



# Selected Acquisition Report (SAR)

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



## **SSN 774 Virginia Class Submarine (SSN 774)**

As of FY 2016 President's Budget

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

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## Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance  
ACAT - Acquisition Category  
ADM - Acquisition Decision Memorandum  
APB - Acquisition Program Baseline  
APPN - Appropriation  
APUC - Average Procurement Unit Cost  
\$B - Billions of Dollars  
BA - Budget Authority/Budget Activity  
Blk - Block  
BY - Base Year  
CAPE - Cost Assessment and Program Evaluation  
CARD - Cost Analysis Requirements Description  
CDD - Capability Development Document  
CLIN - Contract Line Item Number  
CPD - Capability Production Document  
CY - Calendar Year  
DAB - Defense Acquisition Board  
DAE - Defense Acquisition Executive  
DAMIR - Defense Acquisition Management Information Retrieval  
DoD - Department of Defense  
DSN - Defense Switched Network  
EMD - Engineering and Manufacturing Development  
EVM - Earned Value Management  
FOC - Full Operational Capability  
FMS - Foreign Military Sales  
FRP - Full Rate Production  
FY - Fiscal Year  
FYDP - Future Years Defense Program  
ICE - Independent Cost Estimate  
IOC - Initial Operational Capability  
Inc - Increment  
JROC - Joint Requirements Oversight Council  
\$K - Thousands of Dollars  
KPP - Key Performance Parameter  
LRIP - Low Rate Initial Production  
\$M - Millions of Dollars  
MDA - Milestone Decision Authority  
MDAP - Major Defense Acquisition Program  
MILCON - Military Construction  
N/A - Not Applicable  
O&M - Operations and Maintenance  
ORD - Operational Requirements Document  
OSD - Office of the Secretary of Defense  
O&S - Operating and Support  
PAUC - Program Acquisition Unit Cost

PB - President's Budget  
PE - Program Element  
PEO - Program Executive Officer  
PM - Program Manager  
POE - Program Office Estimate  
RDT&E - Research, Development, Test, and Evaluation  
SAR - Selected Acquisition Report  
SCP - Service Cost Position  
TBD - To Be Determined  
TY - Then Year  
UCR - Unit Cost Reporting  
U.S. - United States  
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

## Program Information

### Program Name

SSN 774 Virginia Class Submarine (SSN 774)

### DoD Component

Navy

## Responsible Office

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**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 2014, the first eleven ships of the VIRGINIA Class have been delivered to the Navy with progressive schedule and quality improvements. There are nine additional submarines under construction. The most recently completed, USS NORTH DAKOTA (SSN 784), was delivered in August 2014, two days early to the contract delivery date. NORTH DAKOTA continues the program's history of early and on-budget deliveries. As the lead ship of Block III, with a major bow redesign, this is a noteworthy achievement. Ship readiness was validated by a score of 93% by the Board of Inspection and Survey, which is the highest overall score to date of any VIRGINIA Class submarine.

On April 28, 2014, the Navy, with General Dynamics Electric Boat and Huntington Ingalls Industries-Newport News, signed a Block IV Construction Contract to build ten VIRGINIA Class Submarines. Under the five-year agreement, Electric Boat and Newport News Shipbuilding will jointly build two ships per year from FY 2014 - FY 2018. 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 first two ships of the block are under construction.

The Navy is planning for a class extension and has added Full Funding in FY 2020 for two ships above the program of record 30-ships in accordance with the Navy's Long Range Shipbuilding Strategy. Through program cost efficiencies, Total Acquisition Cost remains below the Milestone III cost objective (BY 1995 \$). The program continues to plan for the VIRGINIA Payload Module (VPM), consisting 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. VPM is targeted for Block V.

Major events for 2015 include the projected delivery of JOHN WARNER (SSN 785) in April 2015 at just over 61 months construction span. Currently, ILLINOIS (SSN 786) is projected to deliver near the end of the calendar year with a construction span under 60 months.

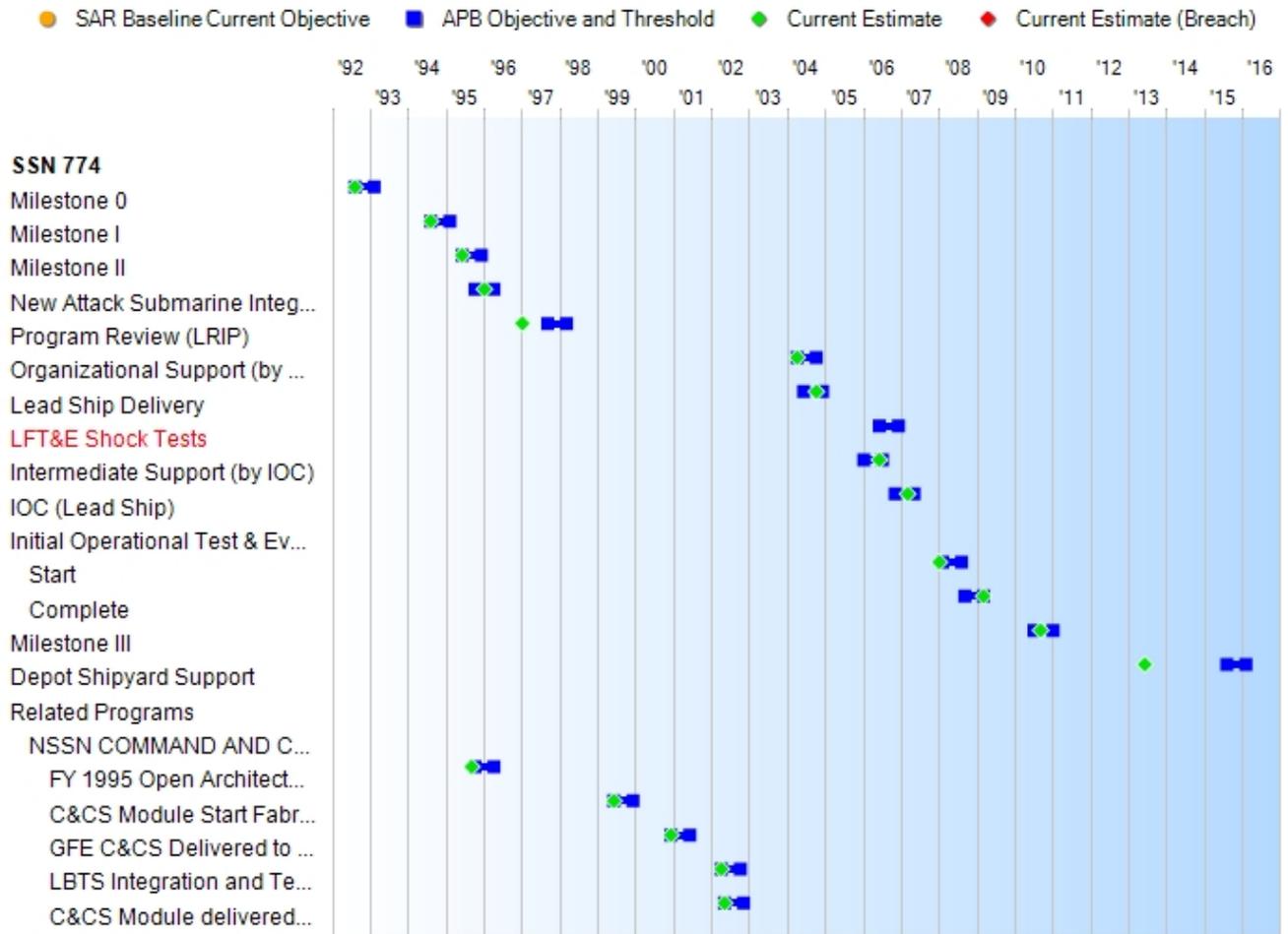
There are no significant software-related issues with this program at this time.

## Threshold Breaches

APB Breaches		Explanation of Breach
<b>Schedule</b>	<input checked="" type="checkbox"/>	Schedule -- This schedule breach was previously reported in the December 2006 SAR.
<b>Performance</b>	<input type="checkbox"/>	
<b>Cost</b>	RDT&E	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.
	Procurement	
	MILCON	
	Acq O&M	
<b>O&amp;S Cost</b>	<input type="checkbox"/>	
<b>Unit Cost</b>	PAUC	
	APUC	

Nunn-McCurdy Breaches	
<b>Current UCR Baseline</b>	
PAUC	None
APUC	None
<b>Original UCR Baseline</b>	
PAUC	Significant
APUC	None

# Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	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 <sup>1</sup>
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

<sup>1</sup> APB Breach

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

#### Change Explanations

None

#### Notes

On December 4, 2006, the USD(AT&L) 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
	<b>Project</b>	<b>Name</b>	
	2177	NEW DESIGN SSN HM&E (NSSN UNIQUE) (Sunk)	
Navy	1319	03	0603564N
	<b>Project</b>	<b>Name</b>	
	2200	Ship Preliminary Design (Sunk)	
Navy	1319	03	0603570N
	<b>Project</b>	<b>Name</b>	
	2158	NUCLEAR PROPULSION (Sunk)	
Navy	1319	05	0604558N
	<b>Project</b>	<b>Name</b>	
	1947	NEW DESIGN SSN HM&E and Combat Systems	
	1950	NEW DESIGN SSN HM&E and Combat Systems	
	2429	NEW DESIGN SSN HM&E and Combat Systems (Sunk)	
	2430	NEW DESIGN SSN HM&E and Combat Systems (Sunk)	
	2644	NEW DESIGN SSN HM&E and Combat Systems (Sunk)	
	2645	NEW DESIGN SSN HM&E and Combat Systems (Sunk)	
	2887	NEW DESIGN SSN HM&E and Combat Systems (Sunk)	
	2888	NEW DESIGN SSN HM&E and Combat Systems (Sunk)	
	3062	NEW DESIGN SSN HM&E and (Shared) Combat Systems (Sunk)	
	4500	VIRGINIA Payload Module (Sunk)	
	<b>Notes:</b>	VIRGINIA Payload Module funding shifted to Program Element 0604580N beginning in FY 2014.	
	9231	NEW DESIGN SSN HM&E and Combat Systems (Sunk)	
	9232	NEW DESIGN SSN HM&E and Combat Systems (Sunk)	
	9386	NEW DESIGN SSN HM&E and Combat Systems (Sunk)	
	9387	NEW DESIGN SSN HM&E and Combat Systems (Sunk)	
	9999	NEW DESIGN SSN HM&E and (Sunk)	

## Combat Systems

Navy	1319	04	0604567N	
	<b>Project</b>		<b>Name</b>	
	2199		Ship Contract Design	(Sunk)
Navy	1319	05	0604580N	
	<b>Project</b>		<b>Name</b>	
	4500		VIRGINIA Payload Module	

**Notes**

FYDP funding includes the following projects from BA 05 PE 0604558: Project F1947 New Design Hull Mechanical & Electrical (HM&E) and Project F1950 New Design Combat Systems. PE 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	
	<b>Line Item</b>		<b>Name</b>	
	2013		New SSN (NSSN-1)	
Navy	1611	05	0204281N	
	<b>Line Item</b>		<b>Name</b>	
	5110		Outfitting and Post Delivery	(Shared)
	5300		Completion of Prior Year Shipbuilding Programs	(Shared) (Sunk)
Navy	1810	01	0204281N	
	<b>Line Item</b>		<b>Name</b>	
	0920		Repair Parts	(Shared) (Sunk)
	0942		VA Class Support Equipment	(Shared)

**Notes**

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							
Appropriation	BY 1995 \$M			BY 1995 \$M	TY \$M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	5420.4	5420.4	5962.4	5575.8	6351.2	6351.2	6577.4
Procurement	58933.2	58933.2	64826.5	58553.1	86856.1	86856.1	92735.2
Flyaway	--	--	--	58050.1	--	--	91956.6
Recurring	--	--	--	56436.8	--	--	90131.3
Non Recurring	--	--	--	1613.3	--	--	1825.3
Support	--	--	--	503.0	--	--	778.6
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	503.0	--	--	778.6
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	64128.9	93207.3	93207.3	99312.6

#### Confidence Level

Confidence Level of cost estimate for current APB: 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.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	0	0	0
Procurement	30	30	32
Total	30	30	32

#### Quantity Notes

The Navy is planning for a class extension and has added Advance Procurement (FY 2018 - FY 2020) and Full Funding (two ships in FY 2020) accordingly. The Increase in the Current Estimate for cost from PB 2015 to PB 2016 is primarily due to additional funding in FY 2019 and FY 2020 for VPM and a class extension.

## Cost and Funding

### Funding Summary

Appropriation Summary									
FY 2016 President's Budget / December 2014 SAR (TY\$ M)									
Appropriation	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
RDT&E	5166.0	205.7	282.7	213.0	242.2	87.9	84.7	295.2	6577.4
Procurement	56269.7	5964.3	5458.7	5331.1	5180.1	6814.0	6942.3	775.0	92735.2
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 2016 Total	61435.7	6170.0	5741.4	5544.1	5422.3	6901.9	7027.0	1070.2	99312.6
PB 2015 Total	61415.8	6232.9	5810.1	5640.0	5877.9	6126.6	302.3	1142.5	92548.1
Delta	19.9	-62.9	-68.7	-95.9	-455.6	775.3	6724.7	-72.3	6764.5

Quantity Summary										
FY 2016 President's Budget / December 2014 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
Development	0	0	0	0	0	0	0	0	0	0
Production	0	20	2	2	2	2	2	2	0	32
PB 2016 Total	0	20	2	2	2	2	2	2	0	32
PB 2015 Total	0	20	2	2	2	2	2	0	0	30
Delta	0	0	0	0	0	0	0	2	0	2

## 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
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	--	--	--	--	--	--	115.4
2015	--	--	--	--	--	--	205.7
2016	--	--	--	--	--	--	282.7
2017	--	--	--	--	--	--	213.0
2018	--	--	--	--	--	--	242.2
2019	--	--	--	--	--	--	87.9
2020	--	--	--	--	--	--	84.7
2021	--	--	--	--	--	--	32.7
2022	--	--	--	--	--	--	41.5
2023	--	--	--	--	--	--	52.7
2024	--	--	--	--	--	--	57.9
2025	--	--	--	--	--	--	64.7
2026	--	--	--	--	--	--	22.8

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2027	--	--	--	--	--	--	22.9
Subtotal	--	--	--	--	--	--	6577.4

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Annual Funding 1319   RDT&E   Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 1995 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
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	--	--	--	--	--	--	77.6
2013	--	--	--	--	--	--	56.9
2014	--	--	--	--	--	--	82.6
2015	--	--	--	--	--	--	144.9
2016	--	--	--	--	--	--	195.8
2017	--	--	--	--	--	--	144.8
2018	--	--	--	--	--	--	161.5
2019	--	--	--	--	--	--	57.4
2020	--	--	--	--	--	--	54.3
2021	--	--	--	--	--	--	20.5
2022	--	--	--	--	--	--	25.6
2023	--	--	--	--	--	--	31.8
2024	--	--	--	--	--	--	34.3
2025	--	--	--	--	--	--	37.5
2026	--	--	--	--	--	--	13.0
2027	--	--	--	--	--	--	12.8
Subtotal	--	--	--	--	--	--	5575.8

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	--	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	6523.7	--	--	6523.7	26.2	6549.9
2015	2	5925.6	--	--	5925.6	29.4	5955.0
2016	2	5410.7	--	--	5410.7	46.0	5456.7
2017	2	5207.4	--	93.7	5301.1	23.0	5324.1
2018	2	5042.4	--	90.5	5132.9	35.9	5168.8
2019	2	5666.8	1086.3	--	6753.1	51.4	6804.5
2020	2	4910.4	1979.9	--	6890.3	42.3	6932.6
2021	--	121.3	--	--	121.3	21.9	143.2
2022	--	116.1	--	--	116.1	19.6	135.7
2023	--	110.9	--	--	110.9	15.5	126.4
2024	--	108.7	--	--	108.7	11.7	120.4
2025	--	105.1	--	--	105.1	--	105.1
2026	--	100.8	--	--	100.8	--	100.8
2027	--	43.4	--	--	43.4	--	43.4
Subtotal	32	87065.1	3066.2	1825.3	91956.6	481.2	92437.8

Annual Funding 1611   Procurement   Shipbuilding and Conversion, Navy							
Fiscal Year	Quantity	BY 1995 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
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	2102.0	--	--	2102.0	12.9	2114.9
2009	1	2359.2	--	--	2359.2	11.6	2370.8
2010	1	2518.8	--	--	2518.8	6.1	2524.9
2011	2	3123.4	--	--	3123.4	11.3	3134.7
2012	2	2802.5	--	--	2802.5	7.3	2809.8
2013	2	2720.4	--	--	2720.4	9.9	2730.3
2014	2	3720.9	--	--	3720.9	15.0	3735.9
2015	2	3320.4	--	--	3320.4	16.4	3336.8
2016	2	2975.5	--	--	2975.5	25.3	3000.8
2017	2	2808.7	--	50.5	2859.2	12.4	2871.6
2018	2	2666.6	--	47.9	2714.5	19.0	2733.5
2019	2	2938.1	563.2	--	3501.3	26.6	3527.9
2020	2	2496.0	1006.4	--	3502.4	21.5	3523.9
2021	--	60.4	--	--	60.4	11.0	71.4
2022	--	56.7	--	--	56.7	9.6	66.3
2023	--	53.1	--	--	53.1	7.4	60.5
2024	--	51.0	--	--	51.0	5.5	56.5
2025	--	48.4	--	--	48.4	--	48.4
2026	--	45.5	--	--	45.5	--	45.5
2027	--	19.2	--	--	19.2	--	19.2
Subtotal	32	54867.2	1569.6	1613.3	58050.1	277.7	58327.8

The Navy is planning for a class extension and has added Advance Procurement (FY 2018 - FY 2020) and Full Funding (2 ships in FY 2020) accordingly. Funding in the Non End Item Recurring Flyaway column is associated with Advance Procurement for ships beyond the FYDP.

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	2356.4
2000	--	--
2001	1	1916.5
2002	1	2036.6
2003	1	1824.5
2004	1	1813.2
2005	1	1745.3
2006	1	1771.5
2007	1	1836.4
2008	1	1782.6
2009	1	1902.5
2010	1	1776.1
2011	2	3361.1
2012	2	3159.7
2013	2	3081.7
2014	2	3175.5
2015	2	3040.1
2016	2	3049.2
2017	2	3031.2
2018	2	3063.3
2019	2	3672.5
2020	2	3329.5
2021	--	--
2022	--	--
2023	--	--
2024	--	--
2025	--	--
2026	--	--
2027	--	--
Subtotal	32	54867.2

Annual Funding 1810   Procurement   Other Procurement, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
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	--	--	--	--	--	2.0	2.0
2017	--	--	--	--	--	7.0	7.0
2018	--	--	--	--	--	11.3	11.3
2019	--	--	--	--	--	9.5	9.5
2020	--	--	--	--	--	9.7	9.7
Subtotal	--	--	--	--	--	297.4	297.4

Annual Funding 1810   Procurement   Other Procurement, Navy							
Fiscal Year	Quantity	BY 1995 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
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	--	--	--	--	--	6.5	6.5
2016	--	--	--	--	--	1.4	1.4
2017	--	--	--	--	--	4.7	4.7
2018	--	--	--	--	--	7.4	7.4
2019	--	--	--	--	--	6.1	6.1
2020	--	--	--	--	--	6.1	6.1
Subtotal	--	--	--	--	--	225.3	225.3

## Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
<b>Approval Date</b>	6/30/1995	6/30/1995
<b>Approved Quantity</b>	14	14
<b>Reference</b>	MS II ADM	MS II ADM
<b>Start Year</b>	1998	1998
<b>End Year</b>	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

\$16,800.9 (TY\$). These costs are for reactor propulsion plant equipment. These costs are included in the Shipbuilding and Conversion, Navy costs in this report. Department of Energy costs are excluded from this report.

## Unit Cost

### Unit Cost Report

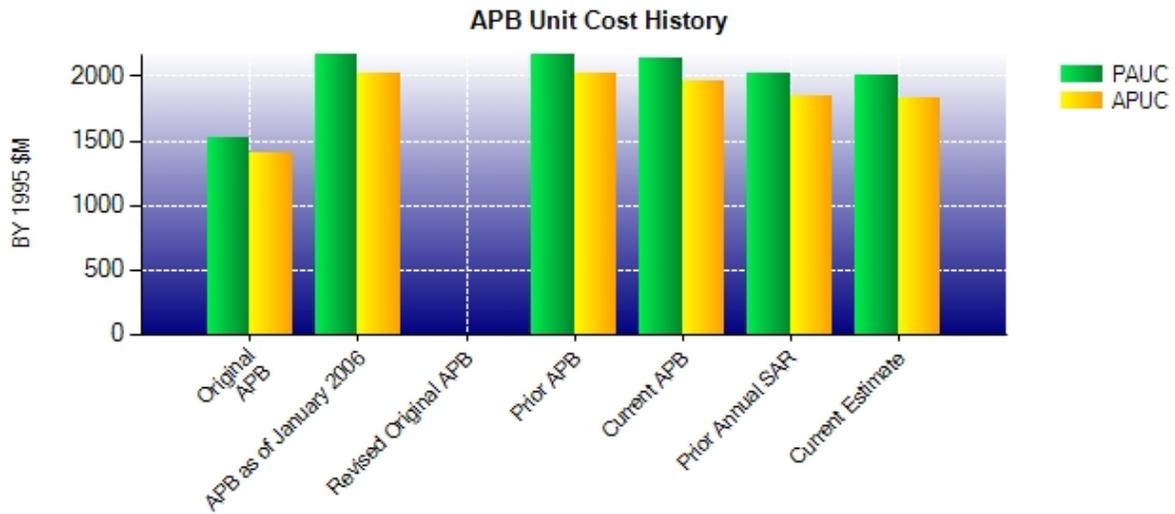
Item	BY 1995 \$M	BY 1995 \$M	% Change
	Current UCR Baseline (Sep 2010 APB)	Current Estimate (Dec 2014 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	64353.6	64128.9	
Quantity	30	32	
Item	2145.120	2004.028	-6.58
<b>Average Procurement Unit Cost</b>			
Cost	58933.2	58553.1	
Quantity	30	32	
Unit Cost	1964.440	1829.784	-6.85

Item	BY 1995 \$M	BY 1995 \$M	% Change
	Original UCR Baseline (Jun 1995 APB)	Current Estimate (Dec 2014 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	45633.1	64128.9	
Quantity	30	32	
Unit Cost	1521.103	2004.028	<b>+31.75<sup>1</sup></b>
<b>Average Procurement Unit Cost</b>			
Cost	42228.1	58553.1	
Quantity	30	32	
Unit Cost	1407.603	1829.784	+29.99

<sup>1</sup> 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**



Item	Date	BY 1995 \$M		TY \$M	
		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 2013	2027.107	1838.367	3084.937	2860.523
Current Estimate	Dec 2014	2004.028	1829.784	3103.519	2897.975

**SAR Unit Cost History**

Initial SAR Baseline to Current SAR Baseline (TY \$M)										
Initial PAUC Development Estimate	Changes								PAUC Production Estimate	
	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 Production Estimate	Changes								PAUC Current Estimate	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
3106.910	176.009	-51.057	-45.394	24.938	-100.759	0.000	-7.128	-3.391	3103.519	

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	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 Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2895.203	175.819	-37.825	-45.394	0.000	-82.700	0.000	-7.128	2.772	2897.975

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	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	Jun 2006
Total Cost (TY \$M)	N/A	71080.8	93207.3	99312.6
Total Quantity	N/A	30	30	32
PAUC	N/A	2369.360	3106.910	3103.519

## Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	6351.2	86856.1	--	93207.3
Previous Changes				
Economic	+29.2	+5434.1	--	+5463.3
Quantity	--	--	--	--
Schedule	--	-1452.6	--	-1452.6
Engineering	+798.0	--	--	+798.0
Estimating	-446.0	-4791.7	--	-5237.7
Other	--	--	--	--
Support	--	-230.2	--	-230.2
Subtotal	+381.2	-1040.4	--	-659.2
Current Changes				
Economic	-23.1	+192.1	--	+169.0
Quantity	--	+4580.0	--	+4580.0
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-131.9	+2145.3	--	+2013.4
Other	--	--	--	--
Support	--	+2.1	--	+2.1
Subtotal	-155.0	+6919.5	--	+6764.5
Adjustments	--	--	--	--
Total Changes	+226.2	+5879.1	--	+6105.3
CE - Cost Variance	6577.4	92735.2	--	99312.6
CE - Cost & Funding	6577.4	92735.2	--	99312.6

Summary BY 1995 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	5420.4	58933.2	--	64353.6
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	-747.5	--	-747.5
Engineering	+556.6	--	--	+556.6
Estimating	-314.8	-2883.0	--	-3197.8
Other	--	--	--	--
Support	--	-151.7	--	-151.7
Subtotal	+241.8	-3782.2	--	-3540.4
Current Changes				
Economic	--	--	--	--
Quantity	--	+2327.8	--	+2327.8
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-86.4	+1073.8	--	+987.4
Other	--	--	--	--
Support	--	+0.5	--	+0.5
Subtotal	-86.4	+3402.1	--	+3315.7
Adjustments	--	--	--	--
Total Changes	+155.4	-380.1	--	-224.7
CE - Cost Variance	5575.8	58553.1	--	64128.9
CE - Cost & Funding	5575.8	58553.1	--	64128.9

Previous Estimate: December 2013

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-23.1
Revised estimate for VIRGINIA Payload Module (VPM) detail design (zero sum transfer to Shipbuilding and Conversion, Navy (SCN)). (Estimating)	-124.0	-184.2
Revised estimate for Hull, Mechanical and Electrical (HM&E) Technology Insertion (zero sum transfer from SCN). (Estimating)	+54.2	+80.2
Revised estimate for VPM development program. (Estimating)	-46.4	-70.2
Revised estimate for the Acoustic Superiority development program (HM&E). (Estimating)	+23.7	+35.0
Revised estimates due to miscellaneous reductions. (Estimating)	-7.0	-11.2
Congressional plus-up to non-core Research and Development program (FY 2015). (Estimating)	+10.6	+15.0
Adjustment for current and prior escalation. (Estimating)	+2.5	+3.5
<b>RDT&amp;E Subtotal</b>	<b>-86.4</b>	<b>-155.0</b>

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+192.1
Full Funding in FY 2020 for two additional ships resulting in an increase in the current estimate from 30 to 32 ships. Advance Procurement for these ships was recognized in prior SARs. (Quantity)	+2327.8	+4580.0
Advance Procurement added to fund class extension (FY 2019 - FY 2020). (Estimating)	+856.2	+1681.0
Revised estimate for the VPM program (FY 2017 - FY 2020). (Estimating)	+796.2	+1539.7
Revised estimate due to refinement of requirements. (Estimating)	-401.8	-752.0
Adjustment for current and prior escalation. (Estimating)	-81.5	-139.2
Technology Insertion reduction (transferred to RDT&E). (Estimating)	-43.0	-80.2
Revised estimate to reflect the application of new outyear escalation indices. (Estimating)	-27.8	-52.5
Congressional reduction to FY 2015 Advanced Procurement. (Estimating)	-28.9	-51.5
Revised estimate for Post Delivery. (Estimating)	+4.4	0.0
Adjustment for current and prior escalation. (Support)	-0.3	-0.5
Decrease in Initial Outfitting Spares (Shipbuilding and Conversion, Navy). (Support)	-0.5	-0.1
Increase in Initial Spares (Navy).Other Procurement Navy. (Support)	+1.3	+2.7
<b>Procurement Subtotal</b>	<b>+3402.1</b>	<b>+6919.5</b>

## Contracts

### Contract Identification

**Appropriation:** Procurement  
**Contract Name:** SSN 784  
**Contractor:** General Dynamics, EB Corporation  
**Contractor Location:** 75 Eastern Point Road  
 Groton, CT 06340  
**Contract Number:** N00024-09-C-2104/1  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** December 22, 2008  
**Definitization Date:** December 22, 2008

### Contract Price

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	1899.3	1956.4	1	1874.3	1876.3

### 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.

### Contract Variance

Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/20/2014)	-0.3	-14.7
Previous Cumulative Variances	+0.3	-4.9
Net Change	-0.6	-9.8

### Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to final labor performance leading up to ship delivery on August 29, 2014.

The unfavorable net change in the schedule variance is due to attempting to hold an aggressive schedule to deliver ahead of the contract delivery date.

### Notes

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

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** SSN 785  
**Contractor:** General Dynamics, EB Corporation  
**Contractor Location:** 75 Eastern Point Road  
 Groton, CT 06340  
**Contract Number:** N00024-09-C-2104/2  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** December 22, 2008  
**Definitization Date:** December 22, 2008

Contract Price							
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	1777.1	1971.5	1	1752.8	1755.5

**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.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/20/2014)	+20.5	-26.7
Previous Cumulative Variances	+5.5	-39.7
Net Change	+15.0	+13.0

**Cost and Schedule Variance Explanations**

The favorable net change in the cost variance is due to positive final assembly performance moving toward launch on September 10, 2014 and projected delivery in Spring 2015.

The favorable net change in the schedule variance is due to holding to an aggressive schedule as the ship nears completion.

**Notes**

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

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** SSN 786  
**Contractor:** General Dynamics, EB Corporation  
**Contractor Location:** 75 Eastern Point Road  
 Groton, CT 06340  
**Contract Number:** N00024-09-C-2104/3  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** December 22, 2008  
**Definitization Date:** December 22, 2008

Contract Price							
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	1751.9	1825.9	N/A	1705.2	1706.1

**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.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/20/2014)	+7.0	-11.2
Previous Cumulative Variances	+46.4	-23.6
Net Change	-39.4	+12.4

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to assembly performance moving toward Pressure Hull Complete.

The favorable net change in the schedule variance is due to holding to a challenging schedule concentrating on integration activities leading up to completion of the pressure hull on December 16, 2014.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** SSN 787  
**Contractor:** General Dynamics, EB Corporation  
**Contractor Location:** 75 Eastern Point Road  
 Groton, CT 06340  
**Contract Number:** N00024-09-C-2104/4  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** December 22, 2008  
**Definitization Date:** December 22, 2008

Contract Price							
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	1816.7	1909.2	1	1759.5	1762.2

**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.

Contract Variance			
Item	Cost Variance		Schedule Variance
Cumulative Variances To Date (12/20/2014)	+100.1		-39.9
Previous Cumulative Variances	+76.3		-20.4
Net Change	+23.8		-19.5

**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 meeting and working towards aggressive module delivery dates. The CPR baseline is set to the aggressive schedule targets – well before the contractual delivery dates – therefore the schedule variances generated are against the aggressive schedules.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** SSN 788  
**Contractor:** General Dynamics, EB Corporation  
**Contractor Location:** 75 Eastern Point Road  
 Groton, CT 06340  
**Contract Number:** N00024-09-C-2104/5  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** December 22, 2008  
**Definitization Date:** December 22, 2008

Contract Price							
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	1713.9	1777.9	1	1661.8	1667.8

**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.

Contract Variance			
Item	Cost Variance		Schedule Variance
Cumulative Variances To Date (12/20/2014)	+26.5		-19.7
Previous Cumulative Variances	+55.0		-9.1
Net Change	-28.5		-10.6

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to labor performance in module fabrication and assembly.

The unfavorable net change in the schedule variance is due to falling short on labor performance in the modular construction process. The Contract Performance Report baseline for this ship is set to aggressive schedule targets – well before the contractual delivery dates – therefore the schedule variances generated are against the aggressive schedules.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** SSN 789  
**Contractor:** General Dynamics, EB Corporation  
**Contractor Location:** 75 Eastern Point Road  
 Groton, CT 06340  
**Contract Number:** N00024-09-C-2104/6  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** December 22, 2008  
**Definitization Date:** December 22, 2008

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1688.8	1796.5	1	1719.3	1796.5	1	1674.9	1682.7

**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.

Contract Variance			
Item	Cost Variance		Schedule Variance
Cumulative Variances To Date (12/20/2014)	+60.4		-32.7
Previous Cumulative Variances	--		--
Net Change	+60.4		-32.7

**Cost and Schedule Variance Explanations**

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

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

**Notes**

This is the first time this contract is being reported.

**Contract Identification**

**Appropriation:** RDT&E  
**Contract Name:** Lead Yard Services  
**Contractor:** General Dynamics, EB Corporation  
**Contractor Location:** 75 Eastern Point Road  
 Groton, CT 06340  
**Contract Number:** N00024-10-C-2118  
**Contract Type:** Cost Plus Fixed Fee (CPFF)  
**Award Date:** July 02, 2010  
**Definitization Date:** July 02, 2010

Contract Price							
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	826.2	N/A	N/A	826.2	826.2

**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.

Contract Variance			
Item	Cost Variance		Schedule Variance
Cumulative Variances To Date	0.0		0.0
Previous Cumulative Variances	--		--
Net Change	+0.0		+0.0

**Cost and Schedule Variance Explanations**

None

**General Contract Variance Explanation**

Cost and schedule variances are not reported because this is a service contract that is level of effort and, therefore, EVM was deemed to not be the most effective way to track contract performance.

**Notes**

The Lead Yard Services contract provides design studies, engineering, material and logistics support and research and development activities on the baseline VIRGINIA design. Cost and schedule variances are not reported for this contract because this service contract is Level Of Effort for which EVM was not deemed the most effective way to track performance.

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

## Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	0	--
Production	11	11	32	34.38%
Total Program Quantity Delivered	11	11	32	34.38%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	99312.6	Years Appropriated	24
Expended to Date	48127.0	Percent Years Appropriated	66.67%
Percent Expended	48.46%	Appropriated to Date	67605.7
Total Funding Years	36	Percent Appropriated	68.07%

The above data is current as of February 01, 2015.

The eleventh ship of the VIRGINIA Class, USS NORTH DAKOTA (SSN 784), was delivered in August 2014, two days prior to the contract delivery date.

## Operating and Support Cost

### Cost Estimate Details

<b>Date of Estimate:</b>	June 01, 2010
<b>Source of Estimate:</b>	SCP
<b>Quantity to Sustain:</b>	30
<b>Unit of Measure:</b>	Ship
<b>Service Life per Unit:</b>	33.00 Years
<b>Fiscal Years in Service:</b>	FY 2004 - FY 2058

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.

Naval Visibility and Management of Operating and Support Cost (VAMOSOC) 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.

The difference between the sustainment quantity (30) and the acquisition quantity (32) reflected in other sections of this report is due to a class extension currently being planned by the Navy.

### 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

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 the 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.

Annual 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	
<b>Total</b>	<b>35.400</b>	<b>30.520</b>	

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.

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

### Equation to Translate Annual Cost to Total Cost

The average annual cost per ship is derived by dividing total O&S costs by 30 ships and service life of 33 years.

O&S Cost Variance		
Category	BY 1995 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2013 SAR	35038.7	
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	
Total Changes	0.0	
Current Estimate	35038.7	

### Disposal Estimate Details

**Date of Estimate:** June 01, 2010  
**Source of Estimate:** SCP  
**Disposal/Demilitarization Total Cost (BY 1995 \$M):** Total costs for disposal of all Ship are 1177.9

Total program disposal costs are estimated to be \$3,130.8M TY.