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Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-542



LPD 17 San Antonio Class Amphibious Transport Dock (LPD 17)

As of FY 2020 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Sensitivity Originator

No originator information is available at this time.

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

LPD 17 San Antonio Class Amphibious Transport Dock (LPD 17)

DoD Component

Navy

Responsible Office

CAPT Brian Metcalf
LPD 17 Amphibious Transport Dock
Ship Program Office (PMS317)
PEO Ships
Washington, DC 20376-2401

Phone: 202-781-0159
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DSN Phone: 326-0159
DSN Fax:
Date Assigned: August 12, 2016

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References

SAR Baseline (Development Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated June 17, 1996

Approved APB

Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated January 8, 2019

Mission and Description

The LPD 17 Flight I San Antonio Class Amphibious Transport Dock Ship (LPD 17) is the functional replacement for the LPD 4, LSD 36, LKA 113, and LST 1179 Classes of Amphibious Ships for embarking, transporting and landing elements of a Marine landing force in an assault by helicopters, landing craft, amphibious vehicles, and by a combination of these methods to conduct the primary amphibious warfare mission.

The LPD 17 Flight II ships are the functional replacement for the LSD 41/49 Class ships.

Core missions for an independently operating LPD 17 and embarked Marines include: Embassy Reinforcement, Maritime Interception Operations, Non-Combatant Evacuation Operations, Humanitarian Assistance/Disaster Response, Theater Security Cooperation, Tactical Recovery of Aircraft and Personnel, and Limited Amphibious Raids. All of these missions require an LPD 17 with organic aviation capacity, sufficient command and control capability to support all platform and embarked force needs, and sufficient medical capability and capacity required to support the operational force.

Executive Summary

Program Highlights Since Last Report

Eleven of thirteen LPD 17 Flight I ships have been delivered and are operating as Fleet assets, and the two final Flight I ships are under construction at Huntington Ingalls Industries in Pascagoula, MS. In April 2018, the MDA directed that the LX (R) requirement be subsumed into the San Antonio Class Program, managed as LPD Flight II, and comply with the JROC validated CDD. The transition from LPD Flight I to LPD Flight II takes place by phasing in design, producibility, and fact-of-life changes across LPD 28 – LPD 30. LPD 30 will be the first LPD Flight II hull.

USS PORTLAND (LPD 27) Post Shakedown Availability (PSA) concludes in CY 2019 and will begin workups in preparation for her first deployment. The installation of a Solid State Laser weapon system technology maturation demonstration will be completed during PSA.

FORT LAUDERDALE (LPD 28) is 38% complete (December 2018). The ship is projected to launch in early CY 2020 and deliver in the Fall 2021.

RICHARD M. McCOOL JR. (LPD 29) detail design and construction contract was awarded in February 2018, and construction is 5% complete (December 2018). The Integrated Baseline Review to assess the production plan and establish the EVM baseline was completed in November 2018. The ship is projected to deliver in the Summer of 2023.

The Consolidated Appropriations Act, 2018, provided full funding for the Detail Design and Construction of LPD 30. LPD 30 will be the first of thirteen Flight II ships. An Undefined Contract Action for Long Lead Time Material was awarded on August 2, 2018; and the Detail Design and Construction contract is planned to be awarded in early CY 2019.

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
September 1990	JROC Validates LX Mission Needs Statement.
January 1993	Defense Acquisition Board Milestone I Approval.
October 1994	PMS 317 Program Office established.
May 1996	Operational Requirements Document (Rev. 03) Approval.
June 1996	Defense Acquisition Board Milestone II approval.
December 1996	Lead ship (LPD 17) contract award.
July 2005	Lead ship (LPD 17) delivered.
August 2005	Hurricane Katrina causes significant damage to the Gulf Coast with the shipyards at Avondale, LA and Pascagoula, MS.
January 2006	Lead ship commissioned (LPD 17).
August 2008	First deployment of lead ship (LPD 17).
April 2014	LX(R) Analysis of Alternatives completed.
February 2016	LX(R) CDD Signed.
April 2018	LPD Flight II ADM Signed. LX(R) subsumed into the SAN ANTONIO Class Program.
August 2018	Long Lead Time Material contract for first LPD Flight II ship (LPD 30) awarded.
November 2018	Flight II Acquisition Strategy signed.
January 2019	APB revised to add LPD 17 Flight II ships.

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"/>

Nunn-McCurdy Breaches

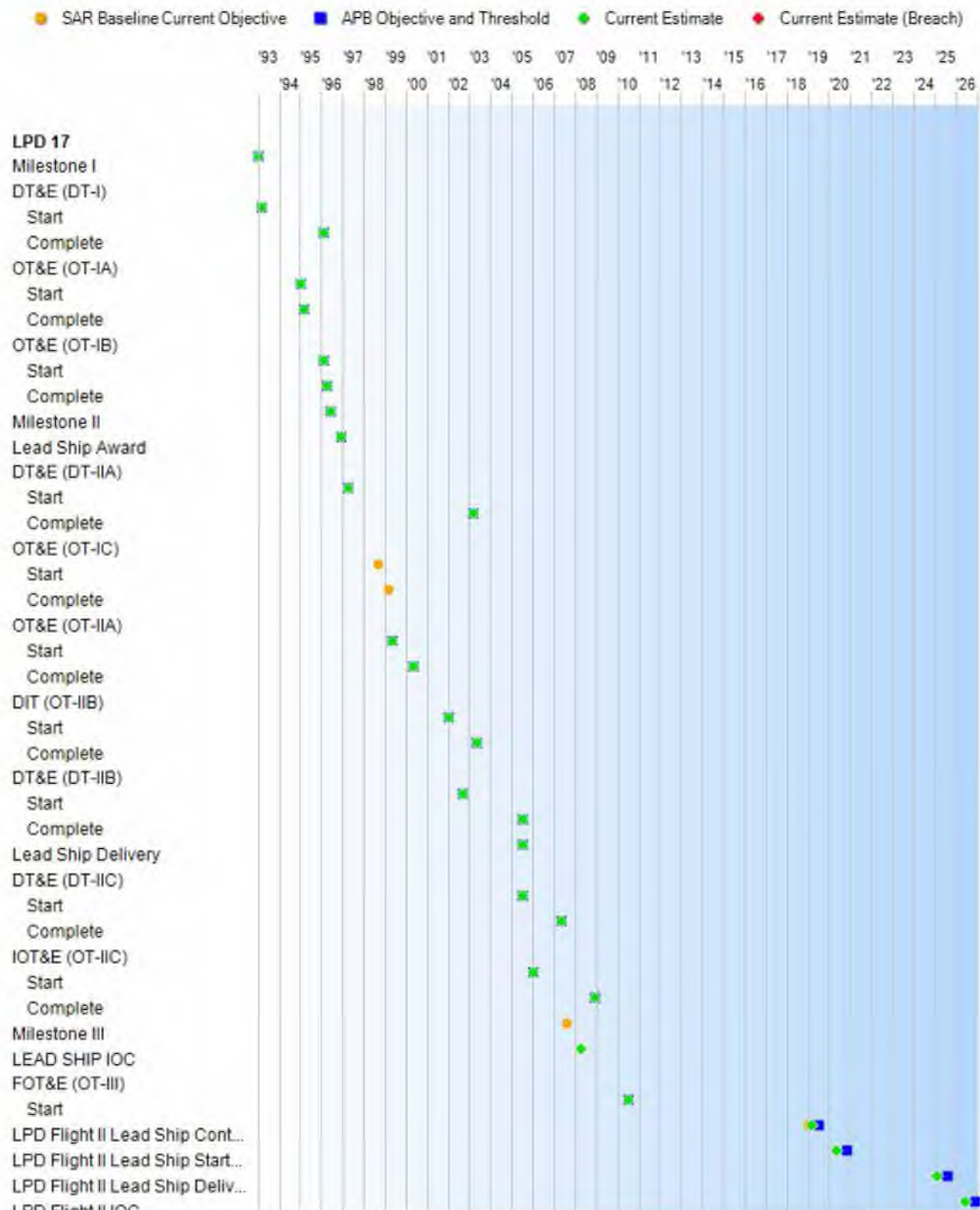
Current UCR Baseline

PAUC	None
APUC	None

Original UCR Baseline

PAUC	None
APUC	None

Schedule



LPD Flight II ICG

Schedule Events				
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate
Milestone I	Jan 1993	Jan 1993	Jan 1993	Jan 1993
DT&E (DT-I)				
Start	Mar 1993	Mar 1993	Mar 1993	Mar 1993
Complete	Feb 1996	Feb 1996	Feb 1996	Feb 1996
OT&E (OT-IA)				
Start	Jan 1995	Jan 1995	Jan 1995	Jan 1995
Complete	Mar 1995	Mar 1995	Mar 1995	Mar 1995
OT&E (OT-IB)				
Start	Feb 1996	Feb 1996	Feb 1996	Feb 1996
Complete	Apr 1996	Apr 1996	Apr 1996	Apr 1996
Milestone II	Jun 1996	Jun 1996	Jun 1996	Jun 1996
Lead Ship Award	Aug 1996	Dec 1996	Dec 1996	Dec 1996
DT&E (DT-IIA)				
Start	Sep 1996	Apr 1997	Apr 1997	Apr 1997
Complete	Aug 1998	Mar 2003	Mar 2003	Mar 2003
OT&E (OT-IC)				
Start	Sep 1998	N/A	N/A	N/A
Complete	Mar 1999	N/A	N/A	N/A
OT&E (OT-IIA)				
Start	Jun 2003	May 1999	May 1999	May 1999
Complete	Sep 2003	May 2000	May 2000	May 2000
DIT (OT-IIB)				
Start	N/A	Jan 2002	Jan 2002	Jan 2002
Complete	N/A	May 2003	May 2003	May 2003
DT&E (DT-IIB)				
Start	Sep 1998	Sep 2002	Sep 2002	Sep 2002
Complete	Jun 2002	Jul 2005	Jul 2005	Jul 2005
Lead Ship Delivery	Jun 2002	Jul 2005	Jul 2005	Jul 2005
DT&E (DT-IIC)				
Start	Jul 2002	Jul 2005	Jul 2005	Jul 2005
Complete	Jan 2004	May 2007	May 2007	May 2007
IOT&E (OT-IIC)				
Start	N/A	Jan 2006	Jan 2006	Jan 2006

Complete	N/A	Dec 2008	Dec 2008	Dec 2008	
Milestone III	Aug 2007	N/A	N/A	N/A	
LEAD SHIP IOC	Jan 2004	Apr 2008	Apr 2008	Apr 2008	
FOT&E (OT-III)					
Start	Jan 2011	Jul 2010	Jul 2010	Jul 2010	
LPD Flight II Lead Ship Contract Award	N/A	Jan 2019	Jul 2019	Mar 2019	(Ch-1)
LPD Flight II Lead Ship Start Fabrication	N/A	May 2020	Nov 2020	May 2020	(Ch-1)
LPD Flight II Lead Ship Delivery	N/A	Feb 2025	Aug 2025	Feb 2025	(Ch-1)
LPD Flight II IOC	N/A	Jun 2026	Dec 2026	Jun 2026	(Ch-1)

Change Explanations

(Ch-1) ASN (RDA) Acquisition Decision Memorandum dated 10 April 2018 directed that LX(R) shall be subsumed into the SAN

ANTONIO Class Acquisition Category IC Program and managed as LPD Flight II. The schedule objectives for LPD Flight II ships have been added to the LPD 17 Class schedule.

Notes

LPD 27 delivery September 2017; OWLD August 2019.

LPD 28 scheduled delivery September 2021; OWLD January 2023.

LPD 29 scheduled delivery July 2023; OWLD February 2025.

Acronyms and Abbreviations

DIT - Design Integration Testing
 DT - Developmental Test
 DT&E - Developmental Test and Evaluation
 FOT&E - Follow-on Operational Test and Evaluation
 IOT&E - Initial Operational Test and Evaluation
 OT - Operational Test
 OT&E - Operational Test and Evaluation
 OWLD - Obligation Work Limiting Date

Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
Mobility				
Sustained Speed (Kts)				
23	23	21.5	24	24
Endurance ((NM)(K) @ Kts)				
10/22	10/22	9.5/20	10.6/20	10.6/20
Amphibious Warfare Embarkation (Net)				
Troops				
750	750	650	720	720
Vehicles (Sq Ft)(k)				
25	25	22	22	22
Cargo (Cubic Feet)(k)				
25	25	22	34	34
Bulk Fuel (Gals)(k)				
325	325	250	307	307
LCAC				
2	2	1(+1)	2	2
VTOL Land/Launch Spots (CH-46 or CH-53E or MV-22)				
4/3/2	4/3/2	4/2/2	4/2/2	4/2/2
VTOL Maint/Storage (CH-46 or CH-53E or MV-22)				
3/1/1	3/1/1	2/1/1	2/1/1	2/1/1
Ship To Shore Capability (LCAC)				
Sustained Operations (reload 6 LCACs)(mins)				
220	220	285	274	274
Operational Availability (Ao)				
.90	.90	.80	.92	.92
LPD Flight II Operational Availability (Ao)				
N/A	.80	(T=O) .80		.80
LPD Flight II Bulk Fuel (Gallons) (K)				
N/A	310	(T=O) 310		310
LPD Flight II Troops				
N/A	552	(T=O) 552		552

LPD Flight II Vehicles (Square Feet) (K)			
N/A	20.88	(T=O) 20.88	20.88
LPD Flight II Cargo (Cubic Feet) (K)			
N/A	28 (after 0.75 broken stow factor is applied)	(T=O) 28 (after 0.75 broken stow factor is applied)	28 (after 0.75 broken stow factor is applied)
LPD Flight II LCAC/SSC / LCU Spots			
N/A	2 / 1	(T=O) 2 / 1	2 / 1
LPD Flight II Aircraft Refueling and Arming			
N/A	Simultaneous refueling and electrical service of four (4) aircraft and re-arming/de-arming of two (2) aircraft in any combination of MV-22, CH-53, H-1, and H-60	(T=O) Simultaneous refueling and electrical service of four (4) aircraft and re-arming/de-arming of two (2) aircraft in any combination of MV-22, CH-53, H-1, and H-60	Simultaneous refueling and electrical service of four (4) aircraft and re-arming/de-arming of two (2) aircraft in any combination of MV-22, CH-53, H-1, and H-60
LPD Flight II VTOL Land and Launch Spots			
N/A	Two (2) primary and four (4) expanded launch spots	(T=O) Two (2) primary and four (4) expanded launch spots	Two (2) primary and four (4) expanded launch spots

Requirements Reference

ORD Revision 3 dated April 8, 1996 and CDD for Amphibious Ship Replacement Program (LX(R)) dated October 17, 2016 - LPD Flight II only

Change Explanations

None

Notes

Demonstrated Performance for Sustained Speed and Vehicles (Sq Ft) reflect performance during LPD 17 BT.

Demonstrated Performance for Troops, Cargo (Cubic Feet), LCAC, and VTOL Land/Launch Spots reflect measurements taken during LPD 17 Sail Away Trials.

Demonstrated Performance for Bulk Fuel, VTOL Maintenance/Storage, and Sustained Operations reflect performance during LPD 17 Class IOT&E events.

Demonstrated Performance for Ao reflects performance cited in the LPD 17 Class OPEVAL report dated January 2010.

Acronyms and Abbreviations

Ao - Operational Availability
BT - Builder's Trials
Gals - gallons
IOT&E - Initial Operational Test and Evaluation
K/k - Thousands
Kts - Knots
LCAC - Landing Craft Air Cushion
mins - minutes
NM - Nautical Miles
OPEVAL - Operational Evaluation
Sq Ft - square feet
VTOL - Vertical Take-Off and Landing

Track to Budget

RDT&E

Appn	BA	PE		
Navy	1319	05	0604311N	
	Project	Name		
	2283	LPD 17 Class Systems Integration		(Shared) (Sunk)
Navy	1319	04	0604454N	
	Project	Name		
	2474	LPD Flight II Design & Integration		

Procurement

Appn	BA	PE		
Navy	1611	03	0204411N	
	Line Item	Name		
	3010	LPD Flight II		
	3036	LPD-17		
Navy	1611	05	0204411N	
	Line Item	Name		
	5110	Outfitting	(Shared)	
	5300	Completion of Prior Year Shipbuilding Programs	(Shared)	

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 1996 \$M			BY 1996 \$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	78.7	276.1	303.7	269.6	77.8	354.2	342.9
Procurement	8939.4	29073.7	31981.1	28816.8	10684.0	51527.3	51457.1
Flyaway	--	--	--	28816.8	--	--	51457.1
Recurring	--	--	--	28779.7	--	--	51357.2
Non Recurring	--	--	--	37.1	--	--	99.9
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	0.0	0.0	0.0	0.0	0.0	0.0
Total	9018.1	29349.8	N/A	29086.4	10761.8	51881.5	51800.0

Current APB Cost Estimate Reference

POE dated November 05, 2018

Cost Notes

A Program Office Estimate has been completed for the LPD 17 Class in the previous year. The estimate was developed using actuals through LPD 27, the EAC for LPD 28, and applying a historically demonstrated learning curve.

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	0	0	0
Procurement	12	26	26
Total	12	26	26

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	284.0	5.6	12.5	12.3	3.0	3.1	3.2	19.2	342.9
Procurement	24149.7	352.0	265.8	1673.0	91.5	1767.5	46.7	23110.9	51457.1
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	24433.7	357.6	278.3	1685.3	94.5	1770.6	49.9	23130.1	51800.0
PB 2019 Total	22464.8	3.5	8.7	14.9	15.0	8.2	144.7	0.0	22659.8
Delta	1968.9	354.1	269.6	1670.4	79.5	1762.4	-94.8	23130.1	29140.2

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	14	0	0	1	0	1	0	10	26
PB 2020 Total	0	14	0	0	1	0	1	0	10	26
PB 2019 Total	0	13	0	0	0	0	0	0	0	13
Delta	0	1	0	0	1	0	1	0	10	13

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
1990	--	--	--	--	--	--	0.5
1991	--	--	--	--	--	--	4.9
1992	--	--	--	--	--	--	1.2
1993	--	--	--	--	--	--	10.3
1994	--	--	--	--	--	--	28.0
1995	--	--	--	--	--	--	10.8
1996	--	--	--	--	--	--	9.2
1997	--	--	--	--	--	--	4.3
1998	--	--	--	--	--	--	12.9
1999	--	--	--	--	--	--	1.3
2000	--	--	--	--	--	--	2.3
2001	--	--	--	--	--	--	0.2
2002	--	--	--	--	--	--	0.5
2003	--	--	--	--	--	--	5.6
2004	--	--	--	--	--	--	3.1
2005	--	--	--	--	--	--	7.4
2006	--	--	--	--	--	--	8.5
2007	--	--	--	--	--	--	4.8
2008	--	--	--	--	--	--	0.3
2009	--	--	--	--	--	--	--
2010	--	--	--	--	--	--	4.2
2011	--	--	--	--	--	--	0.4
2012	--	--	--	--	--	--	6.4
2013	--	--	--	--	--	--	1.5
2014	--	--	--	--	--	--	15.4
2015	--	--	--	--	--	--	32.5
2016	--	--	--	--	--	--	73.4
2017	--	--	--	--	--	--	24.7
2018	--	--	--	--	--	--	9.4
2019	--	--	--	--	--	--	5.6
2020	--	--	--	--	--	--	12.5
2021	--	--	--	--	--	--	12.3
2022	--	--	--	--	--	--	3.0
2023	--	--	--	--	--	--	3.1
2024	--	--	--	--	--	--	3.2

2025	--	--	--	--	--	--	10.4
2026	--	--	--	--	--	--	3.2
2027	--	--	--	--	--	--	3.4
2028	--	--	--	--	--	--	2.2
Subtotal	--	--	--	--	--	--	342.9

Annual Funding							
1319 RDT&E Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 1996 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1990	--	--	--	--	--	--	0.6
1991	--	--	--	--	--	--	5.4
1992	--	--	--	--	--	--	1.3
1993	--	--	--	--	--	--	10.8
1994	--	--	--	--	--	--	28.7
1995	--	--	--	--	--	--	10.9
1996	--	--	--	--	--	--	9.1
1997	--	--	--	--	--	--	4.2
1998	--	--	--	--	--	--	12.5
1999	--	--	--	--	--	--	1.2
2000	--	--	--	--	--	--	2.2
2001	--	--	--	--	--	--	0.2
2002	--	--	--	--	--	--	0.5
2003	--	--	--	--	--	--	5.1
2004	--	--	--	--	--	--	2.7
2005	--	--	--	--	--	--	6.4
2006	--	--	--	--	--	--	7.1
2007	--	--	--	--	--	--	3.9
2008	--	--	--	--	--	--	0.2
2009	--	--	--	--	--	--	--
2010	--	--	--	--	--	--	3.3
2011	--	--	--	--	--	--	0.3
2012	--	--	--	--	--	--	4.8
2013	--	--	--	--	--	--	1.1
2014	--	--	--	--	--	--	11.3
2015	--	--	--	--	--	--	23.5
2016	--	--	--	--	--	--	52.0
2017	--	--	--	--	--	--	17.2
2018	--	--	--	--	--	--	6.4
2019	--	--	--	--	--	--	3.7
2020	--	--	--	--	--	--	8.2
2021	--	--	--	--	--	--	7.9
2022	--	--	--	--	--	--	1.9
2023	--	--	--	--	--	--	1.9
2024	--	--	--	--	--	--	1.9
2025	--	--	--	--	--	--	6.2
2026	--	--	--	--	--	--	1.9
2027	--	--	--	--	--	--	1.9
2028	--	--	--	--	--	--	1.2
Subtotal	--	--	--	--	--	--	269.6

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
1996	1	1051.9	--	--	1051.9	--	1051.9
1997	--	--	--	--	--	--	--
1998	--	96.0	--	--	96.0	--	96.0
1999	1	653.2	--	--	653.2	--	653.2
2000	2	1557.6	--	--	1557.6	--	1557.6
2001	--	592.3	--	--	592.3	--	592.3
2002	--	418.0	--	--	418.0	--	418.0
2003	1	1240.7	--	--	1240.7	--	1240.7
2004	1	1654.8	--	--	1654.8	--	1654.8
2005	1	1314.2	--	--	1314.2	--	1314.2
2006	1	3303.0	--	--	3303.0	--	3303.0
2007	--	469.3	--	--	469.3	--	469.3
2008	1	1600.5	--	--	1600.5	--	1600.5
2009	1	1047.0	--	--	1047.0	--	1047.0
2010	--	1234.2	--	--	1234.2	--	1234.2
2011	--	49.2	--	--	49.2	--	49.2
2012	1	1969.6	--	--	1969.6	--	1969.6
2013	--	391.8	--	--	391.8	--	391.8
2014	--	57.2	--	--	57.2	--	57.2
2015	--	1076.1	--	--	1076.1	--	1076.1
2016	1	640.1	--	--	640.1	--	640.1
2017	1	1895.9	--	--	1895.9	--	1895.9
2018	1	1837.1	--	--	1837.1	--	1837.1
2019	--	352.0	--	--	352.0	--	352.0
2020	--	265.8	--	--	265.8	--	265.8
2021	1	1673.0	--	--	1673.0	--	1673.0
2022	--	91.5	--	--	91.5	--	91.5
2023	1	1767.5	--	--	1767.5	--	1767.5
2024	--	46.7	--	--	46.7	--	46.7
2025	1	2005.6	--	--	2005.6	--	2005.6
2026	1	2037.5	--	--	2037.5	--	2037.5
2027	1	2050.5	--	--	2050.5	--	2050.5
2028	1	2083.8	--	--	2083.8	--	2083.8
2029	1	2174.6	--	--	2174.6	--	2174.6
2030	1	2166.7	--	--	2166.7	--	2166.7
2031	1	2264.0	--	--	2264.0	--	2264.0
2032	1	2291.1	--	--	2291.1	--	2291.1
2033	1	2411.0	--	--	2411.0	--	2411.0
2034	1	2557.6	--	--	2557.6	--	2557.6
2035	--	124.6	--	18.5	143.1	--	143.1

2036	--	127.1	--	51.1	178.2	--	178.2
2037	--	129.7	--	30.3	160.0	--	160.0
2038	--	132.3	--	--	132.3	--	132.3
2039	--	134.9	--	--	134.9	--	134.9
2040	--	137.6	--	--	137.6	--	137.6
2041	--	104.9	--	--	104.9	--	104.9
2042	--	72.4	--	--	72.4	--	72.4
2043	--	5.1	--	--	5.1	--	5.1
Subtotal	26	51357.2	--	99.9	51457.1	--	51457.1

Annual Funding 1611 Procurement Shipbuilding and Conversion, Navy							
Fiscal Year	Quantity	BY 1996 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1996	1	1024.9	--	--	1024.9	--	1024.9
1997	--	--	--	--	--	--	--
1998	--	90.1	--	--	90.1	--	90.1
1999	1	603.5	--	--	603.5	--	603.5
2000	2	1403.4	--	--	1403.4	--	1403.4
2001	--	515.9	--	--	515.9	--	515.9
2002	--	362.0	--	--	362.0	--	362.0
2003	1	1015.8	--	--	1015.8	--	1015.8
2004	1	1307.4	--	--	1307.4	--	1307.4
2005	1	994.2	--	--	994.2	--	994.2
2006	1	2413.7	--	--	2413.7	--	2413.7
2007	--	327.9	--	--	327.9	--	327.9
2008	1	1081.4	--	--	1081.4	--	1081.4
2009	1	686.4	--	--	686.4	--	686.4
2010	--	782.0	--	--	782.0	--	782.0
2011	--	30.2	--	--	30.2	--	30.2
2012	1	1181.5	--	--	1181.5	--	1181.5
2013	--	230.3	--	--	230.3	--	230.3
2014	--	33.0	--	--	33.0	--	33.0
2015	--	608.1	--	--	608.1	--	608.1
2016	1	354.3	--	--	354.3	--	354.3
2017	1	1028.2	--	--	1028.2	--	1028.2
2018	1	976.7	--	--	976.7	--	976.7
2019	--	183.5	--	--	183.5	--	183.5
2020	--	135.8	--	--	135.8	--	135.8
2021	1	838.2	--	--	838.2	--	838.2
2022	--	44.9	--	--	44.9	--	44.9
2023	1	851.1	--	--	851.1	--	851.1
2024	--	22.0	--	--	22.0	--	22.0
2025	1	928.3	--	--	928.3	--	928.3
2026	1	924.5	--	--	924.5	--	924.5
2027	1	912.2	--	--	912.2	--	912.2
2028	1	908.8	--	--	908.8	--	908.8
2029	1	929.8	--	--	929.8	--	929.8
2030	1	908.3	--	--	908.3	--	908.3
2031	1	930.5	--	--	930.5	--	930.5
2032	1	923.2	--	--	923.2	--	923.2
2033	1	952.4	--	--	952.4	--	952.4
2034	1	990.5	--	--	990.5	--	990.5
2035	--	47.3	--	7.0	54.3	--	54.3

2036	--	47.3	--	19.0	66.3	--	66.3
2037	--	47.3	--	11.1	58.4	--	58.4
2038	--	47.3	--	--	47.3	--	47.3
2039	--	47.3	--	--	47.3	--	47.3
2040	--	47.3	--	--	47.3	--	47.3
2041	--	35.4	--	--	35.4	--	35.4
2042	--	23.9	--	--	23.9	--	23.9
2043	--	1.7	--	--	1.7	--	1.7
Subtotal	26	28779.7	--	37.1	28816.8	--	28816.8

Cost Quantity Information		
1611 Procurement Shipbuilding and Conversion, Navy		
Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned With Quantity) BY 1996 \$M
1996	1	1812.2
1997	--	--
1998	--	--
1999	1	1160.7
2000	2	2343.2
2001	--	--
2002	--	--
2003	1	1318.7
2004	1	1247.0
2005	1	1133.6
2006	1	1217.5
2007	--	--
2008	1	1299.7
2009	1	1291.4
2010	--	--
2011	--	--
2012	1	1291.2
2013	--	--
2014	--	--
2015	--	--
2016	1	1061.2
2017	1	1033.9
2018	1	1011.8
2019	--	--
2020	--	--
2021	1	1153.1
2022	--	--
2023	1	884.7
2024	--	--
2025	1	961.3
2026	1	949.4
2027	1	945.7
2028	1	944.6
2029	1	942.8
2030	1	942.4
2031	1	943.6
2032	1	945.5
2033	1	954.0
2034	1	990.5

2035	--	--
2036	--	--
2037	--	--
2038	--	--
2039	--	--
2040	--	--
2041	--	--
2042	--	--
2043	--	--
<hr/> Subtotal	26	28779.7

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	6/17/1996	1/8/2019
Approved Quantity	12	14
Reference	Milestone II ADM	LPD Flight II ADM
Start Year	1996	1996
End Year	2016	2018

The Current Total LRIP Quantity is more than 10% of the total production quantity which is standard for shipbuilding programs.

Foreign Military Sales

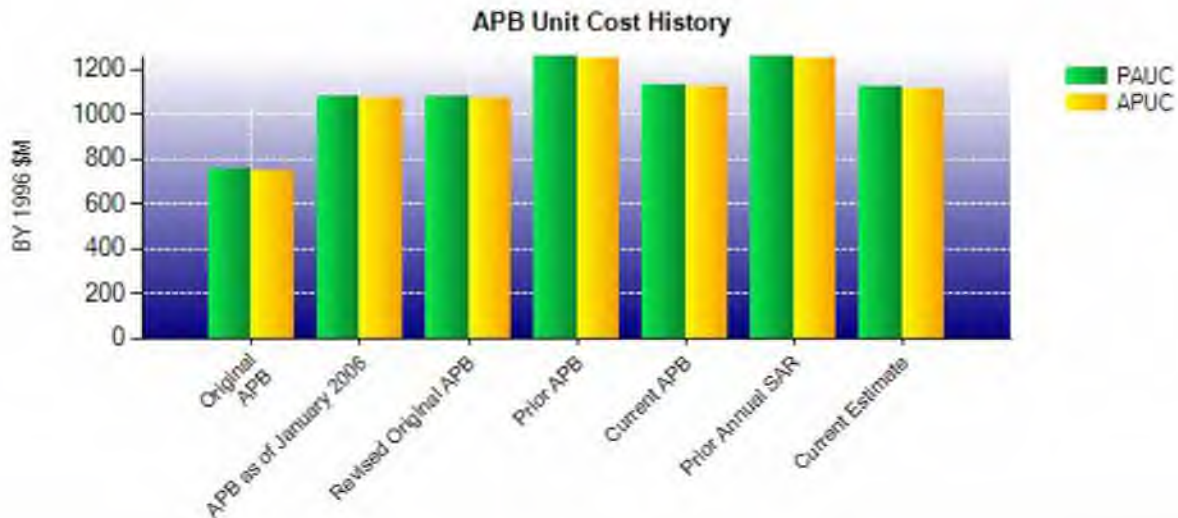
None

Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 1996 \$M	BY 1996 \$M	% Change
	Current UCR Baseline (Jan 2019 APB)	Current Estimate (Dec 2018 SAR)	
Program Acquisition Unit Cost			
Cost	29349.8	29086.4	
Quantity	26	26	
Unit Cost	1128.838	1118.708	-0.90
Average Procurement Unit Cost			
Cost	29073.7	28816.8	
Quantity	26	26	
Unit Cost	1118.219	1108.338	-0.88
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 1996 \$M	BY 1996 \$M	% Change
	Revised Original UCR Baseline (Oct 2005 APB)	Current Estimate (Dec 2018 SAR)	
Program Acquisition Unit Cost			
Cost	12955.2	29086.4	
Quantity	12	26	
Unit Cost	1079.600	1118.708	+3.62
Average Procurement Unit Cost			
Cost	12842.4	28816.8	
Quantity	12	26	
Unit Cost	1070.200	1108.338	+3.56



APB Unit Cost History					
Item	Date	BY 1996 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Jun 1996	751.508	744.950	896.817	890.333
APB as of January 2006	Oct 2005	1079.600	1070.200	1283.233	1273.642
Revised Original APB	Oct 2005	1079.600	1070.200	1283.233	1273.642
Prior APB	Oct 2017	1259.992	1251.431	1752.654	1743.885
Current APB	Jan 2019	1128.838	1118.219	1995.442	1981.819
Prior Annual SAR	Dec 2017	1256.062	1247.131	1743.062	1733.823
Current Estimate	Dec 2018	1118.708	1108.338	1992.308	1979.119

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	
896.817	40.200	70.019	92.265	0.000	682.615	210.450	-0.058	1095.491	1992.308

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
890.333	40.192	73.509	92.031	0.000	672.662	210.450	-0.058	1088.786	1979.119

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone I	Jan 1993	Jan 1993	N/A	Jan 1993
Milestone II	Jul 1995	Jun 1996	N/A	Jun 1996
Milestone III	Oct 2003	Aug 2007	N/A	N/A
IOC	Oct 2003	Jan 2004	N/A	Apr 2008
Total Cost (TY \$M)	59.1	10761.8	N/A	51800.0
Total Quantity	N/A	12	N/A	26
PAUC	N/A	896.817	N/A	1992.308

Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	77.8	10684.0	--	10761.8
Previous Changes				
Economic	+0.2	+994.2	--	+994.4
Quantity	--	+424.0	--	+424.0
Schedule	+6.1	+1092.7	--	+1098.8
Engineering	--	--	--	--
Estimating	+36.0	+6867.3	--	+6903.3
Other	--	+2479.0	--	+2479.0
Support	--	-1.5	--	-1.5
Subtotal	+42.3	+11855.7	--	+11898.0
Current Changes				
Economic	--	+50.8	--	+50.8
Quantity	--	+13951.9	--	+13951.9
Schedule	--	+1300.1	--	+1300.1
Engineering	--	--	--	--
Estimating	+222.8	+10621.9	--	+10844.7
Other	--	+2992.7	--	+2992.7
Support	--	--	--	--
Subtotal	+222.8	+28917.4	--	+29140.2
Total Changes	+265.1	+40773.1	--	+41038.2
CE - Cost Variance	342.9	51457.1	--	51800.0
CE - Cost & Funding	342.9	51457.1	--	51800.0

Summary BY 1996 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	78.7	8939.4	--	9018.1
Previous Changes				
Economic	--	--	--	--
Quantity	--	-268.4	--	-268.4
Schedule	+4.8	+509.9	--	+514.7
Engineering	--	--	--	--
Estimating	+32.6	+5270.5	--	+5303.1
Other	--	+1761.3	--	+1761.3
Support	--	--	--	--
Subtotal	+37.4	+7273.3	--	+7310.7
Current Changes				
Economic	--	--	--	--
Quantity	--	+6099.2	--	+6099.2
Schedule	--	+573.7	--	+573.7
Engineering	--	--	--	--
Estimating	+153.5	+4614.1	--	+4767.6
Other	--	+1317.1	--	+1317.1
Support	--	--	--	--
Subtotal	+153.5	+12604.1	--	+12757.6
Total Changes	+190.9	+19877.4	--	+20068.3
CE - Cost Variance	269.6	28816.8	--	29086.4
CE - Cost & Funding	269.6	28816.8	--	29086.4

Previous Estimate: December 2017

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised estimate to reflect LPD Flight II. (Estimating)	+153.5	+222.8
RDT&E Subtotal	+153.5	+222.8

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+50.8
Total Quantity variance resulting from an increase of 13 ships from 13 to 26. (Subtotal)	+14007.9	+31843.1
Quantity variance resulting from an increase of 13 ships from 13 to 26. (Quantity)	(+8461.4)	(+19240.9)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(+580.5)	(+1318.8)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(+3648.9)	(+8290.7)
Allocation to Other resulting from Quantity change. (Other) (QR)	(+1317.1)	(+2992.7)
Additional quantity variance to reflect actual cost of additional 13 Flight II ships. (Quantity)	-2362.2	-5289.0
Re-phasing of LPD 28/29 post-delivery and outfitting requirements to align with ship production schedules. (Schedule)	-6.8	-18.7
Additional quantity variance due to the additional Advance Procurement funding for Flight II ships. (Estimating) (QR)	+308.7	+597.0
Additional quantity variance for post-delivery and outfitting requirements associated with an increase of 13 ships. (Estimating) (QR)	+615.2	+1619.5
Revised estimate for program closeout costs associated with shutting down production line. (Estimating)	+37.1	+99.9
Revised estimate for cost-to-complete funding for (b)(3):10 USC § 130 restoration and Avondale restructure costs on LPD 28. (Estimating)	+10.2	+20.3
Revised estimate for cost-to-complete funding for (b)(3):10 USC § 130 install and GFE shortfalls on LPD 29. (Estimating)	+21.1	+42.8
Miscellaneous adjustments to post delivery and outfitting. (Estimating)	-0.7	-0.6
Adjustment for current and prior escalation. (Estimating)	-26.4	-47.7
Procurement Subtotal	+12604.1	+28917.4

(QR) Quantity Related

Contracts

Contract Identification

Appropriation: Procurement
Contract Name: LPD 28
Contractor: Huntington Ingalls Industries
Contractor Location: 1000 Access Road
 Pascagoula, MS 39567-0149
Contract Number: N00024-16-C-2431
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: December 19, 2016
Definitization Date: December 19, 2016

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1434.0	1573.0	1	1452.0	1592.0	1	(b)(4)	

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the incorporation of engineering change proposals and settlement of LPD 28's share of Avondale restructure.

Contract Variance		
Item	Cost Variance	Schedule Variance

(b)(4)		
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Notes

LPD 28 construction is being performed at Huntington Ingalls Industries (HII), Pascagoula, Operations.

Over the past year the Program Manager's Estimate At Completion (EAC) has decreased as a result of retiring risks that have not been realized, efficiencies gained through a combination of capital improvements to the shipyard and the incorporation of lessons learned from prior ships. The Program Manager's estimated price at completion includes the government liability associated with the Avondale restructuring/closure modification.

Contract Identification

Appropriation: Procurement
Contract Name: LPD 29
Contractor: Huntington Ingalls Industries
Contractor Location: 1000 Access Road
 Pascagoula, MS 39567
Contract Number: N00024-16-C-2431/29
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: February 16, 2018
Definitization Date: February 16, 2018

Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1399.0	1534.0	1	1400.0	1535.0	1	(b)(4)	

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the incorporation of engineering change proposals.

Contract Variance

Item	Cost Variance	Schedule Variance
(b)(4)		

Notes

This is the first time this contract is being reported.

LPD 29 construction is being performed at Huntington Ingalls Industries (HII) Pascagoula Operations. The Integrated Baseline Review (IBR) was conducted with the shipbuilder in November 2018 to establish the EVM baseline which will be reported in the next SAR submission and the keel laying will occur in spring 2019.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	0	--
Production	11	11	26	42.31%
Total Program Quantity Delivered	11	11	26	42.31%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	51800.0	Years Appropriated	30
Expended to Date	19651.0	Percent Years Appropriated	55.56%
Percent Expended	37.94%	Appropriated to Date	24791.3
Total Funding Years	54	Percent Appropriated	47.86%

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

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	February 11, 2019
Source of Estimate:	POE
Quantity to Sustain:	26
Unit of Measure:	Ship
Service Life per Unit:	40.00 Years
Fiscal Years in Service:	FY 2005 - FY 2083

The cost element data for the LPD 17 class was pulled from the Naval Visibility and Management of Operating & Support Costs (VAMOSOC) database for 2008 through 2017. The average crew size for an LPD 17 class ship over this timeframe was 391.

Per ASN (RDA) Acquisition Decision Memorandum, LX(R) was subsumed into the LPD program as a Flight II; and the O&S estimate has been revised to reflect 26 vice 13 ships.

Sustainment Strategy

Life cycle engineering and support contracts with the shipbuilder and the Integrated Shipboard Electronics contractor, along with In Service Engineering Agent support contracts, are in place to support sustainment efforts.

Responsibilities have been divided to leverage strengths; the shipbuilder maintains the planning yard while the in-service program office manages life-cycle maintenance, modernization, and logistics. Phased maintenance and dry dock availabilities are planned on a standard cycle; and continuous maintenance availabilities are conducted in between.

This strategy has proven to be effective for the first thirteen ships of the class and will be adopted for the Flight II ships.

Antecedent Information

The LPD 17 San Antonio Class Amphibious Transport Dock Ship (LPD 17) is the functional replacement for the LPD 4, LSD 36, LKA 113, and LST 1179 classes of amphibious ships. Of these four ship classes, the LPD 4 class is most analogous to the LPD 17 class in terms of profile, configuration, and crew size; and thus, the LPD 4 class was selected as the antecedent for purposes of O&S cost comparisons. The cost element data for the LPD 4 class was pulled from the Naval VAMOSOC database for all available years of data. The LPD 4 average annual cost per ship was extended using a quantity of 26 ships and expected service life of 40 years to mirror the LPD 17 Class profile and expected service life. The estimate also incorporated actual LPD 4 commissioning and decommissioning profiles. The average annual costs per LPD 4 class ship were calculated in BY 1996 dollars for each cost element.

The cost element estimates for the LPD 4 class were not revised since last year's SAR submission; with the decommissioning of USS PONCE in 2017, all LPD 4 class ships have been decommissioned.

Average crew size for an LPD 4 class ship was 364.

Annual O&S Costs BY1996 \$M		
Cost Element	LPD 17 Average Annual Cost Per Ship	LPD 4 (Antecedent) Average Annual Cost Per Ship
Unit-Level Manpower	17.550	12.300
Unit Operations	4.450	3.900
Maintenance	13.750	8.600
Sustaining Support	1.050	0.900
Continuing System Improvements	2.700	2.400
Indirect Support	11.700	8.300
Other	0.000	0.000
Total	51.200	36.400

Item	Total O&S Cost \$M			
	LPD 17		LPD 4 (Antecedent)	
	Current Development APB Objective/Threshold	Current Estimate		
Base Year	57876.0	63663.6	53248.0	37856.0
Then Year	177795.0	N/A	165496.0	N/A

Equation to Translate Annual Cost to Total Cost

The total O&S cost estimates for both the LPD 17 class and LPD 4 class are based on 26 ships over the same 40-year life cycle timeframe. The estimates were calculated using the following formula.

(Total Average Annual Cost per Hull x 26 hulls x 40 years)

LPD 17: \$51.2M x 26 x 40 = \$53,248M

LPD 4: \$36.4M x 26 x 40 = \$37,856M

O&S Cost Variance		
Category	BY 1996 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2017 SAR	26208.0	
Programmatic/Planning Factors	27040.0	Quantity profile increase from 13 to 26 ships.
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	27040.0	
Current Estimate	53248.0	

The total estimate has been revised to account for the increase in the number of ships for the LPD class from 13 ships to 26 ships. With the sustainment strategy remaining unchanged for the LPD class, there were no other cost elements or factors that would impact the total O&S cost increase.

Disposal Estimate Details

Date of Estimate:	February 11, 2019
Source of Estimate:	POE
Disposal/Demilitarization Total Cost (BY 1996 \$M):	132.6

The disposal cost estimate per ship is unchanged.

The LPD 17 Class disposal cost has been updated to include 26 ships.