduction against LHA 9. (Estimating)	-1.6	-2.6
Additional funding for LHA 9 Advanced Procurement to support future ship acceleration. (Estimating)	+228.9	+350.0
Adjustment for current and prior escalation. (Estimating)	-41.7	-61.2
Revised estimate to reflect application of new outyear inflation indices. (Estimating)	-38.7	-65.2
<b>Procurement Subtotal</b>	<b>+2262.8</b>	<b>+3900.3</b>

(QR) Quantity Related

Acq O&M	\$M	
	Base Year	Then Year
<b>Current Change Explanations</b>		
Revised escalation indices. (Economic)	N/A	+0.2
Refined estimate for LHA 8 acquisition requirement. (Estimating)	-0.1	-0.1
Revised estimate due to application of new outyear inflation indices. (Estimating)	-0.1	-0.2
<b>Acq O&amp;M Subtotal</b>	<b>-0.2</b>	<b>-0.1</b>

~~(U//FOUO)~~ Contracts

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** LHA 7 Detail Design & Construction Contract (DD&C)  
**Contractor:** Huntington Ingalls Incorporated (HII)  
**Contractor Location:** 1000 Access Road  
 Pascagoula, MS 39567  
**Contract Number:** N00024-10-C-2229  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** June 30, 2010  
**Definitization Date:** May 31, 2012

~~(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

(b)(5)

[Redacted Contract Price Data]							
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**Notes**

Due to HII transition to a new Business/Financial system on January 2019, the December 2018 CPR is used in this report.

This contract is more than 90% complete; therefore, this is the final report for this contract.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** LHA 8 Detail Design and Construction Contract (DD&C)  
**Contractor:** Huntington Ingalls Incorporated  
**Contractor Location:** 1000 Access Road  
 Pascagoula, MS 39567-4485  
**Contract Number:** N00024-16-C-2427/1  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** June 30, 2016  
**Definitization Date:** June 30, 2017

(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
(b)(5)							

**Notes**

Due to HII transition to a new Business/Financial system on January 2019, the December 2018 CPR is used in this report. The PM Estimated Price at Completion reflects the Current Target Price of the contract.

## Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	0	--
Production	4	1	4	25.00%
Total Program Quantity Delivered	4	1	4	25.00%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	15163.1	Years Appropriated	19
Expended to Date	7060.7	Percent Years Appropriated	65.52%
Percent Expended	46.57%	Appropriated to Date	11206.0
Total Funding Years	29	Percent Appropriated	73.90%

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

### Notes

The planned delivery to date was increased to four ships due to funding added for LHA 9.

## Operating and Support Cost

### Cost Estimate Details

<b>Date of Estimate:</b>	May 09, 2016
<b>Source of Estimate:</b>	POE
<b>Quantity to Sustain:</b>	3
<b>Unit of Measure:</b>	Ship
<b>Service Life per Unit:</b>	40.00 Years
<b>Fiscal Years in Service:</b>	FY 2017 - FY 2064

The LHA (R) program is currently comprised of the LHA 6, LHA 7 and LHA 8 ships. LHA 6 was delivered to the Navy in April 2014. LHA 7 is under construction, and the Advanced Procurement and the Detail Design of LHA 8 has commenced.

The O&S cost estimate will be updated when a new APB is approved with 4 ships as Program of Record.

The intent is to estimate the normal costs of O&S the ship in typical peacetime operations. Additional costs that might be incurred under wartime operating scenarios are not included. Potential costs of currently unplanned and unknown future upgrades or configuration changes are assumed to occur in the same proportion as modernization work that has occurred on the LHD 1 ship class. Nominal OPTEMPO is assumed to be 2700 hours steaming underway and 1200 hours steaming not underway, based on the fuel burn rates and time profiles provided by the LHA 6 design team.

### Sustainment Strategy

The LHA (R) sustainment strategy includes the use of commercial shipyards for depot maintenance in concert with Organizational (O) and Intermediate (I) level maintenance strategies. Existing shore support and infrastructure will be used to the maximum extent possible. Life cycle cost savings are anticipated from fuel savings realized from the propulsion system and Manpower savings expected from operations and maintenance of the Gas Turbine engines.

### Antecedent Information

The antecedent system designated for LHA (R) program is LHD 1. LHD 1 Unitized O&S Costs (BY 2006 \$M) reflect the Operating and Support Cost Analysis Model (OSCAM) historical average dataset for LHD 1. Visibility and Management of Operating and Support Costs (VAMOSC) data reflects average O&S return data for active ships (LHD1-7) between FY 1992 and FY 2016. Open Architecture Retrieval System (OARS) 3-M data includes the years FY 2001 through FY 2016. Like the LHA (R) program Unitized O&S Costs, antecedent costs reflect a 40 year life cycle. Projected manning includes approximately 24 fewer officer and 55 fewer enlisted personnel than the average historical manning on LHD 1-7. However, FY 2006 Military Pay Rates utilized to estimate Personnel are approximately 12 percent higher than the average LHD 1-7 historical rates, which were inflated to FY 2006. Therefore, Unit Level Personnel costs do not reflect expected savings due to reduction in crew size. If personnel rates were normalized, it would show an approximate 10 percent savings when compared to the antecedent class. The discrepancy between historical rates and the FY 2006 set could be driven in part by actual crews being manned with lower ranking personnel than that assumed in the baseline estimate. For comparative purposes, the FY 2006 cost per barrel of Diesel Fuel, Marine (DFM) was substituted for the historical average cost of DFM observed in LHD 1 class data. This methodology better aligns LHD 1 historical requirements for Unit Operations with estimated requirements. In line with LHA (R) Maintenance requirements, antecedent Maintenance costs reflect requirements laid out in the Office of the Chief of Naval Operations (OPNAV) 4700.

Annual O&S Costs BY2006 \$M			
Cost Element	LHA 6		LHD 1 (Antecedent)
	Average Annual Cost Per Ship		Average Annual Cost Per Ship
Unit-Level Manpower	68.694		71.983
Unit Operations	12.102		18.910
Maintenance	31.178		34.882
Sustaining Support	8.997		9.276
Continuing System Improvements	9.749		8.978
Indirect Support	40.464		45.227
Other	0.000		0.000
<b>Total</b>	<b>171.184</b>		<b>189.256</b>

Item	Total O&S Cost \$M			
	LHA 6			LHD 1 (Antecedent)
	Current Development APB Objective/Threshold	Current Estimate		
<b>Base Year</b>	20542.0	22596.2	20542.0	22710.8
<b>Then Year</b>	38382.5	N/A	38382.5	0.0

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

Total O&S Cost = 3 Ships X 40 Service Life X \$171.184M Average Annual Cost Per Ship = \$20,542.0M.

O&S Cost Variance		
Category	BY 2006 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2017 SAR	20542.0	
Programmatic/Planning Factors	0.0	
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	
<b>Total Changes</b>	<b>0.0</b>	
Current Estimate	20542.0	

#### Disposal Estimate Details

**Date of Estimate:** May 09, 2016  
**Source of Estimate:** POE  
**Disposal/Demilitarization Total Cost (BY 2006 \$M):** 28.6

The CG class of ship was determined by the Naval Sea Systems Command (NAVSEA) Inactive Ships Program Office (PMS 211) as most comparable to the LHA 7 out of those vessels historically disposed of by NAVSEA. The decision to use the CG class of ships was based upon the comparison of warship compartmentalization, hazardous materials to remove and hull weight, influenced by scrap metal commodity prices.