Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-516

SSN 774 Virginia Class Submarine (SSN 774)

As of FY 2015 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Common Acronyms and Abbreviations

Acq O&M - Acquisition-Related Operations and Maintenance
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
BA - Budget Authority/Budget Activity
BY - Base Year
DAMIR - Defense Acquisition Management Information Retrieval
Dev Est - Development Estimate
DoD - Department of Defense
DSN - Defense Switched Network
Econ - Economic
Eng - Engineering
Est - Estimating
FMS - Foreign Military Sales
FY - Fiscal Year
IOC - Initial Operational Capability
$K - Thousands of Dollars
LRIP - Low Rate Initial Production
$M - Millions of Dollars
MILCON - Military Construction
N/A - Not Applicable
O&S - Operating and Support
Oth - Other
PAUC - Program Acquisition Unit Cost
PB - President's Budget
PE - Program Element
Proc - Procurement
Prod Est - Production Estimate
QR - Quantity Related
Qty - Quantity
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
Sch - Schedule
Spt - Support
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting

Program Information

Program Name

SSN 774 Virginia Class Submarine (SSN 774)

DoD Component

Navy

Responsible Office

Responsible Office

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Date Assigned June 28, 2012

References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated September 3, 2010

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated September 3, 2010

Mission and Description

The VIRGINIA Class (SSN 774) Submarine Program is bringing forward a critical national security asset designed to flexibly address the unique multi-mission requirements of the post-Cold War era. Capable of performing traditional submarine missions, dominating the littoral battle space and adapting to future requirements, the VIRGINIA Class Submarine satisfies any assigned role well into the Twenty-First Century. Intended to replace the fleet of SSN 688 Class submarines, the VIRGINIA Class Submarine is characterized by state-of-the-art stealth, enhanced features for special operations forces, and cost effective Command, Control, Communication and Intelligence capability. With an array of armament including the MK48 Advanced Capability torpedo and cruise missile vertical launch capability, the VIRGINIA Class Submarine maintains total undersea superiority at an affordable cost.

Executive Summary

As of December 2013, the first ten ships of the VIRGINIA Class have been delivered to the Navy with progressive schedule and quality improvements. There are eight additional submarines under construction. The most recently completed, USS MINNESOTA (SSN 783), was delivered in June 2013, 11 months early to the contract delivery date. The Navy's independent assessor, the Board of Inspection and Survey, gave MINNESOTA the highest score yet for a VIRGINIA Class Submarine at delivery.

The Navy is close to completing contracting actions with General Dynamics Electric Boat and Huntington Ingalls Industries-Newport News for a Block IV Construction Contract to build ten ships (FY 2014 - FY 2018). Award is projected for early 2014. Block IV incorporates cost saving design changes which will lower O&S costs by reducing by one the number of major drydocking availabilities required.

The program is continuing planning actions for a VIRGINIA Payload Module (VPM), which will consist of four large-diameter payload tubes located in a new hull section aft of the sail. VPM will be flexibly designed to support a Tomahawk strike mission to mitigate the loss of strike capacity as a result of the decommissioning SSGNs and also allow for the employment of future payloads. A Capability Development Document (CDD) was approved by the Chief of Naval Operations in June 2013 and was approved by the Joint Requirements Oversight Council on December 17, 2013. The CDD adds Key Performance Parameters for strike capacity, cost and schedule. VPM detail design is targeted for Block V.

Major events for 2014 include the projected delivery of NORTH DAKOTA (SSN 784) in spring 2014. NORTH DAKOTA is the first of the Block III ships which were designed with cost reduction modifications. JOHN WARNER (SSN 785) is scheduled to reach the significant production milestone of Pressure Hull Complete in March followed by launch in August. ILLINOIS (SSN 786) is projected to reach Pressure Hull Complete in October 2014.

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

Threshold Breaches

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

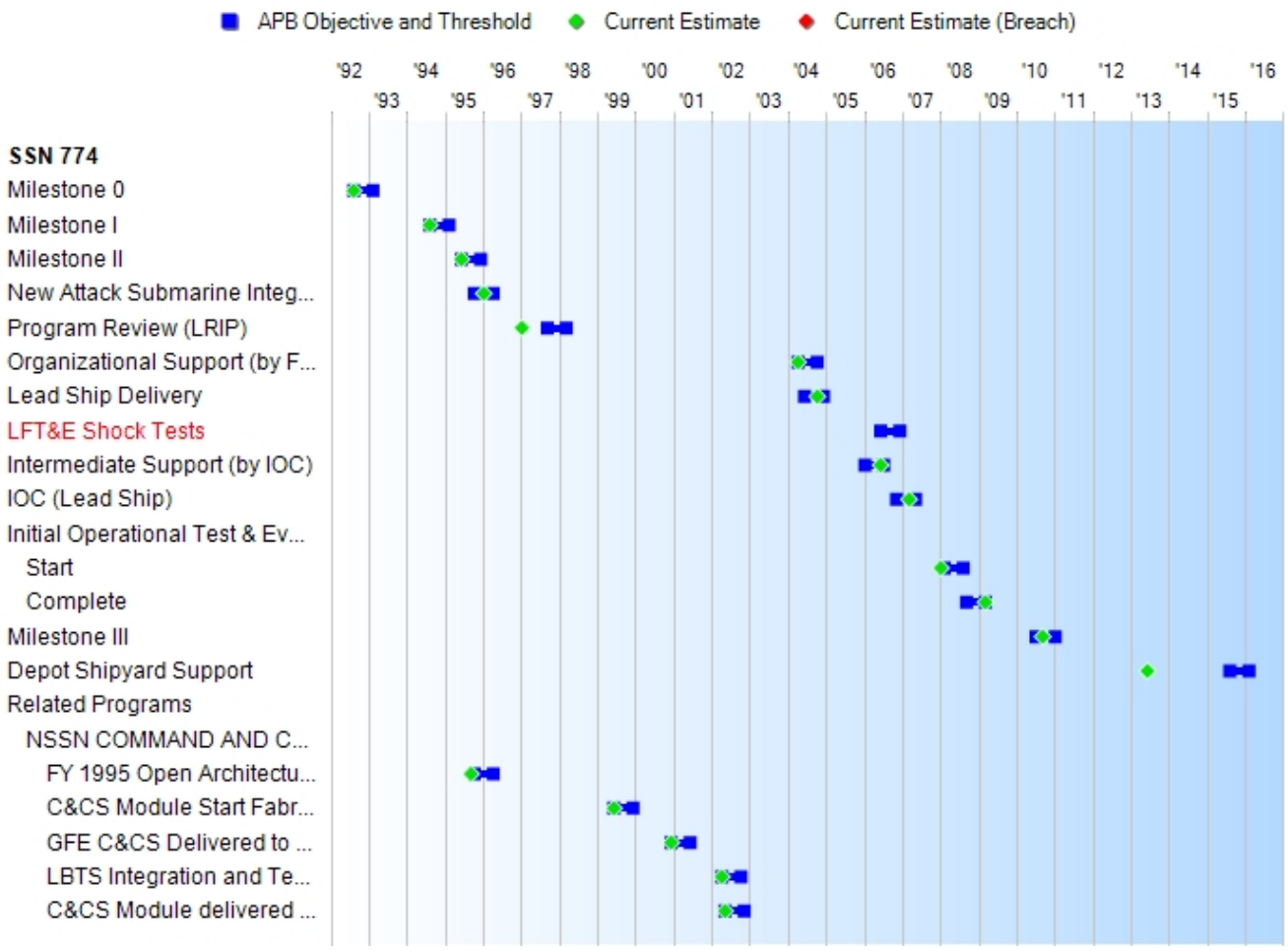
Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	Significant
	APUC	Significant

Explanation of Breach

Schedule -- This schedule breach was previously reported in the December 2006 SAR.

Nunn McCurdy Unit Cost -- This program reflects a significant Nunn-McCurdy breach to the original baseline that was first reported in the December 2005 SAR.

Schedule


APB Objective and Threshold
Current Estimate
Current Estimate (Breach)
'92
'93
'94
'95
'96
'97
'98
'99
'00
'01
'02
'03
'04
'05
'06
'07
'08
'09
'10
'11
'12
'13
'14
'15
'16
SSN 774
Milestone 0
Milestone I
Milestone II
New Attack Submarine Integ...
Program Review (LRIP)
Organizational Support (by F...
Lead Ship Delivery
LFT&E Shock Tests
Intermediate Support (by IOC)
IOC (Lead Ship)
Initial Operational Test & Ev...
Start
Complete
Milestone III
Depot Shipyard Support
Related Programs
NSSN COMMAND AND C...
FY 1995 Open Architectu...
C&CS Module Start Fabr...
GFE C&CS Delivered to ...
LBTS Integration and Te...
C&CS Module delivered ...

Milestones	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate
Milestone 0	AUG 1992	AUG 1992	FEB 1993	AUG 1992
Milestone I	AUG 1994	AUG 1994	FEB 1995	AUG 1994
Milestone II	JUN 1995	JUN 1995	DEC 1995	JUN 1995
New Attack Submarine Integrated Product and Process Development Contract Award	OCT 1995	OCT 1995	APR 1996	JAN 1996
Program Review (LRIP)	SEP 1997	SEP 1997	MAR 1998	JAN 1997
Organizational Support (by Fast Cruise)	APR 2004	APR 2004	OCT 2004	APR 2004
Lead Ship Delivery	JUN 2004	JUN 2004	DEC 2004	OCT 2004
LFT&E Shock Tests	JUN 2006	JUN 2006	DEC 2006	N/A [1]
Intermediate Support (by IOC)	JAN 2006	JAN 2006	JUL 2006	JUN 2006
IOC (Lead Ship)	NOV 2006	NOV 2006	MAY 2007	MAR 2007
Initial Operational Test & Evaluation				
Start	FEB 2008	FEB 2008	AUG 2008	JAN 2008
Complete	SEP 2008	SEP 2008	MAR 2009	MAR 2009
Milestone III	JUL 2010	JUL 2010	JAN 2011	SEP 2010
Depot Shipyard Support	AUG 2015	AUG 2015	FEB 2016	JUN 2013
Related Programs				
NSSN COMMAND AND CONTROL SYSTEM				
FY 1995 Open Architecture Demo Complete	OCT 1995	OCT 1995	APR 1996	SEP 1995
C&CS Module Start Fabrication	JUN 1999	JUN 1999	DEC 1999	JUN 1999
GFE C&CS Delivered to Shipyard	DEC 2000	DEC 2000	JUN 2001	DEC 2000
LBTS Integration and Test Complete	APR 2002	APR 2002	OCT 2002	APR 2002
C&CS Module delivered to ship	MAY 2002	MAY 2002	NOV 2002	MAY 2002

[1] *APB Breach*

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

Change Explanations

None

Memo

On December 4, 2006, the Undersecretary of Defense (Acquisition, Technology and Logistics) notified Congress of the decision to eliminate the VIRGINIA Class Ship Shock Test from the Live Fire Test and Evaluation portion of the VIRGINIA Class Test and Evaluation Master Plan.

Acronyms and Abbreviations

C&CS - Command and Control System
GFE - Government Furnished Equipment
LBTS - Land Based Test Site
LFT&E - Live Fire Test and Evaluation
NSSN - New Attack Submarine

Performance

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

Track to Budget

RDT&E

Appn		BA	PE		
Navy	1319	03	0603561N		
	Project		**Name**		
	F2177		NEW DESIGN SSN HM&E (NSSN UNIQUE)		(Sunk)
Navy	1319	03	0603564N		
	Project		**Name**		
	F2200		Ship Preliminary Design		(Sunk)
Navy	1319	03	0603570N		
	Project		**Name**		
	S2158		NUCLEAR PROPULSION		(Sunk)
Navy	1319	05	0604558N		
	Project		**Name**		
	F1947		NEW DESIGN SSN HM&E and Combat Systems		
	F1950		NEW DESIGN SSN HM&E and Combat Systems		
	F2429		NEW DESIGN SSN HM&E and Combat Systems		(Sunk)
	F2430		NEW DESIGN SSN HM&E and Combat Systems		(Sunk)
	F2644		NEW DESIGN SSN HM&E and Combat Systems		(Sunk)
	F2645		NEW DESIGN SSN HM&E and Combat Systems		(Sunk)
	F2887		NEW DESIGN SSN HM&E and Combat Systems		(Sunk)
	F2888		NEW DESIGN SSN HM&E and Combat Systems		(Sunk)
	F3062		NEW DESIGN SSN HM&E and Combat Systems	(Shared)	(Sunk)
	F4500		VIRGINIA Payload Module		(Sunk)
	Notes:		VIRGINIA Payload Module funding shifted to Program Element 0604580N beginning in FY 2014.		
	F9231		NEW DESIGN SSN HM&E and Combat Systems		(Sunk)
	F9232		NEW DESIGN SSN HM&E and Combat Systems		(Sunk)
	F9386		NEW DESIGN SSN HM&E and Combat Systems		(Sunk)

	F9387		NEW DESIGN SSN HM&E and Combat Systems		(Sunk)
	F9999		NEW DESIGN SSN HM&E and Combat Systems		(Sunk)
Navy	1319	04	0604567N		
	Project		**Name**		
	F2199		Ship Contract Design		(Sunk)
Navy	1319	05	0604580N		
	Project		**Name**		
	F4500		VIRGINIA Payload Module		

Future Years Defense Program (FYDP) funding includes the following projects from Budget Activity (BA) 05 Program Element 0604558: Project F1947 New Design Hull Mechanical & Electrical (HM&E) and Project F1950 New Design Combat Systems. Program Element 0604558, Project 3062, Multi-mission Team Trainer, is not included as part of the VIRGINIA Class baseline acquisition cost for RDT&E. Project F4500 VIRGINIA Payload Module shifted to PE 0604580 beginning in FY 2014.

Procurement

Appn		**BA**	**PE**		
Navy	1611	02	0204281N		
	Line Item		**Name**		
	2013		New SSN (NSSN-1)		
Navy	1611	05	0204281N		
	Line Item		**Name**		
	5110		Outfitting and Post Delivery	(Shared)	
	5300		Completion of Prior Year Shipbuilding Programs	(Shared)	(Sunk)
Navy	1810	01	0204281N		
	Line Item		**Name**		
	0920		Repair Parts	(Shared)	(Sunk)
	0942		VA Class Support Equipment	(Shared)	

VIRGINIA Class program acquisition costs include a portion of the Other Procurement, Navy (OPN) budget Project Line Item 0942. Programs included in VIRGINIA Class acquisition costs are: VA Class Special Operations Forces Support, Test and Evaluation Measuring Equipment, Exterior Communication System Trainer, Virginia Ship Control Operator Trainer and Major Shore Spares. The balance of the OPN budget is captured in program O&S Costs.

Cost and Funding

Cost Summary

Total Acquisition Cost and Quantity

	BY1995 $M			BY1995 $M	TY $M		
Appropriation	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Prod Est	Current APB Production Objective	Current Estimate
RDT&E	5420.4	5420.4	5962.4	5662.2	6351.2	6351.2	6732.4
Procurement	58933.2	58933.2	64826.5	55151.0	86856.1	86856.1	85815.7
Flyaway	--	--	--	54648.5	--	--	85039.5
Recurring	--	--	--	53133.6	--	--	83398.4
Non Recurring	--	--	--	1514.9	--	--	1641.1
Support	--	--	--	502.5	--	--	776.2
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	502.5	--	--	776.2
MILCON	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
Total	64353.6	64353.6	N/A	60813.2	93207.3	93207.3	92548.1

Confidence Level for Current APB Cost 50% -

The Independent Cost Estimate (ICE) to support the VIRGINIA Class Submarine Program Milestone III decision, like all life-cycle cost estimates previously performed by Cost Assessment and Program Evaluation (CAPE), is built upon a product-oriented work breakdown structure, based on historical actual cost information to the maximum extent possible, and, most importantly, based on conservative assumptions that are consistent with actual demonstrated contractor and government performance for a series of acquisition programs in which the Department has been successful.

It is difficult to calculate mathematically the precise confidence levels associated with life-cycle cost estimates prepared for Major Defense Acquisition Programs (MDAPs). Based on the rigor in methods used in building estimates, the strong adherence to the collection and use of historical cost information, and the review of applied assumptions, we project that it is about equally likely that the estimate will prove too low or too high for execution of the program described.

Quantity	SAR Baseline Prod Est	Current APB Production	Current Estimate
RDT&E	0	0	0
Procurement	30	30	30
Total	30	30	30

The Navy is planning for a possible class extension and has added Advance Procurement (FY 2018 and FY 2019) accordingly. An APB to extend the class beyond the program of record 30-ship program and to include VIRGINIA Payload Module (VPM) will be developed when requirements are determined for VPM. The Increase in the Current Estimate for cost from PB 2014 to PB 2015 is primarily due to the Advance Procurement funding added to FY 2019 to fund a class extension.

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2015 President's Budget / December 2013 SAR (TY$ M)

Appropriation	Prior	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	To Complete	Total
RDT&E	5050.6	118.8	202.7	253.0	291.7	265.4	111.5	438.7	6732.4
Procurement	49705.1	6541.3	6030.2	5557.1	5348.3	5612.5	6015.1	1006.1	85815.7
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 2015 Total	54755.7	6660.1	6232.9	5810.1	5640.0	5877.9	6126.6	1444.8	92548.1
PB 2014 Total	55216.2	5519.1	7309.8	5926.0	5779.8	5956.8	4737.3	1402.4	91847.4
Delta	-460.5	1141.0	-1076.9	-115.9	-139.8	-78.9	1389.3	42.4	700.7

Quantity	Undistributed	Prior	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	To Complete	Total
Development	0	0	0	0	0	0	0	0	0	0
Production	0	18	2	2	2	2	2	2	0	30
PB 2015 Total	0	18	2	2	2	2	2	2	0	30
PB 2014 Total	0	18	2	2	2	2	2	2	0	30
Delta	0	0	0	0	0	0	0	0	0	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding TY$
1319 | RDT&E | Research, Development, Test, and Evaluation, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
1992	--	--	--	--	--	--	22.7
1993	--	--	--	--	--	--	66.3
1994	--	--	--	--	--	--	363.7
1995	--	--	--	--	--	--	453.4
1996	--	--	--	--	--	--	429.0
1997	--	--	--	--	--	--	452.3
1998	--	--	--	--	--	--	382.4
1999	--	--	--	--	--	--	308.4
2000	--	--	--	--	--	--	275.4
2001	--	--	--	--	--	--	237.3
2002	--	--	--	--	--	--	218.8
2003	--	--	--	--	--	--	242.2
2004	--	--	--	--	--	--	155.4
2005	--	--	--	--	--	--	153.1
2006	--	--	--	--	--	--	166.3
2007	--	--	--	--	--	--	191.2
2008	--	--	--	--	--	--	233.5
2009	--	--	--	--	--	--	180.5
2010	--	--	--	--	--	--	172.8
2011	--	--	--	--	--	--	161.5
2012	--	--	--	--	--	--	105.7
2013	--	--	--	--	--	--	78.7
2014	--	--	--	--	--	--	118.8
2015	--	--	--	--	--	--	202.7
2016	--	--	--	--	--	--	253.0
2017	--	--	--	--	--	--	291.7

2018	--	--	--	--	--	--	265.4
2019	--	--	--	--	--	--	111.5
2020	--	--	--	--	--	--	143.5
2021	--	--	--	--	--	--	32.7
2022	--	--	--	--	--	--	41.5
2023	--	--	--	--	--	--	52.7
2024	--	--	--	--	--	--	57.9
2025	--	--	--	--	--	--	64.7
2026	--	--	--	--	--	--	22.8
2027	--	--	--	--	--	--	22.9
Subtotal	**--**	**--**	**--**	**--**	**--**	**--**	**6732.4**

Annual Funding BY$
1319 | RDT&E | Research, Development, Test, and Evaluation, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway BY 1995 $M	Non End Item Recurring Flyaway BY 1995 $M	Non Recurring Flyaway BY 1995 $M	Total Flyaway BY 1995 $M	Total Support BY 1995 $M	Total Program BY 1995 $M
1992	--	--	--	--	--	--	23.8
1993	--	--	--	--	--	--	68.0
1994	--	--	--	--	--	--	365.9
1995	--	--	--	--	--	--	447.5
1996	--	--	--	--	--	--	416.4
1997	--	--	--	--	--	--	433.7
1998	--	--	--	--	--	--	363.7
1999	--	--	--	--	--	--	289.9
2000	--	--	--	--	--	--	255.1
2001	--	--	--	--	--	--	216.9
2002	--	--	--	--	--	--	198.0
2003	--	--	--	--	--	--	216.0
2004	--	--	--	--	--	--	134.8
2005	--	--	--	--	--	--	129.4
2006	--	--	--	--	--	--	136.3
2007	--	--	--	--	--	--	153.0
2008	--	--	--	--	--	--	183.5
2009	--	--	--	--	--	--	140.0
2010	--	--	--	--	--	--	132.1
2011	--	--	--	--	--	--	120.5
2012	--	--	--	--	--	--	77.5
2013	--	--	--	--	--	--	56.8
2014	--	--	--	--	--	--	84.3
2015	--	--	--	--	--	--	141.2
2016	--	--	--	--	--	--	172.9
2017	--	--	--	--	--	--	195.4
2018	--	--	--	--	--	--	174.3
2019	--	--	--	--	--	--	71.8
2020	--	--	--	--	--	--	90.6

2021	--	--	--	--	--	--	20.2
2022	--	--	--	--	--	--	25.2
2023	--	--	--	--	--	--	31.3
2024	--	--	--	--	--	--	33.8
2025	--	--	--	--	--	--	37.0
2026	--	--	--	--	--	--	12.8
2027	--	--	--	--	--	--	12.6
Subtotal	**--**	**--**	**--**	**--**	**--**	**--**	**5662.2**

Annual Funding TY$
1611 | Procurement | Shipbuilding and Conversion, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
1996	--	571.0	--	219.3	790.3	--	790.3
1997	--	533.2	--	242.5	775.7	--	775.7
1998	1	1625.0	--	840.9	2465.9	--	2465.9
1999	1	1882.0	--	165.6	2047.6	--	2047.6
2000	--	744.6	--	--	744.6	--	744.6
2001	1	1597.9	--	90.8	1688.7	0.2	1688.9
2002	1	2423.2	--	60.8	2484.0	15.9	2499.9
2003	1	2402.0	--	14.3	2416.3	8.3	2424.6
2004	1	2715.5	--	6.9	2722.4	11.0	2733.4
2005	1	2601.5	--	--	2601.5	4.3	2605.8
2006	1	2563.9	--	--	2563.9	15.1	2579.0
2007	1	2581.1	--	--	2581.1	8.4	2589.5
2008	1	3157.8	--	--	3157.8	19.5	3177.3
2009	1	3652.5	--	--	3652.5	17.9	3670.4
2010	1	4034.7	--	--	4034.7	9.8	4044.5
2011	2	5164.0	--	--	5164.0	18.7	5182.7
2012	2	4735.8	--	--	4735.8	12.3	4748.1
2013	2	4686.1	--	--	4686.1	16.9	4703.0
2014	2	6512.2	--	--	6512.2	14.4	6526.6
2015	2	5979.3	--	--	5979.3	41.6	6020.9
2016	2	5511.8	--	--	5511.8	36.3	5548.1
2017	2	5297.6	--	--	5297.6	41.5	5339.1
2018	2	4433.2	1129.9	--	5563.1	40.1	5603.2
2019	2	4556.3	1394.7	--	5951.0	54.6	6005.6
2020	--	131.8	--	--	131.8	27.0	158.8
2021	--	139.1	--	--	139.1	15.9	155.0
2022	--	139.6	--	--	139.6	24.4	164.0
2023	--	138.1	--	--	138.1	15.5	153.6
2024	--	114.2	--	--	114.2	11.7	125.9

2025	--	93.8	--	--	93.8	--	93.8
2026	--	111.6	--	--	111.6	--	111.6
2027	--	43.4	--	--	43.4	--	43.4
Subtotal	**30**	**80873.8**	**2524.6**	**1641.1**	**85039.5**	**481.3**	**85520.8**

Annual Funding BY$
1611 | Procurement | Shipbuilding and Conversion, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway BY 1995 $M	Non End Item Recurring Flyaway BY 1995 $M	Non Recurring Flyaway BY 1995 $M	Total Flyaway BY 1995 $M	Total Support BY 1995 $M	Total Program BY 1995 $M
1996	--	548.1	--	210.6	758.7	--	758.7
1997	--	504.1	--	229.3	733.4	--	733.4
1998	1	1502.6	--	777.6	2280.2	--	2280.2
1999	1	1713.0	--	150.8	1863.8	--	1863.8
2000	--	661.0	--	--	661.0	--	661.0
2001	1	1371.2	--	77.9	1449.1	0.2	1449.3
2002	1	2067.7	--	51.8	2119.5	13.6	2133.1
2003	1	1937.5	--	11.5	1949.0	6.7	1955.7
2004	1	2113.7	--	5.4	2119.1	8.5	2127.6
2005	1	1939.0	--	--	1939.0	3.2	1942.2
2006	1	1845.9	--	--	1845.9	10.9	1856.8
2007	1	1776.6	--	--	1776.6	5.8	1782.4
2008	1	2102.8	--	--	2102.8	13.0	2115.8
2009	1	2362.0	--	--	2362.0	11.6	2373.6
2010	1	2524.6	--	--	2524.6	6.1	2530.7
2011	2	3134.0	--	--	3134.0	11.4	3145.4
2012	2	2816.3	--	--	2816.3	7.3	2823.6
2013	2	2736.8	--	--	2736.8	9.9	2746.7
2014	2	3733.7	--	--	3733.7	8.3	3742.0
2015	2	3362.5	--	--	3362.5	23.4	3385.9
2016	2	3039.0	--	--	3039.0	20.0	3059.0
2017	2	2863.6	--	--	2863.6	22.4	2886.0
2018	2	2349.4	598.7	--	2948.1	21.3	2969.4
2019	2	2367.3	724.6	--	3091.9	28.4	3120.3
2020	--	67.1	--	--	67.1	13.8	80.9
2021	--	69.5	--	--	69.5	7.9	77.4
2022	--	68.3	--	--	68.3	12.0	80.3
2023	--	66.3	--	--	66.3	7.4	73.7
2024	--	53.7	--	--	53.7	5.5	59.2

2025	--	43.3	--	--	43.3	--	43.3
2026	--	50.5	--	--	50.5	--	50.5
2027	--	19.2	--	--	19.2	--	19.2
Subtotal	**30**	**51810.3**	**1323.3**	**1514.9**	**54648.5**	**278.6**	**54927.1**

The Navy is planning for a possible class extension and has added Advance Procurement (FY 2018 and FY 2019) accordingly. An APB to extend the class beyond the program of record 30-ship program and to include VIRGINIA Payload Module (VPM) will be developed when requirements are determined for VPM. Funding in the Non End Item Recurring Flyaway column is associated with one and two year Advance Procurement for ships beyond the 30-ship program of record.

Cost Quantity Information
1611 | Procurement | Shipbuilding and Conversion, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned with Quantity) BY 1995 $M
1996	--	--
1997	--	--
1998	1	2141.8
1999	1	2356.8
2000	--	--
2001	1	1916.5
2002	1	2036.7
2003	1	1824.5
2004	1	1813.4
2005	1	1745.4
2006	1	1771.7
2007	1	1833.6
2008	1	1783.2
2009	1	1904.0
2010	1	1776.3
2011	2	3353.0
2012	2	3161.9
2013	2	3093.1
2014	2	3193.1
2015	2	3074.1
2016	2	3130.4
2017	2	3165.3
2018	2	3251.8
2019	2	3483.7
2020	--	--
2021	--	--
2022	--	--

2023	--	--
2024	--	--
2025	--	--
2026	--	--
2027	--	--
Subtotal	**30**	**51810.3**

Annual Funding TY$
1810 | Procurement | Other Procurement, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2005	--	--	--	--	--	12.5	12.5
2006	--	--	--	--	--	44.1	44.1
2007	--	--	--	--	--	47.0	47.0
2008	--	--	--	--	--	39.7	39.7
2009	--	--	--	--	--	48.0	48.0
2010	--	--	--	--	--	13.8	13.8
2011	--	--	--	--	--	21.7	21.7
2012	--	--	--	--	--	5.3	5.3
2013	--	--	--	--	--	1.8	1.8
2014	--	--	--	--	--	14.7	14.7
2015	--	--	--	--	--	9.3	9.3
2016	--	--	--	--	--	9.0	9.0
2017	--	--	--	--	--	9.2	9.2
2018	--	--	--	--	--	9.3	9.3
2019	--	--	--	--	--	9.5	9.5
Subtotal	**--**	**--**	**--**	**--**	**--**	**294.9**	**294.9**

Annual Funding BY$
1810 | Procurement | Other Procurement, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway BY 1995 $M	Non End Item Recurring Flyaway BY 1995 $M	Non Recurring Flyaway BY 1995 $M	Total Flyaway BY 1995 $M	Total Support BY 1995 $M	Total Program BY 1995 $M
2005	--	--	--	--	--	10.4	10.4
2006	--	--	--	--	--	35.6	35.6
2007	--	--	--	--	--	37.2	37.2
2008	--	--	--	--	--	30.9	30.9
2009	--	--	--	--	--	36.9	36.9
2010	--	--	--	--	--	10.4	10.4
2011	--	--	--	--	--	16.1	16.1
2012	--	--	--	--	--	3.9	3.9
2013	--	--	--	--	--	1.3	1.3
2014	--	--	--	--	--	10.4	10.4
2015	--	--	--	--	--	6.4	6.4
2016	--	--	--	--	--	6.1	6.1
2017	--	--	--	--	--	6.1	6.1
2018	--	--	--	--	--	6.1	6.1
2019	--	--	--	--	--	6.1	6.1
Subtotal	**--**	**--**	**--**	**--**	**--**	**223.9**	**223.9**

Low Rate Initial Production

	Initial LRIP Decision	Current Total LRIP
Approval Date	6/30/1995	6/30/1995
Approved Quantity	14	14
Reference	MS II ADM	MS II ADM
Start Year	1998	1998
End Year	2007	2011

The Current Total LRIP Quantity is more than 10% of the total production quantity due to this being a shipbuilding program for which this is standard practice.

Foreign Military Sales

None

Nuclear Costs

$15,707.4M (TY$). These costs are for reactor propulsion plant equipment. These costs are included in the Shipbuilding and Conversion, Navy costs in this report. DOE costs are excluded from this report.

Unit Cost

Unit Cost Report

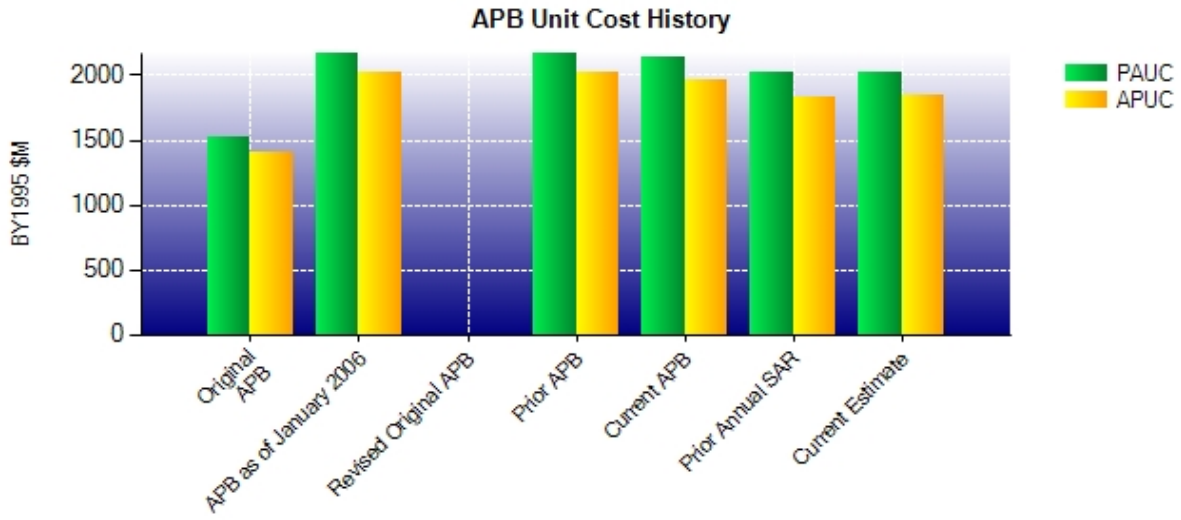
Unit Cost	BY1995 $M Current UCR Baseline (SEP 2010 APB)	BY1995 $M Current Estimate (DEC 2013 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	64353.6	60813.2	
Quantity	30	30	
Unit Cost	2145.120	2027.107	-5.50
Average Procurement Unit Cost (APUC)			
Cost	58933.2	55151.0	
Quantity	30	30	
Unit Cost	1964.440	1838.367	-6.42

Unit Cost	BY1995 $M Original UCR Baseline (JUN 1995 APB)	BY1995 $M Current Estimate (DEC 2013 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	45633.1	60813.2	
Quantity	30	30	
Unit Cost	1521.103	2027.107	**+33.27** [1]
Average Procurement Unit Cost (APUC)			
Cost	42228.1	55151.0	
Quantity	30	30	
Unit Cost	1407.603	1838.367	**+30.60** [1]

[1] **Nunn-McCurdy Breach**

This program reflects a significant Nunn-McCurdy breach to the original baseline that was first reported in the December 2005 SAR. The supporting breach information and explanations can be found in the UCR section of that SAR.

Unit Cost History



		BY1995 $M		TY $M	
	Date	PAUC	APUC	PAUC	APUC
Original APB	JUN 1995	1521.103	1407.603	2369.360	2242.227
APB as of January 2006	MAY 2005	2174.943	2021.430	2749.060	2578.850
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	MAY 2005	2174.943	2021.430	2749.060	2578.850
Current APB	SEP 2010	2145.120	1964.440	3106.910	2895.203
Prior Annual SAR	DEC 2012	2017.943	1828.550	3061.580	2836.073
Current Estimate	DEC 2013	2027.107	1838.367	3084.937	2860.523

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY $M)

Initial PAUC Dev Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2369.360	-166.403	0.000	259.820	42.410	564.303	9.333	28.087	737.550	3106.910

Current SAR Baseline to Current Estimate (TY $M)

PAUC Prod Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
3106.910	182.110	0.000	-48.420	26.600	-174.590	0.000	-7.673	-21.973	3084.937

Initial SAR Baseline to Current SAR Baseline (TY $M)

Initial APUC Dev Est	Changes								APUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2242.227	-160.064	0.000	259.820	36.360	479.440	9.333	28.087	652.976	2895.203

Current SAR Baseline to Current Estimate (TY $M)

APUC Prod Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2895.203	181.137	0.000	-48.420	0.000	-159.723	0.000	-7.673	-34.679	2860.523

SAR Baseline History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	AUG 1994	AUG 1994	AUG 1994
Milestone II	N/A	JUN 1995	JUN 1995	JUN 1995
Milestone III	N/A	OCT 2007	JUL 2010	SEP 2010
IOC	N/A	OCT 2005	NOV 2006	MAR 2007
Total Cost (TY $M)	N/A	71080.8	93207.3	92548.1
Total Quantity	N/A	30	30	30
Prog. Acq. Unit Cost (PAUC)	N/A	2369.360	3106.910	3084.937

Cost Variance

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	6351.2	86856.1	--	93207.3
Previous Changes				
Economic	+42.9	+5333.9	--	+5376.8
Quantity	--	--	--	--
Schedule	--	-1452.6	--	-1452.6
Engineering	+798.0	--	--	+798.0
Estimating	-426.9	-5434.2	--	-5861.1
Other	--	--	--	--
Support	--	-221.0	--	-221.0
Subtotal	+414.0	-1773.9	--	-1359.9
Current Changes				
Economic	-13.7	+100.2	--	+86.5
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-19.1	+642.5	--	+623.4
Other	--	--	--	--
Support	--	-9.2	--	-9.2
Subtotal	-32.8	+733.5	--	+700.7
Adjustments	--	--	--	--
Total Changes	+381.2	-1040.4	--	-659.2
CE - Cost Variance	6732.4	85815.7	--	92548.1
CE - Cost & Funding	6732.4	85815.7	--	92548.1

Summary Base Year 1995 $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	5420.4	58933.2	--	64353.6
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	-747.5	--	-747.5
Engineering	+556.6	--	--	+556.6
Estimating	-295.2	-3183.7	--	-3478.9
Other	--	--	--	--
Support	--	-145.5	--	-145.5
Subtotal	+261.4	-4076.7	--	-3815.3
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-19.6	+300.7	--	+281.1
Other	--	--	--	--
Support	--	-6.2	--	-6.2
Subtotal	-19.6	+294.5	--	+274.9
Adjustments	--	--	--	--
Total Changes	+241.8	-3782.2	--	-3540.4
CE - Cost Variance	5662.2	55151.0	--	60813.2
CE - Cost & Funding	5662.2	55151.0	--	60813.2

Previous Estimate: December 2012

RDT&E	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	-13.7
Revised estimate for the VIRGINIA Payload Module (VPM) development program. (Estimating)	-29.6	-33.2
Revised estimates due to miscellaneous reductions. (Estimating)	-2.2	-2.8
Congressional plus-up to non-core Research & Development program (FY 2013). (Estimating)	+9.9	+13.7
Adjustment for current and prior escalation. (Estimating)	+2.3	+3.2
RDT&E Subtotal	-19.6	-32.8

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+100.2
Advance Procurement (AP) funding added to FY 2019 to fund class extension. (Estimating)	+358.4	+689.8
Reduction due to Congressional Sequestration Order. (Estimating)	-301.1	-492.2
Congressional plus-up to restore FY 2013 sequestration cuts to SSN790/791 (FY 2014). (Estimating)	+130.1	+227.0
Service reprogramming to restore FY 2013 sequestration cuts to AP for FY 2014 and FY 2015 ships (FY13). (Estimating)	+74.1	+126.8
Revised estimates to reflect FY 2015 PB funding. (Estimating)	+90.1	+180.0
Revised estimate to reflect the application of new outyear escalation indices. (Estimating)	-37.1	-66.4
Adjustment for current and prior escalation. (Estimating)	-13.8	-22.5
Adjustment for current and prior escalation. (Support)	+0.3	+0.2
Decreased estimate for Shipbuilding and Conversion, Navy (SCN) Outfitting Initial Spares. (Support)	-0.8	-0.8
Decrease estimate for Other Procurement, Navy (OPN) Initial Spares. (Support)	-5.7	-8.6
Procurement Subtotal	+294.5	+733.5

Contracts

Appropriation: Procurement	
Contract Name	**SSN 784**
Contractor	General Dynamics, EB Corporation
Contractor Location	Groton, CT 06340
Contract Number, Type	N00024-09-C-2104/1, FPIF
Award Date	December 22, 2008
Definitization Date	December 22, 2008

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price at Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1717.1	1899.5	1	1898.1	2047.8	1	1873.4	1867.0

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to authorized contract change orders.

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/25/2014)	+0.3	-4.9
Previous Cumulative Variances	-8.6	+0.4
Net Change	+8.9	-5.3
Percent Variance	+0.02%	-0.32%
Percent Complete	+92.03%	

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to positive final assembly performance moving towards a successful launch in November 2013.

The unfavorable net change in the schedule variance is due to attempting to hold a very aggressive target schedule as the ship nears completion.

Contract Comments

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

Appropriation: Procurement

Contract Name	**SSN 785**
Contractor	General Dynamics, EB Corporation
Contractor Location	Groton, CT 06340
Contract Number, Type	N00024-09-C-2104/2, FPIF
Award Date	December 22, 2008
Definitization Date	December 22, 2008

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price at Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1646.7	1821.6	1	1777.8	1914.7	1	1752.9	1771.3

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to authorized contract change orders.

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/25/2014)	+5.5	-39.7
Previous Cumulative Variances	+14.0	-38.9
Net Change	-8.5	-0.8
Percent Variance	+0.45%	-3.14%
Percent Complete	+79.99%	

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to expending more labor resources than anticipated on modular integration and activities leading up to power and propulsion installation.

The unfavorable net change in the schedule variance is due to attempting to hold a challenging schedule that concentrated on integration activities leading up to Pressure Hull Complete and Float Off in Spring 2014.

Appropriation: Procurement

Contract Name	**SSN 786**
Contractor	General Dynamics, EB Corporation
Contractor Location	Groton, CT 06340
Contract Number, Type	N00024-09-C-2104/3, FPIF
Award Date	December 22, 2008
Definitization Date	December 22, 2008

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price at Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1694.1	1825.9	N/A	1754.3	1893.4	N/A	11721.0	1723.7

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to authorized contract change orders.

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/25/2014)	+46.4	-23.6
Previous Cumulative Variances	+11.8	-12.1
Net Change	+34.6	-11.5
Percent Variance	+4.57%	-2.27%
Percent Complete	+67.05%	

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to positive modular fabrication and assembly performance.

The unfavorable net change in the schedule variance is due to falling short on labor performance while working toward aggressive schedule targets mostly on the modular construction.

Appropriation: Procurement

Contract Name	**SSN 787**
Contractor	General Dynamics, EB Corporation
Contractor Location	Groton, CT 06340
Contract Number, Type	N00024-09-C-2104/4, FPIF
Award Date	December 22, 2008
Definitization Date	December 22, 2008

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price at Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1773.6	1909.2	1	1822.0	1962.1	1	1768.9	1773.1

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to authorized contract change orders.

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/25/2014)	+76.3	-20.4
Previous Cumulative Variances	+18.2	-4.5
Net Change	+58.1	-15.9
Percent Variance	+7.97%	-2.09%
Percent Complete	+61.02%	

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to positive modular fabrication and assembly performance.

The unfavorable net change in the schedule variance is due to falling short on labor performance in the modular construction process.

Appropriation: Procurement

Contract Name	**SSN 788**
Contractor	General Dynamics, EB Corporation
Contractor Location	Groton, CT 06340
Contract Number, Type	N00024-09-C-2104/5, FPIF
Award Date	December 22, 2008
Definitization Date	December 22, 2008

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price at Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1650.0	1777.9	1	1708.1	1842.7	1	1664.9	1689.2

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to authorized contract change orders.

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/25/2014)	+55.0	-9.1
Previous Cumulative Variances	--	--
Net Change	+55.0	-9.1
Percent Variance	+7.30%	-1.19%
Percent Complete	+55.32%	

Cost and Schedule Variance Explanations

The favorable cumulative cost variance is due to positive labor performance relative to modular fabrication and assembly.

The unfavorable cumulative schedule variance is due to falling short on labor performance while working fairly early in the modular construction process.

Contract Comments

This is the first time this contract is being reported.

Appropriation: RDT&E

Contract Name	**Lead Yard Services**
Contractor	General Dynamics, EB Corporation
Contractor Location	Groton, CT 06340
Contract Number, Type	N00024-10-C-2118, CPFF
Award Date	July 02, 2010
Definitization Date	July 02, 2010

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price at Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
171.9	N/A	N/A	605.2	N/A	N/A	605.2	605.2

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to tasking added to this incrementally funded contract.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this CPFF contract.

Contract Comments

The Lead Yard Services contract provides design studies, engineering, material and logistics support and research and development activities on the baseline VIRGINIA design.

Deliveries and Expenditures

Delivered to Date	Plan to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	0	--
Production	9	10	30	33.33%
Total Program Quantity Delivered	9	10	30	33.33%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	92548.1	Years Appropriated	23
Expended to Date	42856.8	Percent Years Appropriated	63.89%
Percent Expended	46.31%	Appropriated to Date	61415.8
Total Funding Years	36	Percent Appropriated	66.36%

The above data is current as of 2/1/2014.

The tenth ship of the VIRGINIA Class, USS MINNESOTA (SSN 783), was delivered in June 2013, 11 months early to the contract delivery date.

Operating and Support Cost

SSN 774

Assumptions and Ground Rules

Cost Estimate Reference:

The source of this data is the VIRGINIA Class Milestone III (MSIII) Program Life Cycle Cost Estimate dated June 2010, which uses the Cost Assessment and Program Evaluation (CAPE) six element cost classification system. The analysis includes description of input data and detailed Cost Element Structure reporting in the format recommended by the Office of the Secretary of Defense (OSD), CAPE.

Visibility and Management of Operation and Support Cost (VAMOSC) data for LOS ANGELES Class and VIRGINIA Class actuals were used to construct the estimate. The estimate includes costs for Unit Level Manpower, Unit Operations, Maintenance, Sustaining Support, Continuing System Improvements, and Indirect Support. Unit Level Manpower was estimated based on the crew description contained in the Manning Estimate Report (15 officers, 120 enlisted), and the direct personnel costs using VIRGINIA Class rates factored for VIRGINIA Class crew size. Unit Operations was based on historical LOS ANGELES Class data and factored by power, weight, and crew size. Maintenance was estimated based on historical LOS ANGELES Class maintenance costs factored for the VIRGINIA Class based on weight. Public and private shipyard data was used, as well as the maintenance schedule provided in the Cost Analysis Requirements Description (CARD), Rev E dated May 2010, to appropriately phase maintenance costs over the service life of the submarines. Sustaining Support was estimated based on historical LOS ANGELES Class data factored by weight or crew size, depending on the individual element. Continuing System Improvements were estimated based on historical LOS ANGELES Class data factored by weight. The Software Maintenance portion was based on the analysis of DDG 51 cost per line of code and factored by the total Source Lines of Code count contained in the CARD. Indirect Support was based on historical infrastructure costs from U.S. Naval Submarine Bases, as well as historical personnel costs from LOS ANGELES Class which were factored for the VIRGINIA Class crew size.

Sustainment Strategy:

The baseline sustainment strategy is structured to achieve 14 deployments during the 33 year design life for each of the total force of 30 VIRGINIA Class submarines. The first deployment occurs after a Post Shakedown Availability (PSA) conducted at the private industry construction yard. The deployment rate is achieved through maintaining material readiness using maintenance periods including three Extended Drydocking Selected Restricted Availabilities (EDSRAs) and one Depot Maintenance Period (DMP) scheduled and planned according to the required maintenance periods for major equipments and systems. The EDRSAs and DMP are expected to be performed at Navy depot maintenance facilities such as the Naval shipyards. Additional routine maintenance and repair are conducted throughout the submarine’s life cycle at the homeport Navy intermediate maintenance facility.

Changes to the equipment and system design are considered and implemented on a case by case basis which may increase maintenance periodicities and support an increase to 15 deployments during the life cycle for later submarines of the class.

Antecedent Information:

O&S costs for the legacy system (LOS ANGELES Class) in TY$ and BY$ have not been previously compiled and tracked, nor has a comprehensive legacy Life Cycle Cost (LCC) estimate been prepared. Assembly of an accurate compilation O&S cost estimate for the SSN 688 Class using actual cost data going back to 1976 when USS LOS ANGELES was commissioned and then projecting those costs out to Calendar Year 2029 is also problematic

based on the availability and detail of the historic data. VIRGINIA Class O&S comparisons with legacy class are hampered by changes in required attack submarine force size where the LOS ANGELES Class, at one time, had 62 submarines compared to the planned class size of 30 VIRGINIA Class submarines.

The source of antecedent data is VAMOSC data for LOS ANGELES Class submarines for the years 1984-2008, however, this data must be adjusted due to significant differences between the two classes, to achieve a comparable estimate. The LOS ANGELES Class was comprised of 62 ships with major design changes in blocks of ships that had an original planned life of 30 years. Some of these 62 ships were retired at mid-life and, therefore, did not incur normal life of ship maintenance and operating costs.

Unitized O&S Costs BY1995 $M		
Cost Element	**SSN 774 Average Annual Cost per Ship**	**LOS ANGELES CLASS (Antecedent) Average Annual Cost per Ship**
Unit-Level Manpower	8.980	5.450
Unit Operations	0.740	0.700
Maintenance	13.980	15.030
Sustaining Support	0.960	0.990
Continuing System Improvements	6.370	4.240
Indirect Support	4.370	4.110
Other	0.000	0.000
Total	35.400	30.520

Unitized Cost Comments:

The VIRGINIA Class (SSN 774) total O&S cost current estimate is based on a 30-ship class with a 33 year service life. The average annual cost per ship is derived by dividing total O&S costs by 30 ships and service life of 33 years. .

There are several factors contributing to an apparent anomaly between VIRGINIA CLASS and LOS ANGELES Class (SSN 688) per ship Unit Level Manpower costs. The costs for SSN 688 are lower than SSN 774 despite a larger crew size for SSN 688 due to the source and timing of the data. SSN 688 costs are extracted from VAMOSC using class average data 1984 - 2008. Manpower costs for the first several years of the data were approximately 65% of the most recent costs for the SSN 688 Class indicating real growth in pay and allowances (i.e., above inflation) over the period. The overall average, however, is significantly influenced by the lower initial costs. Further, 688 VAMOSC data reflect the average annual cost of ships in the fleet. VIRGINIA estimates were built using a ramp up/ramp down methodology and reflect the total annual manpower costs for the program from assignment of the first pre-commissioning crew of the lead ship through decommissioning of the last ship.

The total O&S Cost referenced below for the SSN 688 Class was derived using the average annual cost per ship, 62 ships in the class and an expected service life of 33 years. The 33-year service life is used for comparative purposes with the SSN 774 Class as SSN 688 ships were originally designed for 30 years and subsequently increased to 33 years.

	Total O&S Cost $M			
	Current Production APB Objective/Threshold		Current Estimate	
	SSN 774		SSN 774	LOS ANGELES CLASS (Antecedent)
Base Year	36216.6	39838.3	35038.7	62443.9
Then Year	98758.7	N/A	95627.9	N/A

Total O&S Costs Comments:
None

Disposal Costs:

Disposal costs for the VIRGINIA Class are not included in Total O&S Costs. Total program disposal costs are estimated to be $1,177.9M BY 1995; $3,130.8M TY.