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

SSN 774 Virginia Class Submarine (SSN 774)

As of FY 2021 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Common Acronyms and Abbreviations for MDAP Programs

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

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

Program Information

Program Name
SSN 774 Virginia Class Submarine (SSN 774)

DoD Component
Navy

Responsible Office

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Date Assigned: April 16, 2018

References

SAR Baseline (Production Estimate)

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

Approved APB

Component Acquisition Executive (CAE) Approved Acquisition Program Baseline (APB) dated February 13, 2017

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. Replacing 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

Program Highlights Since Last Report

The VIRGINIA Class Submarine Program is at full rate production delivering two submarines per year at two shipyards.With the delivery to the Navy of VERMONT (SSN 792) this year, 19 VIRGINIAs will be in service with 10 more under construction.

A Block V construction contract for 9 VIRGINIA Class Submarines (8 with VIRGINIA Payload Module (VPM)) and a priced option for a 10th was signed December 2, 2019. The Block V contract is a $22.2-billion fixed-price incentive fee, multi-year procurement contract for fiscal years 2019 through 2023. The contract preserves the 10^{th} ship option at a later stage if funding and production performance support. This option serves as an incentive to drive shipbuilder performance. Additionally, per National Defense Authorization Act (NDAA) of FY 2019 direction, the contract also includes unpriced options to procure a VIRGINIA Class Submarine in FY 2022 and FY 2023.

The VPM design is progressing with design products completing near schedule. Payload Tube manufacturing and material procurement are in progress to support Block V construction start. The design is expected to be over 70% complete at construction start as compared to the Block III Design for Affordability (DFA) redesign which was approximately 60% complete at construction start.

Acoustic Superiority (AS) supports the CNO's undersea dominance mandate and represents the first significant investment in VIRGINIA acoustic capability since initial design. The SOUTH DAKOTA Insertion Program (SDIP) is a near-term AS concept demonstration on a VIRGINIA Class platform to be installed during SOUTH DAKOTA (SSN 790) Post Shakedown Availability (PSA).

The Tactical Submarine Evolution Plan (TSEP) is the Undersea Enterprises' holistic plan to maintain the right mix of SSN, SSGN, SSBN, and next SSN platforms to meet current and future requirements for Undersea Warfare. TSEP looks at a near-term (10 year) and a long-term window of at least 50 years to build, train, and equip the submarine force of the future to maintain undersea dominance.

Near term VIRGINIA Class program events include the projected float off of OREGON (SSN 793) in summer 2020 with delivery in November 2020. MONTANA (SSN 794) is projected to float off in summer 2020.

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

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	**Significant Development Description**
August 1992	Milestone 0 for Centurion Submarine, "the first submarine designed with affordability considerations paramount". Conceptualized as a lower cost alternative to SEAWOLF Class.
August 1994	Milestone I was approved for the New Attack Submarine (NSSN) following two years of extensive review of requirements and rigorous systems definition effort.
December 1994	Milestone I APB established.
June 1995	The New Attack Submarine Program successfully passed Milestone II with the signing of an ADM.
June 1995	A waiver from full-up, system-level live fire testing was approved jointly by USD (A&T&L) and the Director, Operational Test & Evaluation with notification letters sent to Congressional Defense Committees on June 29, 1995.
April 1996	Contract award for the New Attack Submarine Command, Control, Communications and Intelligence (C3I) System was executed to Lockheed Martin Federal Systems.
May 1996	The Integrated Process and Product Development (IPPD) 1996 Design/Build Contract with Electric Boat (EB) Corporation was definitized.
October 1997	The revised APB (Change 1 to the Development Baseline of June 30, 1995) was signed to reflect the co-construction teaming arrangement between EB and Newport News Shipbuilding (NNS) as mandated in the FY 1998 Authorization and Appropriations Acts.
September 1998	The IPPD 96 Design Build contract with EB was modified to include construction of the first four VIRGINIA Class Submarines.
January 2001	Systems testing and integration started on the first Command and Control Systems Module (CCSM) at the Off-hull Assembly and Test Site (COATS). The COATS facility is used to test VIRGINIA Class CCSM units prior to shipyard delivery.
August 2003	In pursuit of the lowest possible future program costs, the Navy awarded the Block II construction contract with clauses to transition to a multi-year contract in FY 2004.
January 2004	The transition to multi-year procurement for hulls six through ten was completed in January 2004 following approval by Congress in the FY 2004 Defense Appropriations and Authorization Acts.
October 2004	Lead Ship delivery (USS VIRGINIA SSN 774). Delivery occurred within the original baseline schedule threshold set ten years earlier, in 1994.
June 2006	USS TEXAS, which was essentially the second lead ship of the class, was the first submarine delivered at Northrop Grumman, Newport News in nearly ten years.
March 2007	The program achieved IOC although USS VIRGINIA first deployed operationally in the fall of 2005 in support of the Global War on Terror.
December 2008	The Navy awarded the Block III construction contract to General Dynamics Electric Boat and Northrop Grumman Newport News for the construction of eight VIRGINIA Class submarines from FY 2009 through FY 2013.
September 2010	The program achieved Milestone III. The ADM was signed by the USD (AT&L) and included a declaration of Full Operational Capability and authorization of Full Rate Production.
October 2010	The program accelerated to Full Rate Production of two ships per year.
January 2012	The initial Concept Design for the Virginia Payload Module (VPM) was completed.
April 2014	The Navy signed a Block IV Construction Contract to build ten VIRGINIA Class Submarines with

	General Dynamics Electric Boat and Huntington Ingalls Industries-Newport News. Under the five-year agreement, Electric Boat and Newport News Shipbuilding would jointly build two ships per year from FY 2014 - FY 2018.
February 2017	On February 13, 2017, an APB was signed by the acting Assistant Secretary of the Navy (Research, Development & Acquisition) reflecting an increase in the number of submarines from 30 to 48. The baseline update includes the VIRGINIA Payload Module (VPM) and Acoustic Superiority (AS) on Block V and follow ships.
December 2019	The Navy signed a Block V Construction Contract on December 2, 2019 with General Dynamics Electric Boat and Huntington Ingalls Industries-Newport News for 9 VIRGINIA Class Submarines (8 with VIRGINIA Payload Module) and a priced option for a 10th submarine. In accordance with the NDAA of FY 2019, the contract also includes unpriced options to procure a VIRGINIA Class Submarine in FY 2022 and FY 2023.

Threshold Breaches

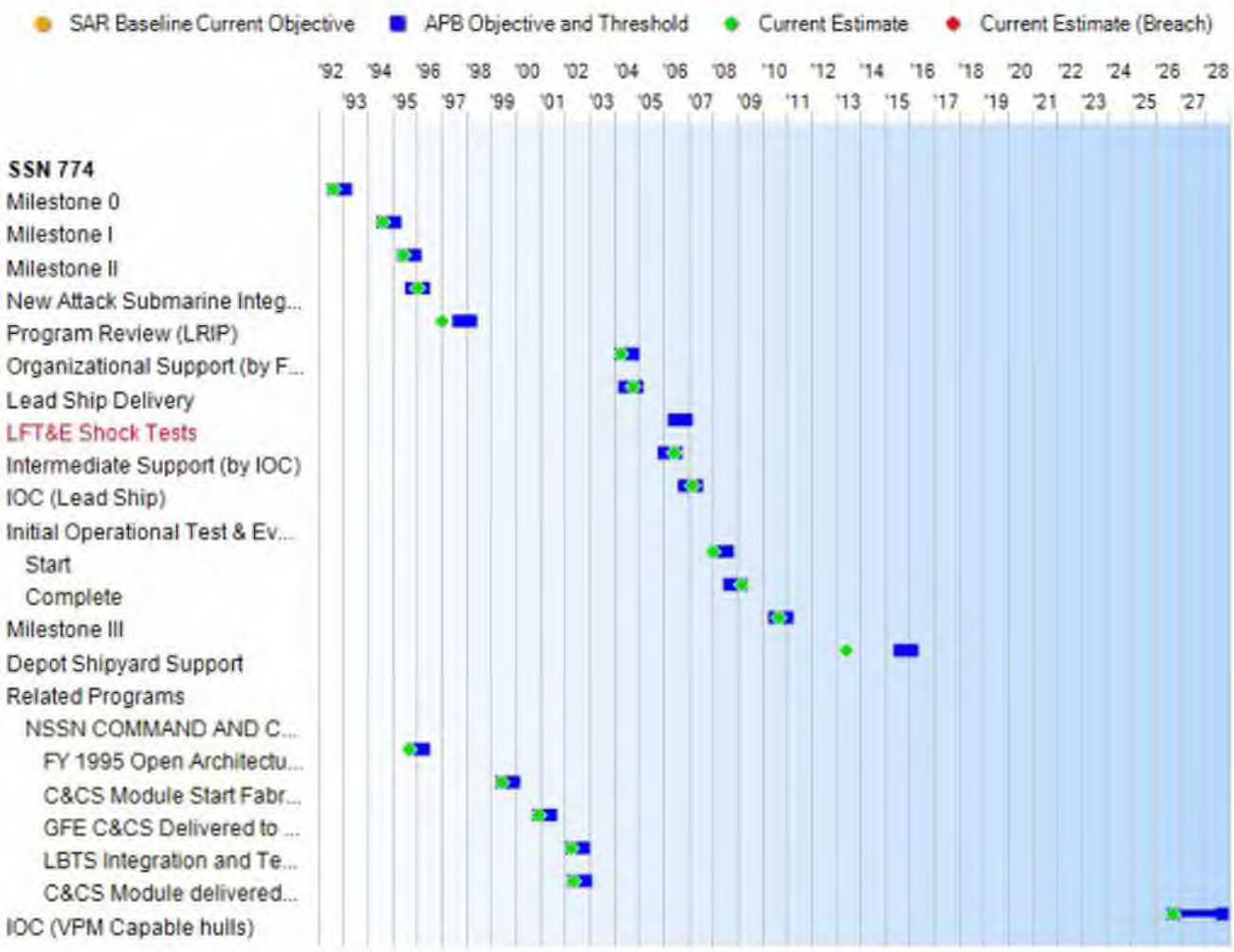
APB Breaches		
Schedule		☑
Performance		☐
Cost	RDT&E	☐
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
O&S Cost		☐
Unit Cost	PAUC	☐
	APUC	☐

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

Explanation of Breach

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

Schedule


SAR Baseline Current Objective
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 '17 '18 '19 '20 '21 '22 '23 '24 '25 '26 '27 '28
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...
IOC (VPM Capable hulls)

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[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
IOC (VPM Capable hulls)	N/A	Sep 2026	Sep 2028	Sep 2026

[1] *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.

Projected delivery and OWLD dates for ships under construction:

FY14-1 - SSN 792 – PCU VERMONT - Delivery: Mar 2020, OWLD: Feb 2021

FY14-2 - SSN 793 – PCU OREGON – Delivery: Nov 2020, OWLD: Oct 2021

FY15-1 - SSN 794 – PCU MONTANA – Delivery: Aug 2021, OWLD: Jul 2022

FY15-2 - SSN 795 – PCU HYMAN G. RICKOVER – Delivery: Jul 2021, OWLD: Jun 2022

FY16-1 - SSN 796 – PCU NEW JERSEY – Delivery: Jan 2022, OWLD: Dec 2022

FY16-2 - SSN 797 – PCU IOWA – Delivery: Jul 2022, OWLD: Jun 2023

FY17-1 - -SSN 798 – PCU MASSACHUSETTS – Delivery: Dec 2022, OWLD: Nov 2023

FY17-2 - SSN 799 – PCU IDAHO – Delivery: Jun 2023, OWLD: May 2024

FY18-1 - SSN 800 – PCU ARKANSAS – Delivery: Dec 2023, OWLD: Nov 2024

FY18-2 - SSN 801 – PCU UTAH – Delivery: Mar 2024, OWLD: Feb 2025

FY19-1 - SSN 802 – PCU OKLAHOMA – Delivery: Jun 2025, OWLD: May 2026

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**		
	2177		NEW DESIGN SSN HM&E (NSSN UNIQUE)		(Sunk)
Navy	1319	03	0603564N		
	Project		**Name**		
	2200		Ship Preliminary Design		(Sunk)
Navy	1319	03	0603570N		
	Project		**Name**		
	2158		NUCLEAR PROPULSION		(Sunk)
Navy	1319	05	0604558N		
	Project		**Name**		
	1947		New Design SSN HM&E		
	1950		New Design SSN Combat Sys Dev		
	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 Combat Systems	(Shared)	(Sunk)
	4500		VIRGINIA Payload Module		(Sunk)
	Notes:		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		Congressional Adds		(Sunk)

Navy 1319 04 0604567N

Project	Name	
2199	Ship Contract Design	(Sunk)

Navy 1319 05 0604580N

Project	Name	
4500	VIRGINIA Payload Module	(Sunk)

Notes

FYDP funding includes the following projects from BA 05 PE 0604558: Project 1947 New Design Hull Mechanical & Electrical (HM&E) and Project 1950 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 4500 VIRGINIA Payload Module shifted to PE 0604580 beginning in FY 2014 and ended in FY 2018.

Procurement

Navy 1611 02 0204281N

Line Item	Name		
2013	Virginia Class Submarine		

Navy 1611 05 0204281N

Line Item	Name		
5110	Outfitting	(Shared)	
5300	Completion of Prior Year Shipbuilding Programs	(Shared)	(Sunk)

Navy 1810 01 0204281N

Line Item	Name		
0942	Virginia Class Support Equipment	(Shared)	
9020	Spares and Repair Parts	(Shared)	(Sunk)

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.

MILCON

Navy 1205 01 0203176N

Project	Name
095	
	Notes: Military construction projects supporting VIRGINIA Payload Module (VPM).
676	
	Notes: Military construction projects supporting VIRGINIA Payload Module (VPM).

Navy 1205 01 0212176N

Project	Name
1044	
	Notes: Military construction projects supporting VIRGINIA Payload Module (VPM).
194	
	Notes: Military construction projects supporting VIRGINIA Payload Module (VPM).

Navy 1205 01 0712876N

Project	Name
702	
	Notes: Military construction projects supporting VIRGINIA Payload Module (VPM).

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	6498.8	7018.9	7011.5	6351.2	8192.7	9057.6
Procurement	58933.2	87455.7	97035.7	87252.6	86856.1	157493.5	156297.4
Flyaway	--	--	--	86337.2	--	--	154591.9
Recurring	--	--	--	84670.3	--	--	152659.6
Non Recurring	--	--	--	1666.9	--	--	1932.3
Support	--	--	--	915.4	--	--	1705.5
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	915.4	--	--	1705.5
MILCON	0.0	348.8	383.7	93.2	0.0	570.8	160.9
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	64353.6	94303.3	N/A	94357.3	93207.3	166257.0	165515.9

Current APB Cost Estimate Reference

SCP dated November 04, 2016

Cost Notes

CAPE COST RISK:

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

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	0	0	0
Procurement	30	48	48
Total	30	48	48

Cost and Funding

Funding Summary

Appropriation Summary FY 2021 President's Budget / December 2019 SAR (TY$ M)									
Appropriation	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
RDT&E	6230.1	317.9	256.7	314.9	345.0	278.9	284.5	1029.6	9057.6
Procurement	85568.9	8493.6	4399.8	6480.5	6487.1	7717.6	7313.6	29836.3	156297.4
MILCON	0.0	0.0	46.5	0.0	47.7	33.9	32.8	0.0	160.9
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2021 Total	91799.0	8811.5	4703.0	6795.4	6879.8	8030.4	7630.9	30865.9	165515.9
PB 2020 Total	91855.6	10225.1	6499.3	6389.8	6537.0	7517.7	7517.2	24983.8	161525.5
Delta	-56.6	-1413.6	-1796.3	405.6	342.8	512.7	113.7	5882.1	3990.4

Quantity Summary FY 2021 President's Budget / December 2019 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Development	0	0	0	0	0	0	0	0	0	0
Production	0	30	2	1	2	2	2	2	7	48
PB 2021 Total	0	30	2	1	2	2	2	2	7	48
PB 2020 Total	0	30	3	2	2	2	2	2	5	48
Delta	0	0	-1	-1	0	0	0	0	2	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
		TY $M					
Fiscal Year	Quantity	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	--	--	--	--	--	--	189.6
2016	--	--	--	--	--	--	305.1
2017	--	--	--	--	--	--	220.3
2018	--	--	--	--	--	--	177.3
2019	--	--	--	--	--	--	171.8
2020	--	--	--	--	--	--	317.9
2021	--	--	--	--	--	--	256.7
2022	--	--	--	--	--	--	314.9
2023	--	--	--	--	--	--	345.0
2024	--	--	--	--	--	--	278.9
2025	--	--	--	--	--	--	284.5
2026	--	--	--	--	--	--	133.2

2027	--	--	--	--	--	--	124.5
2028	--	--	--	--	--	--	99.2
2029	--	--	--	--	--	--	118.1
2030	--	--	--	--	--	--	133.5
2031	--	--	--	--	--	--	132.9
2032	--	--	--	--	--	--	125.4
2033	--	--	--	--	--	--	112.2
2034	--	--	--	--	--	--	8.2
2035	--	--	--	--	--	--	8.5
2036	--	--	--	--	--	--	8.1
2037	--	--	--	--	--	--	8.3
2038	--	--	--	--	--	--	8.6
2039	--	--	--	--	--	--	8.9
Subtotal	--	--	--	--	--	--	9057.6

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
		BY 1995 $M					
Fiscal Year	Quantity	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	--	--	--	--	--	--	120.6
2012	--	--	--	--	--	--	77.6
2013	--	--	--	--	--	--	57.2
2014	--	--	--	--	--	--	82.7
2015	--	--	--	--	--	--	134.2
2016	--	--	--	--	--	--	212.1
2017	--	--	--	--	--	--	150.4
2018	--	--	--	--	--	--	118.2
2019	--	--	--	--	--	--	112.3
2020	--	--	--	--	--	--	203.8
2021	--	--	--	--	--	--	161.4
2022	--	--	--	--	--	--	194.1
2023	--	--	--	--	--	--	208.4
2024	--	--	--	--	--	--	165.2
2025	--	--	--	--	--	--	165.2
2026	--	--	--	--	--	--	75.8
2027	--	--	--	--	--	--	69.5
2028	--	--	--	--	--	--	54.3
2029	--	--	--	--	--	--	63.4
2030	--	--	--	--	--	--	70.2
2031	--	--	--	--	--	--	68.5

2032	--	--	--	--	--	--	63.4
2033	--	--	--	--	--	--	55.6
2034	--	--	--	--	--	--	4.0
2035	--	--	--	--	--	--	4.0
2036	--	--	--	--	--	--	3.8
2037	--	--	--	--	--	--	3.8
2038	--	--	--	--	--	--	3.9
2039	--	--	--	--	--	--	3.9
Subtotal	--	--	--	--	--	--	7011.5

Annual Funding 1611 | Procurement | Shipbuilding and Conversion, Navy							
		TY $M					
Fiscal Year	Quantity	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	--	532.9	--	242.5	775.4	--	775.4
1998	1	1625.0	--	840.9	2465.9	--	2465.9
1999	1	1881.6	--	165.6	2047.2	--	2047.2
2000	--	743.7	--	--	743.7	--	743.7
2001	1	1589.8	--	90.8	1680.6	0.2	1680.8
2002	1	2407.5	--	60.8	2468.3	15.9	2484.2
2003	1	2402.0	--	14.3	2416.3	8.3	2424.6
2004	1	2715.2	--	6.9	2722.1	11.0	2733.1
2005	1	2601.5	--	--	2601.5	4.3	2605.8
2006	1	2563.9	--	--	2563.9	15.1	2579.0
2007	1	2580.8	--	--	2580.8	8.4	2589.2
2008	1	3157.6	--	--	3157.6	19.5	3177.1
2009	1	3652.5	--	--	3652.5	17.9	3670.4
2010	1	4034.3	--	--	4034.3	9.8	4044.1
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	6523.4	--	--	6523.4	26.2	6549.6
2015	2	5912.9	--	--	5912.9	24.6	5937.5
2016	2	5388.3	--	--	5388.3	34.7	5423.0
2017	2	5022.2	--	93.7	5115.9	22.4	5138.3
2018	2	5407.9	--	90.5	5498.4	14.5	5512.9
2019	2	7100.8	--	107.0	7207.8	34.8	7242.6
2020	2	8454.6	--	--	8454.6	22.9	8477.5
2021	1	4350.7	--	--	4350.7	39.8	4390.5
2022	2	6450.2	--	--	6450.2	20.7	6470.9
2023	2	6435.9	--	--	6435.9	41.4	6477.3
2024	2	7662.1	--	--	7662.1	45.5	7707.6
2025	2	7265.0	--	--	7265.0	38.4	7303.4
2026	2	7723.9	--	--	7723.9	78.6	7802.5
2027	2	7951.1	--	--	7951.1	80.5	8031.6
2028	2	8164.7	--	--	8164.7	82.5	8247.2
2029	1	4414.3	--	--	4414.3	84.6	4498.9
2030	--	150.8	--	--	150.8	86.7	237.5
2031	--	153.9	--	--	153.9	88.9	242.8
2032	--	158.2	--	--	158.2	91.1	249.3
2033	--	162.4	--	--	162.4	90.1	252.5
2034	--	161.1	--	--	161.1	--	161.1
Subtotal	48	152659.6	--	1932.3	154591.9	1207.2	155799.1

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	--	503.9	--	229.2	733.1	--	733.1
1998	1	1502.6	--	777.6	2280.2	--	2280.2
1999	1	1712.7	--	150.7	1863.4	--	1863.4
2000	--	660.2	--	--	660.2	--	660.2
2001	1	1364.3	--	77.9	1442.2	0.2	1442.4
2002	1	2054.3	--	51.8	2106.1	13.6	2119.7
2003	1	1937.5	--	11.5	1949.0	6.7	1955.7
2004	1	2113.5	--	5.4	2118.9	8.5	2127.4
2005	1	1939.0	--	--	1939.0	3.2	1942.2
2006	1	1845.9	--	--	1845.9	10.9	1856.8
2007	1	1776.4	--	--	1776.4	5.8	1782.2
2008	1	2101.9	--	--	2101.9	13.0	2114.9
2009	1	2359.1	--	--	2359.1	11.6	2370.7
2010	1	2518.3	--	--	2518.3	6.1	2524.4
2011	2	3121.0	--	--	3121.0	11.3	3132.3
2012	2	2798.4	--	--	2798.4	7.2	2805.6
2013	2	2713.6	--	--	2713.6	9.8	2723.4
2014	2	3705.8	--	--	3705.8	14.9	3720.7
2015	2	3289.7	--	--	3289.7	13.7	3303.4
2016	2	2936.1	--	--	2936.1	18.9	2955.0
2017	2	2680.4	--	50.0	2730.4	12.0	2742.4
2018	2	2827.7	--	47.3	2875.0	7.6	2882.6
2019	2	3640.3	--	54.9	3695.2	17.8	3713.0
2020	2	4249.4	--	--	4249.4	11.5	4260.9
2021	1	2143.9	--	--	2143.9	19.6	2163.5
2022	2	3116.1	--	--	3116.1	10.0	3126.1
2023	2	3048.2	--	--	3048.2	19.6	3067.8
2024	2	3557.8	--	--	3557.8	21.1	3578.9
2025	2	3307.3	--	--	3307.3	17.5	3324.8
2026	2	3447.2	--	--	3447.2	35.1	3482.3
2027	2	3479.1	--	--	3479.1	35.2	3514.3
2028	2	3502.5	--	--	3502.5	35.4	3537.9
2029	1	1856.5	--	--	1856.5	35.6	1892.1
2030	--	62.2	--	--	62.2	35.7	97.9
2031	--	62.2	--	--	62.2	35.9	98.1
2032	--	62.7	--	--	62.7	36.1	98.8
2033	--	63.1	--	--	63.1	35.0	98.1
2034	--	61.4	--	--	61.4	--	61.4
Subtotal	48	84670.3	--	1666.9	86337.2	576.1	86913.3

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	1910.7
2002	1	2021.3
2003	1	1824.4
2004	1	1813.2
2005	1	1745.2
2006	1	1771.4
2007	1	1836.1
2008	1	1781.3
2009	1	1899.4
2010	1	1773.6
2011	2	3356.3
2012	2	3156.5
2013	2	3077.0
2014	2	3165.8
2015	2	3015.6
2016	2	3023.1
2017	2	2987.0
2018	2	2999.2
2019	2	3421.6
2020	2	3202.5
2021	1	2348.9
2022	2	3227.9
2023	2	3239.7
2024	2	3470.1
2025	2	3359.3
2026	2	4391.7
2027	2	4256.7
2028	2	4205.6
2029	1	1891.0
2030	--	--
2031	--	--
2032	--	--
2033	--	--
2034	--	--

Subtotal	48	84670.3

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	--	--	--	--	--	9.0	9.0
2018	--	--	--	--	--	24.3	24.3
2019	--	--	--	--	--	27.2	27.2
2020	--	--	--	--	--	16.1	16.1
2021	--	--	--	--	--	9.3	9.3
2022	--	--	--	--	--	9.6	9.6
2023	--	--	--	--	--	9.8	9.8
2024	--	--	--	--	--	10.0	10.0
2025	--	--	--	--	--	10.2	10.2
2026	--	--	--	--	--	11.1	11.1
2027	--	--	--	--	--	11.4	11.4
2028	--	--	--	--	--	11.7	11.7
2029	--	--	--	--	--	12.1	12.1
2030	--	--	--	--	--	12.5	12.5
2031	--	--	--	--	--	12.8	12.8
2032	--	--	--	--	--	13.2	13.2
2033	--	--	--	--	--	13.6	13.6
2034	--	--	--	--	--	2.7	2.7
2035	--	--	--	--	--	2.8	2.8
2036	--	--	--	--	--	2.9	2.9
2037	--	--	--	--	--	3.0	3.0
2038	--	--	--	--	--	3.1	3.1
Subtotal	--	--	--	--	--	498.3	498.3

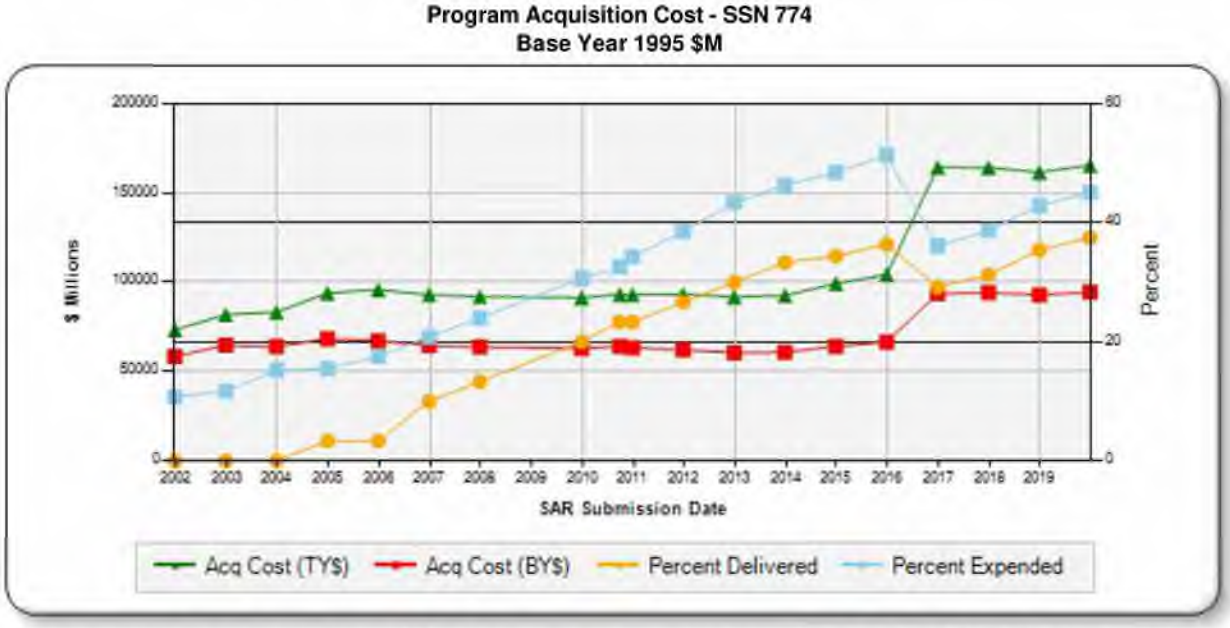
Annual Funding 1810 | Procurement | Other Procurement, Navy							
Fiscal Year	Quantity	BY 1995 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2005	--	--	--	--	--	10.4	10.4
2006	--	--	--	--	--	35.6	35.6
2007	--	--	--	--	--	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	--	--	--	--	--	10.5	10.5
2015	--	--	--	--	--	6.5	6.5
2016	--	--	--	--	--	1.4	1.4
2017	--	--	--	--	--	6.1	6.1
2018	--	--	--	--	--	16.1	16.1
2019	--	--	--	--	--	17.7	17.7
2020	--	--	--	--	--	10.3	10.3
2021	--	--	--	--	--	5.8	5.8
2022	--	--	--	--	--	5.9	5.9
2023	--	--	--	--	--	5.9	5.9
2024	--	--	--	--	--	5.9	5.9
2025	--	--	--	--	--	5.9	5.9
2026	--	--	--	--	--	6.3	6.3
2027	--	--	--	--	--	6.3	6.3
2028	--	--	--	--	--	6.4	6.4
2029	--	--	--	--	--	6.5	6.5
2030	--	--	--	--	--	6.5	6.5
2031	--	--	--	--	--	6.6	6.6
2032	--	--	--	--	--	6.6	6.6
2033	--	--	--	--	--	6.7	6.7
2034	--	--	--	--	--	1.3	1.3
2035	--	--	--	--	--	1.3	1.3
2036	--	--	--	--	--	1.3	1.3
2037	--	--	--	--	--	1.4	1.4
2038	--	--	--	--	--	1.4	1.4
Subtotal	--	--	--	--	--	339.3	339.3

Annual Funding 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	TY $M Total Program
2021	46.5
2022	--
2023	47.7
2024	33.9
2025	32.8
Subtotal	160.9

Annual Funding 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	**BY 1995 $M** **Total Program**
2021	28.0
2022	--
2023	27.6
2024	19.3
2025	18.3
Subtotal	93.2

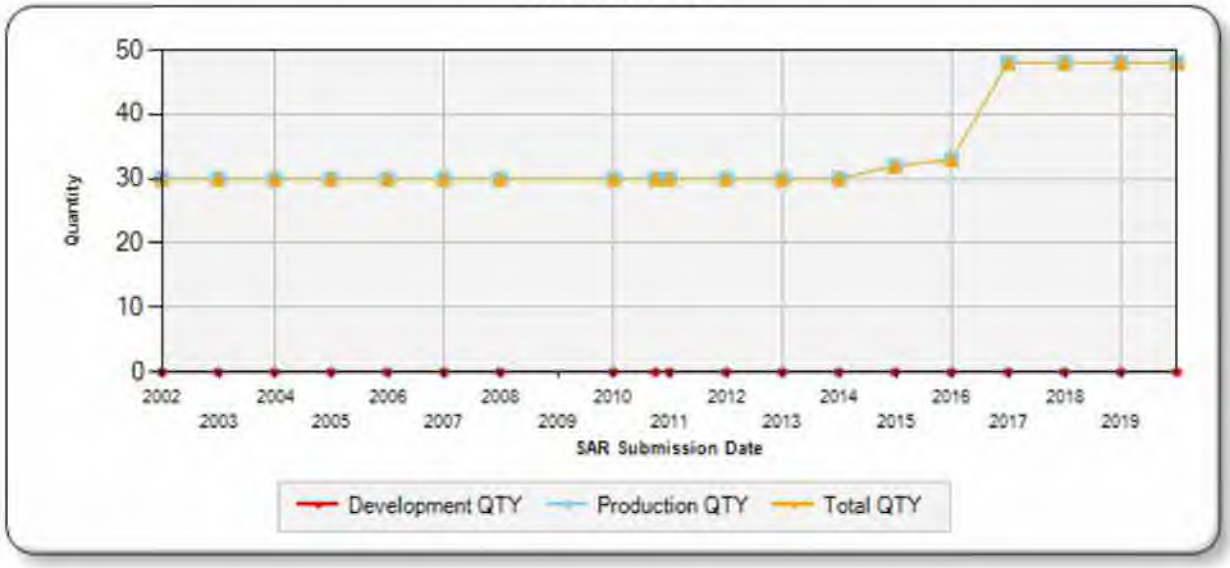
Charts

SSN 774 first began SAR reporting in December 1997

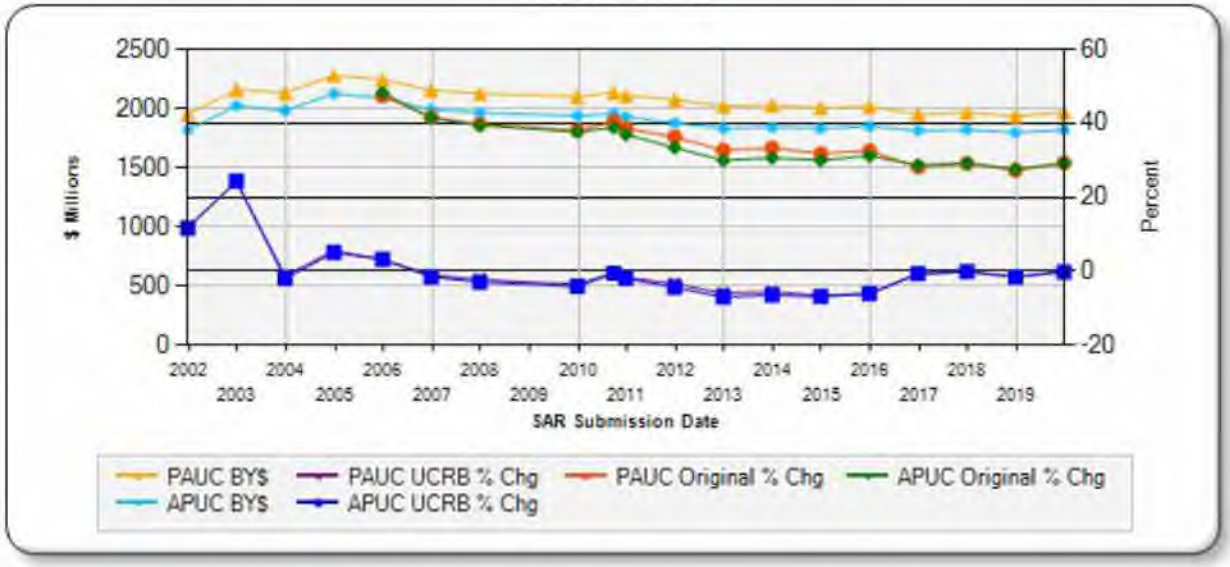


An APB was approved on February 13, 2017 restructuring the program to 48 ships. RDT&E cost was increased to $8,016.0 ($M), Procurement cost was increased to $159,152.5 ($M) and O&S cost was increased to $169,852.5 ($M). Program costs reported in the PB21 SAR are not in APB breach status.

Quantity - SSN 774



Unit Cost - SSN 774
Base Year 1995 $M



Risks

Significant Schedule and Technical Risks

Significant Schedule and Technical Risks	
Current Estimate (December 2019)	
1.	Schedule: Block IV deliveries are likely to be 6 to 12 months late to the aggressive contract delivery dates. The program's objective is to stabilize a delivery cadence going into Block V.

Risks

Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Baseline Estimate (February 2017)	
1.	The Assistant Secretary of the Navy(Research, Development & Acquisition) endorsed the Navy's SCP and certified that the FYDP fully funded the Navy's SCP. Risk: In preparing the SCP, the NCCA identified three cost drivers: labor hour learning, the realization of Cost Reduction Initiatives savings, and the realization of MYP savings. This analysis determined that these were the variables whose changes would create the greatest changes in cost.
Original Baseline Estimate (June 1995)	
1.	The original baseline estimate for the program is from the MSII decision of June 1995.
Revised Original Estimate (N/A)	
None	
Current Procurement Cost (December 2019)	
1.	An Acquisition Program Baseline (APB) update reflecting an increase in the number of submarines in the class from 30 to 48 was signed by the Milestone Decision Authority on February 13, 2017. The baseline update includes the VIRGINIA Payload Module (VPM) and Acoustic Superiority (AS) on Block V and follow ships. A Component Cost Position supporting the restructured program was signed in November 2016.

Low Rate Initial Production

Item	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

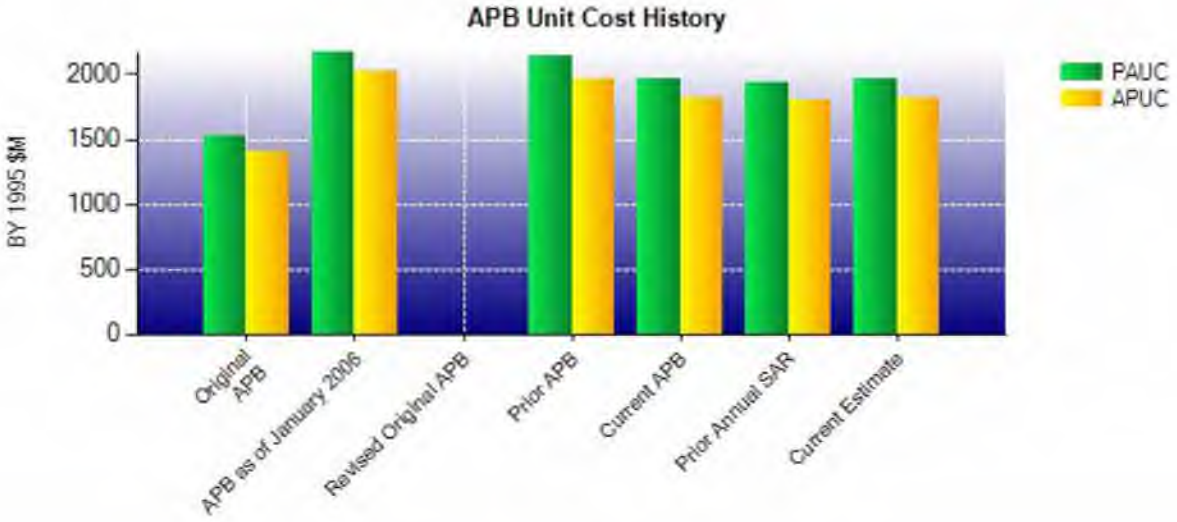
Nuclear Costs

These costs are for reactor propulsion plant equipment and are included in the Shipbuilding and Conversion, Navy costs in this report. Department of Energy costs are excluded from this report.

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 1995 $M Current UCR Baseline (Feb 2017 APB)	BY 1995 $M Current Estimate (Dec 2019 SAR)	% Change
Program Acquisition Unit Cost			
Cost	94303.3	94357.3	
Quantity	48	48	
Unit Cost	1964.652	1965.777	+0.06
Average Procurement Unit Cost			
Cost	87455.7	87252.6	
Quantity	48	48	
Unit Cost	1821.994	1817.762	-0.23

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 1995 $M Original UCR Baseline (Jun 1995 APB)	BY 1995 $M Current Estimate (Dec 2019 SAR)	% Change
Program Acquisition Unit Cost			
Cost	45633.1	94357.3	
Quantity	30	48	
Unit Cost	1521.103	1965.777	+29.23
Average Procurement Unit Cost			
Cost	42228.1	87252.6	
Quantity	30	48	
Unit Cost	1407.603	1817.762	+29.14



APB 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	Sep 2010	2145.120	1964.440	3106.910	2895.203
Current APB	Feb 2017	1964.652	1821.994	3463.688	3281.115
Prior Annual SAR	Dec 2018	1934.952	1795.073	3365.115	3186.596
Current Estimate	Dec 2019	1965.777	1817.762	3448.248	3256.196

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	136.762	373.042	-132.492	132.317	-182.706	0.000	14.415	341.338	3448.248

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	136.473	452.433	-132.492	104.852	-214.688	0.000	14.415	360.993	3256.196

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	165515.9
Total Quantity	N/A	30	30	48
PAUC	N/A	2369.360	3106.910	3448.248

Cost Variance

Summary TY $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	6351.2	86856.1	--	93207.3
Previous Changes				
Economic	+5.6	+6395.9	+0.7	+6402.2
Quantity	--	+73830.4	--	+73830.4
Schedule	--	-9828.2	--	-9828.2
Engineering	+1318.3	+5032.9	--	+6351.2
Estimating	+893.8	-9998.0	-0.7	-9104.9
Other	--	--	--	--
Support	--	+667.5	--	+667.5
Subtotal	+2217.7	+66100.5	--	+68318.2
Current Changes				
Economic	+7.6	+154.8	--	+162.4
Quantity	--	--	--	--
Schedule	--	+3468.6	--	+3468.6
Engineering	--	--	--	--
Estimating	+481.1	-307.0	+160.9	+335.0
Other	--	--	--	--
Support	--	+24.4	--	+24.4
Subtotal	+488.7	+3340.8	+160.9	+3990.4
Total Changes	+2706.4	+69441.3	+160.9	+72308.6
Current Estimate	9057.6	156297.4	160.9	165515.9

Summary BY 1995 $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	5420.4	58933.2	--	64353.6
Previous Changes				
Economic	--	--	--	--
Quantity	--	+33418.9	--	+33418.9
Schedule	--	-3676.6	--	-3676.6
Engineering	+882.3	+2299.6	--	+3181.9
Estimating	+411.5	-5065.5	--	-4654.0
Other	--	--	--	--
Support	--	+253.9	--	+253.9
Subtotal	+1293.8	+27230.3	--	+28524.1
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	+1237.9	--	+1237.9
Engineering	--	--	--	--
Estimating	+297.3	-156.1	+93.2	+234.4
Other	--	--	--	--
Support	--	+7.3	--	+7.3
Subtotal	+297.3	+1089.1	+93.2	+1479.6
Total Changes	+1591.1	+28319.4	+93.2	+30003.7
Current Estimate	7011.5	87252.6	93.2	94357.3

Previous Estimate: December 2018

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+7.6
Revised estimate to fund Payload Integration for VIRGINIA Class Block V/VI/VII. (Estimating)	+131.9	+213.8
Congressional adjustment to transfer funding from SCN to RDT&E for capabilities development and design risk reduction. (Estimating)	+128.2	+200.0
Revised estimate for core Research & Development (Hull, Mechanical and Electrical (HM&E) and Non-propulsion Electronic Systems (NPES)) program. (Estimating)	+41.6	+74.9
Revised estimate to reflect the application of new outyear escalation indices. (Estimating)	-3.4	-6.1
Adjustment for current and prior escalation. (Estimating)	-1.0	-1.5
RDT&E Subtotal	+297.3	+488.7

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+154.8
Stretch-out of procurement buy profile of two submarines, one FY 2020 ship to FY 2028 and one FY 2021 ship to FY 2029. (Schedule)	+1237.9	+3468.6
Revised estimate for refinement of requirements. (Estimating)	-117.3	-242.6
Revised estimate for Block VI FY 2024 Economic Order Quantity (EOQ) procurement for FY 2027 SSNs. (Estimating)	+252.7	+544.0
Revised estimate for Post Delivery, Shipbuilding and Conversion, Navy (SCN). (Estimating)	-143.4	-309.6
Congressional adjustment to transfer funding from SCN to RDT&E for capabilities development and design risk reduction. (Estimating)	-100.6	-200.0
Revised estimate to reflect the application of new outyear escalation indices. (Estimating)	-44.0	-98.0
Adjustment for current and prior escalation. (Estimating)	-30.4	-58.2
Revised estimate for Special Operations Forces (SOF) Capability of Block V submarines. (Estimating)	+19.4	+41.6
Revised estimate for tech insertion. (Estimating)	+7.5	+15.8
Increase in Initial Spares for Outfitting (SCN). (Support)	+7.4	+24.4
Increase in Initial Spares (Other Procurement,Navy). (Support)	+0.1	+0.2
Adjustment for current and prior escalation. (Support)	-0.2	-0.2
Procurement Subtotal	+1089.1	+3340.8

MILCON	$M	
Current Change Explanations	Base Year	Then Year
Revised estimate for infrastructure improvements supporting VIRGINIA Class Submarines. (Estimating)	+93.2	+160.9
MILCON Subtotal	+93.2	+160.9

Contracts

Contract Identification

Appropriation: Procurement
Contract Name: SSN 792
Contractor: General Dynamics, EB Corporation
Contractor Location: 75 Eastern Point Road
Groton, CT 06340
Contract Number: N00024-12-C-2115/1
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: April 28, 2014
Definitization Date: April 28, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1917.2	2068.9	1	1923.7	2081.9	1	1935.0	1952.0

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.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (11/30/2019)	-70.9	-95.5
Previous Cumulative Variances	-55.9	-107.1
Net Change	-15.0	+11.6

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to final ship delivery issues.

The favorable net change in the schedule variance is due to efficient production performance leading to delivery in 2020.

Notes

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

Contract Identification

Appropriation: Procurement
Contract Name: SSN 793
Contractor: General Dynamics, EB Corporation
Contractor Location: 75 Eastern Point Road
Groton, CT 06340
Contract Number: N00024-12-C-2115/2
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: April 28, 2014
Definitization Date: April 28, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1697.4	1833.0	1	1698.9	1843.7	1	1715.8	1733.3

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 (11/30/2019)	-49.1	-30.0
Previous Cumulative Variances	-33.4	-146.2
Net Change	-15.7	+116.2

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to early material availability issues and associated module delays and non-optimal work sequencing.

The favorable net change in the schedule variance is due to efficient production performance leading to delivery in fall 2020.

Contract Identification

Appropriation: Procurement
Contract Name: SSN 794
Contractor: General Dynamics, EB Corporation
Contractor Location: 75 Eastern Point Road
Groton, CT 06340
Contract Number: N00024-12-C-2115/3
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: April 28, 2014
Definitization Date: April 28, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1731.7	1870.0	1	1735.9	1876.1	1	1756.9	1789.5

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 (11/30/2019)	-79.9	-48.9
Previous Cumulative Variances	-32.2	-129.5
Net Change	-47.7	+80.6

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to degradation from material availability and associated non-optimal work sequence, reductions in force/hiring freeze, increased Service/Support/Supervision, and increased cost due to construction duration.

The favorable net change in the schedule variance is due to to resetting program goals that are aggressive yet achievable and to stabilize a delivery cadence going into Block V.

Contract Identification

Appropriation: Procurement
Contract Name: SSN 795
Contractor: General Dynamics, EB Corporation
Contractor Location: 75 Eastern Point Road
Groton, CT 06340
Contract Number: N00024-12-C-2115/4
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: April 28, 2014
Definitization Date: April 28, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1690.1	1825.4	1	1692.8	1838.5	1	1719.4	1737.7

Target Price Change Explanation

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

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (11/30/2019)	-66.4	-58.3
Previous Cumulative Variances	-46.2	-127.5
Net Change	-20.2	+69.2

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to degradation from material availability and associated non-optimal work sequence, reductions in force/hiring freeze, increased Service/Support/Supervision, and increased cost due to construction duration.

The favorable net change in the schedule variance is due to to resetting program goals that are aggressive yet achievable and to stabilize a delivery cadence going into Block V.

Contract Identification

Appropriation: Procurement
Contract Name: SSN 796
Contractor: General Dynamics, EB Corporation
Contractor Location: 75 Eastern Point Road
Groton, CT 06340
Contract Number: N00024-12-C-2115/5
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: April 28, 2014
Definitization Date: April 28, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1755.9	1899.5	1	1751.1	1900.9	1	1766.3	1805.9

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 (11/30/2019)	-29.0	-107.2
Previous Cumulative Variances	-13.5	-179.3
Net Change	-15.5	+72.1

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to degradation from material availability and associated non-optimal work sequence, reductions in force/hiring freeze, increased Service/Support/Supervision, and increased cost due to construction duration.

The favorable net change in the schedule variance is due to to resetting program goals that are aggressive yet achievable and to stabilize a delivery cadence going into Block V.

Contract Identification

Appropriation: Procurement
Contract Name: SSN 797
Contractor: General Dynamics, EB Corporation
Contractor Location: 75 Eastern Point Road
Groton, CT 06340
Contract Number: N00024-12-C-2115/6
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: April 28, 2014
Definitization Date: April 28, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1734.8	1874.4	1	1722.2	1881.4	1	1744.0	1752.3

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 (11/30/2019)	-39.5	-63.9
Previous Cumulative Variances	-21.5	-134.4
Net Change	-18.0	+70.5

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to degradation from material availability and associated non-optimal work sequence, reductions in force/hiring freeze, increased Service/Support/Supervision, and increased cost due to construction duration.

The favorable net change in the schedule variance is due to to resetting program goals that are aggressive yet achievable and to stabilize a delivery cadence going into Block V.

Contract Identification

Appropriation: Procurement
Contract Name: SSN 798
Contractor: General Dynamics, EB Corporation
Contractor Location: 75 Eastern Point Road
Groton, CT 06340
Contract Number: N00024-12-C-2115/7
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: April 28, 2014
Definitization Date: April 28, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1783.0	1930.4	1	1776.5	1931.7	1	1784.0	1825.6

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 (11/30/2019)	-31.3	-69.1
Previous Cumulative Variances	-15.2	-107.8
Net Change	-16.1	+38.7

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to degradation from material availability and associated non-optimal work sequence, reductions in force/hiring freeze, increased Service/Support/Supervision, and increased cost due to construction duration.

The favorable net change in the schedule variance is due to to resetting program goals that are aggressive yet achievable and to stabilize a delivery cadence going into Block V.

Contract Identification

Appropriation: Procurement
Contract Name: SSN 799
Contractor: General Dynamics, EB Corporation
Contractor Location: 75 Eastern Point Road
Groton, CT 06340
Contract Number: N00024-12-C-2115/8
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: April 28, 2014
Definitization Date: April 28, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1748.9	1903.1	1	1740.7	1901.0	1	1762.7	1787.4

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 (11/30/2019)	-28.4	-81.2
Previous Cumulative Variances	--	--
Net Change	-28.4	-81.2

Cost and Schedule Variance Explanations

The unfavorable cumulative cost variance is due to degradation from material availability and associated non-optimal work sequence, reductions in force/hiring freeze, increased Service/Support/Supervision, and increased cost due to construction duration.

The unfavorable cumulative schedule variance is due to in large measure to late material procurement.

Contract Identification

Appropriation: Procurement
Contract Name: SSN 800
Contractor: General Dynamics, EB Corporation
Contractor Location: 75 Eastern Point Road
Groton, CT 06340
Contract Number: N00024-12-C-2115/9
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: April 28, 2014
Definitization Date: April 28, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1820.5	1972.2	1	1806.6	1968.0	1	1815.5	1876.6

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 (11/30/2019)	+2.3	-84.1
Previous Cumulative Variances	--	--
Net Change	+2.3	-84.1

Cost and Schedule Variance Explanations

The favorable cumulative cost variance is due to maintaining cost of material below budget.

The unfavorable cumulative schedule variance is due to in large measure to late material procurement.

Contract Identification

Appropriation: Procurement
Contract Name: SSN 801
Contractor: General Dynamics, EB Corporation
Contractor Location: 75 Eastern Point Road
Groton, CT 06340
Contract Number: N00024-12-C-2115/10
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: April 28, 2014
Definitization Date: April 28, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1776.0	1932.4	1	1759.5	1920.8	1	1777.9	1777.9

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 (11/30/2019)	-11.2	-51.9
Previous Cumulative Variances	--	--
Net Change	-11.2	-51.9

Cost and Schedule Variance Explanations

The unfavorable cumulative cost variance is due to degradation from material availability and associated non-optimal work sequence, reductions in force/hiring freeze, increased Service/Support/Supervision, and increased cost due to construction duration.

The unfavorable cumulative schedule variance is due to in large measure to late material procurement.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	0	--
Production	19	18	48	37.50%
Total Program Quantity Delivered	19	18	48	37.50%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	165515.9	Years Appropriated	29
Expended to Date	74550.8	Percent Years Appropriated	60.42%
Percent Expended	45.04%	Appropriated to Date	100610.5
Total Funding Years	48	Percent Appropriated	60.79%

The above data is current as of February 10, 2020.

Notes

With the delivery of USS DELAWARE (SSN 791) on 25 October, 2019, eighteen submarines have been delivered to date.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	November 04, 2016
Source of Estimate:	SCP
Quantity to Sustain:	48
Unit of Measure:	Ship
Service Life per Unit:	33.00 Years
Fiscal Years in Service:	FY 2004 - FY 2065

The O&S cost position remains consistent with the effort for the VIRGINIA Class APB (signed out in January 2017). A cost estimate update is being undertaken to update Life Cycle Costs. The scope and schedule of the update are currently being formed.

Sustainment Strategy

The baseline sustainment strategy of 48 SSN 774 VIRGINIA Class submarine is structured to achieve 14 deployments during the 33 year design life for each of the total force.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

The antecedent system is the SSN 688 LOS ANGELES Class Submarine program. Assembly of an accurate compilation O&S cost estimate for the LOS ANGELES Class using actual cost data going back to 1976 when USS LOS ANGELES was commissioned and then projecting those costs out is 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 originally planned class size of 30 VIRGINIA Class submarines.

The source of antecedent data is the Naval Visibility and Management of Operating and Support Cost (VAMOSC) database for LOS ANGELES Class submarines for the years 1984-2008. 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	6.942	5.450
Unit Operations	0.849	0.700
Maintenance	20.921	15.030
Sustaining Support	0.491	0.990
Continuing System Improvements	7.352	4.240
Indirect Support	0.000	0.000
Other	0.000	0.000
Total	36.555	26.410

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 the LOS ANGELES Class are lower than the VIRGINIA Class despite a larger crew size for the LOS ANGELES Class due to the source and timing of the data. LOS ANGELES Class 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 LOS ANGELES 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, LOS ANGELES Class 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 LOS ANGELES 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 VIRGINIA Class as LOS ANGELES Class ships were originally designed for a 30 year service life 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	
Base Year	60744.3	66818.7	57903.4	62443.9
Then Year	169852.5	N/A	160906.3	0.0

Disposal Cost is included in the Operating and Support Cost of the current APB objective and threshold for this program.

The BY O&S Current Production APB Objective/Threshold and Current Estimate exclude Indirect Support costs of $6,159.8M BY 1995, and Acoustic Superiority (AS) Backfit costs of $1,485.9M BY 1995. The TY O&S Current Production APB Objective/Threshold and Current Estimate include Indirect Support costs of $16,460.9M and TY AS Backfit costs of $2,877.6M TY.

Equation to Translate Annual Cost to Total Cost

The average annual cost per ship is derived by dividing total O&S costs by 48 ships and service life of 33 years. This is demonstrated by dividing $57,903.4 by 48 ships and by a 33 year service life for each ship.

O&S Cost Variance		
Category	**BY 1995 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2018 SAR	57903.4	
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	57903.4	

Disposal Estimate Details

Date of Estimate: November 04, 2016
Source of Estimate: SCP
Disposal/Demilitarization Total Cost (BY 1995 $M): 2840.9

Total program disposal costs are estimated to be $8,946.0M TY.