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Department of Defense
OFFICE OF PREPUBLICATION AND SECURITY REVIEW



TRIDENT II (D-5) SEA-LAUNCHED BALLISTIC MISSILE UGM 133A (TRIDENT II MISSILE)

December 2021 Selected Acquisition Report (SAR)



DECEMBER 31, 2021
DEPARTMENT OF THE NAVY

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Common Acronyms and Abbreviations

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(A&S) - Under Secretary of Defense (Acquisition and Sustainment)
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

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Program Manager**Name:** VADM Johnny Wolfe**Date Assigned:** May 4, 2018**Address:** Strategic Systems Programs
1250-10th Street, SE
Suite 3600; Washington Navy Yard
Washington, DC 20374-5127**Phone:** 202-451-3000**Email:** SP00@SSP.NAVY.MIL**Mission and Description**

The TRIDENT II (D5) Sea-Launched Ballistic Missile UGM 133A (TRIDENT II (D5) missile) developed an improved Submarine Launched Ballistic Missile with greater accuracy and payload capability at equivalent ranges as compared to the TRIDENT I (C4) system. TRIDENT II (D5) enhances United States (U.S.) strategic deterrence by providing a survivable seabased system capable of engaging the full spectrum of potential targets. It enhances the U.S. position in strategic arms negotiation by providing a weapon system with performance and payload flexibility to accommodate various treaty initiatives. The TRIDENT II (D5) missile's increased payload allows the deterrent mission to be achieved with fewer submarines.

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Executive Summary

Significant Accomplishments:

In the area of rocket motors and post boost control system gas generators, the TRIDENT II (D5) missile program has maintained the solid rocket motor unit cost from FY 2014 PB as the Navy continues low-rate production of boost motors with Lockheed Martin (LM) and Northrop Grumman. There continues to be industrial base concerns regarding solid rocket motor manufacturers as well as their suppliers (such as Ammonium Perchlorate). The Navy is working closely with industrial partners and reaching out to other government programs to ensure Solid Rocket Motors industrial base stay viable and costs under control. The PM continues to monitor the disparity between the OSD approved and industry realized inflation indices to monitor its effects to the strategic weapon systems' operational engineering support. With cradle to grave responsibility, a broad range of engineering knowledge and unique skill sets must be maintained to support the Navy's and the Nation's primary strategic deterrent system.

While the TRIDENT II (D5) Missile program is over 90% delivered and expended, it has been decided by the Assistant Secretary of the Navy (Research, Development and Acquisition) the current APB is to remain open as the TRIDENT II (D5) missile will be sustained throughout the entire life of the OHIO Class submarine, and will also be the initial payload for the Ship, Submersible, Ballistic, Nuclear (SSBN) 826 COLUMBIA Class submarine.

In September 2021, the program conducted a Demonstration Shakedown Operation (DASO) on the USS WYOMING. This operation shot two D5 Life Extended (D5LE) missiles and certified the crew after extended SSBN refit.

Significant Issues:

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

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	Significant Development Description
March 1980	The Secretary of the Navy announces the intention to proceed with an Advanced Development Program for a Submarine Launched Ballistic Missile Modernization program.
October 1983	Milestone II - Inventory Objective: R&D Missiles - 30; Production Missiles - 715.
July 1987	Milestone III - Program based upon a missile procurement inventory objective of 815 missiles to support the outload and missile flight test program of 21 TRIDENT II submarines (13 new builds/8 backfit).
March 1990	TRIDENT II (D5) weapon system achieved IOC with the outload and deployment of USS TENNESSEE (Ship, Submersible, Ballistic, Navy (SSBN) 734).
January 1991	FY 1992 PB reduced the missile procurement inventory objective to 779 missiles to support the outload and the missile flight test program of 18 TRIDENT II submarines (10 new builds/8 backfits).
January 1993	FY 1994 PB reduced both the annual procurement rate of missiles and the missile inventory objective to 428 missiles to support the outload and a reduced missile flight test program of 10 TRIDENT II submarines (no backfits). Annual procurement quantities reduced from 66 to 24 in FY 1994 and 12 per year in FY

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	<p>1998 and thereafter. Reduced flight tests led to the reduced inventory objective and reduced force structure. This force structure was based upon the outcome of the Defense Nuclear Posture Review (NPR) and was in accordance with Presidential Decision Directive/NSC-30 of September 21, 1994. The program decision was based upon the deferral of the decision on the D5 Backfit Program until POM 1996.</p> <p>Pending that decision, the backfit efforts were removed from the TRIDENT II (D5) Missile program.</p>
January 1994	FY 1995 PB further reduced the missile procurement inventory objective to 389 missiles based on revision of several planning factors.
March 1995	The TRIDENT II (D5) Missile procurement program was revised to support a force level of 14 TRIDENT II submarines based on the conclusions of the NPR. Four Pacific TRIDENT submarines would be backfit to the TRIDENT II configuration beginning in FY 2000. New builds will complete with 10 TRIDENT II configured submarines. The new inventory objective of 434 missiles reflects the requirement to outload 14 submarines and a further reduction in the numbers of missiles to support the flight test program. New APB was approved.
3rd Quarter FY 1998	The TRIDENT II (D5) Missile inventory objective was reduced from 434 missiles to 425 by reducing the flight tests as a result of a new determination that flight test data from Demonstration and Shakedown Operations (DASOs) may be combined with Follow-On CINC Evaluation Test data to determine reliability and safety.
January 1999	FY 2000 PB contained funding in FY 2005 for the commencement of the TRIDENT II (D5) Missile Life Extension (LE) program.
December 1999	All TRIDENT II (D5) new build submarines had completed strategic loadout and had deployed.
December 2001	Program Decision Memorandum (PDM) II directed the TRIDENT II (D5) missile extend its service life from 30 to 44 years. Funding for this effort would support additional acquisition necessary to continue production of missile critical components, acquire additional missiles to support flight testing during the extended life and to replace missile electronics and guidance systems in all TRIDENT II (D5) missiles.
June 2002	Approval of APB reflecting service life extension of the TRIDENT II (D5) submarine from 30-44 years as directed by PDM II of 15 December 2021. Inventory Objective is now 540 missiles.
January 2011	TRIDENT II (D5) LE completed its system Critical Design Review.
September 2011	TRIDENT II (D5) missile submitted a revised acquisition program baseline approved by the Assistant Secretary of the Navy (Research, Development & Acquisition). The significant changes in this APB were a revised D5 LE funding profile, the addition of the Explosive Handling Wharf (EHW) #2 at the Strategic Weapons Facility, Pacific (SWFPAC), and Joint Fuze sustainment efforts.
June 2014	USS WEST VIRGINIA (SSBN 736) completed DASO with two successful D5 LE flight operations involving both the LE missile electronics packages and the Guidance LE subsystem.
November 2015	DASO flight operation with a fully configured D5 LE missile involving all four of the missile electronics packages and the Guidance LE subsystem.

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February 2017	Initial Fleet Introduction of the fully configured D5 LE missile which involved all four missile electronics packages and the Guidance LE subsystem with the outload of the USS MARYLAND (SSBN 738).
April 2018	EHW#2 at SWFPAC received its Authority to Operate, as scheduled. This facility is critical to meeting workload demands of the Pacific fleet.
June 2018	Program completed the first operational flight test (Commander Evaluation Test 1) of the TRIDENT II (D5) LE missile, four months ahead of schedule.
September 2019	The program completed the second operational flight test (Commander Evaluation Test 2) of the TRIDENT II D5 Life Extended Missile.
February 2021	The program completed the third operational flight test (Commander Evaluation Test 3) of the TRIDENT II D5 Life Extended Missile.

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Schedule

Schedule Events

Schedule Events					
Events	Development APB Objective	Current APB Development Objective/Threshold		Current Estimate/Actual	Deviation
Milestone I (Initiate Concept Definition)		Oct 1977	Apr 1978	Oct 1977	
Commence Advanced Dev Phase		Oct 1980	Apr 1981	Oct 1980	
Milestone II (Commence FSD)		Oct 1983	Apr 1984	Oct 1983	
First Development Flight Test		Jan 1987	Jul 1987	Jan 1987	
Milestone III (Production Approval)/Award Initial Missile Production		Apr 1987	Oct 1987	Apr 1987	
IOC (may be less than full msl outload)		Dec 1989	Jun 1990	Mar 1990	
D5 LE System CDR		Feb 2011	Aug 2011	Jan 2011	
First Guidance Only Flight Test (DASO-23)		Feb 2012	Aug 2012	Feb 2012	
Second Guidance Only Flight Test (DASO-24)		Aug 2012	Feb 2013	Apr 2013 ¹	2 months
First Missile Electronics Flight Test (PTM-1/DASO-25)		Sep 2013	Mar 2014	Apr 2013	
IFI for FCEA/Interlocks		Apr 2017	Oct 2017	Feb 2017	
EHW#2 at Bangor IOC		Oct 2017	Apr 2018	Apr 2018	
First Operational Flight Test (CET)		Oct 2018	Apr 2019	Jun 2018	

Acronyms and Abbreviations

FSD – Full Scale Development

MSL - Missile

CDR – Critical Design Review

DASO – Demonstration and Shakedown Operation

PM – Program Manager

IFI – Initial Flight Introduction

FCEA – Flight Control Electronics Assembly

EHW – Explosive Handling Wharf

CET – Commander Evaluation Test

Deviation Explanations:

The schedule breach for the Second Guidance Only Flight Test (DASO-24) was previously reported in the December 2014 SAR.

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Significant Schedule Risks

Significant Schedule Risks	
Current Estimate (December 2021)	
1.	None

Acquisition Budget Estimate

Total Acquisition Cost

Category	Base Year	Development APB	APB TRIDENT II (Current) 09/10/2011		Budget Estimate PB 2023		Deviation
		Objective (BY\$)	Objective (BY\$)	Threshold (BY\$)	BY\$	TY\$	
RDT&E	1983		8783.9	9662.3	8792.0	10154.1	
Procurement	1983		18406.7	20247.4	18834.8	32067.6	
MILCON	1983		757.6	833.4	656.7	1041.7	
Acq. O&M			--	--			
Total			27948.2	30743.1	28283.5	43263.4	
PAUC	1983		49.819	54.800	50.416	77.118	
APUC	1983		34.534	37.988	35.337	60.164	

Total End Item Quantity

Quantity Category	Current APB Quantity	Current Estimate Quantity
Development	28	28
Procurement	533	533

Budget Notes:

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

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Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Procurement Cost (December 2021)	
1.	N/A
Original Baseline Estimate (July 1987)	
1.	N/A
Revised Original Estimate (June 2002)	
None	
Admin Baseline Estimate (September 2011)	
1.	The TRIDENT II (D5) Missile has reached its original design life goal and, like any other aging weapon system, will require increased maintenance and repair to sustain a safe, reliable, and accurate Strategic Weapon System and an adequate industrial base and workforce expertise to ensure that this system will be available as the initial payload for the follow-on SSBN 826 COLUMBIA Class submarine.

Unit Cost

Current Baseline Compared with Current Estimate

Category (\$M)	Current APB	Current Estimate	% Change	NMC Breach
PAUC				
Cost	27948.2	28283.5	-	-
Quantity	561	561	-	-
Unit Cost	49.819	50.416	1.20%	
APUC				
Cost	18406.7	18834.8	-	-
Quantity	533	533	-	-
Unit Cost	34.534	35.337	2.33%	

Original Baseline Compared with Current Estimate

Category (\$M)	Current APB	Current Estimate	% Change	NMC Breach
PAUC				
Cost	25943.7	28283.5	-	-
Quantity	568	561	-	-
Unit Cost	45.676	50.416	10.38%	
APUC				
Cost	17155.2	18834.8	-	-
Quantity	540	533	-	-
Unit Cost	31.769	35.337	11.23%	

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Contracts

Contract Data (\$TYM)		
Contract Number	N00030-17-C-0100	
Effort Number		
Modification Number	P00044	
Award Date	July 31, 2017	
Definitization Date	October 1, 2017	
Order Number		
CAGE Code/CAGE Legal Name	06887 / Lockheed Martin Space	
Contract Title	FY18 Production and Deployed Systems Support (P&DSS)	
Contract Address	Sunnyvale, CA	
Contracts/Effort Price, Quantity, and Performance (\$M)		
Initial Target Price	Current Target Price	
418.7	1,528.6	
Initial Ceiling Price	Current Ceiling Price	
578.5	578.5	
Contract's EAC	PM's EAC	
1,379.0	1,390.0	
Initial Quantity	Current Quantity	Delivered Quantity
BAC	BCWP	ACWP
1,363.1	1,291.7	1291.8
BCWS	Cost Variance	Schedule Variance
1315.0	(0.1)	(23.3)

Contract Notes:

The FY 2018 P&DSS contract specifies a ceiling price that applies to the Fixed Price Incentive Production CLINs.

Initial Target Price and Current Target Price represent the total contract values. Ceiling Prices reflect the value of the Fixed Price CLINs, which are the only CLINs with ceilings. Therefore, Ceiling Prices will be lower than Target Price for this contract.

THIS IS THE FINAL REPORT FOR THIS CONTRACT.

Cost Variance:

The unfavorable net change in the cost variance is due to: 1) material costs; and 2) increased labor costs due to Forward Pricing Rate Agreement (FPRA) rate changes as a result of Proposal Pricing Rates & Disclosures. This cost variance is expected to be managed within program resources.

Schedule Variance:

The unfavorable net change in the schedule variance is due to: 1) delays in the First Stage Rocket Motor Chamber processing; 2) equipment replacement due to a vendor exiting the business sector; and 3) a portion of work being held pending completion of restructuring related to vendor qualification. All delays are being actively managed and expected to be resolved within program resources.

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Contract Data (\$TYM)		
Contract Number	N00030-18-C-0100	
Effort Number		
Modification Number	P00021	
Award Date	August 8, 2018	
Definitization Date	September 28, 2018	
Order Number		
CAGE Code/CAGE Legal Name	06887 / Lockheed Martin Space	
Contract Title	FY19 Production and Deployed Systems Support (P&DSS)	
Contract Address	Sunnyvale, CA	
Contracts/Effort Price, Quantity, and Performance (\$M)		
Initial Target Price	Current Target Price	
747.6	760.3	
Initial Ceiling Price	Current Ceiling Price	
597.8	601.6	
Contract's EAC	PM's EAC	
678.5	697.0	
Initial Quantity	Current Quantity	Delivered Quantity
BAC	BCWP	ACWP
676.6	556.0	563.4
BCWS	Cost Variance	Schedule Variance
580.1	(7.4)	(24.1)

Contract Notes:

The FY 2019 P&DSS contract specifies a ceiling price that applies to the Fixed Price Incentive Production CLINs.

Initial Target Price and Current Target Price represent the total contract values. Ceiling Prices reflect the value of the Fixed Price CLINs, which are the only CLINs with ceilings. Therefore, Ceiling Prices will be lower than Target Price for this contract.

Cost Variance:

The unfavorable net change in the cost variance is driven by: 1) material costs higher than planned due to volume costs and timephasing; and 2) increased labor costs associated with completing mechanical receiving, inspection, and material movement. This cost variance is expected to be managed within program resources.

Schedule Variance:

The unfavorable net change in the schedule variance is driven by: 1) equipment delay issues; 2) focus on prior production year which has resulted in slower than planned execution of efforts on this contract; 3) missed Performance Based Payments (PBPs) milestones; 4) earlier than planned procurement of piece parts material, and 5) supplier delays. These schedule delays are expected to be managed within program resources.

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Contract Data (\$TYM)		
Contract Number	N00030-19-C-0100	
Effort Number		
Modification Number	P00021	
Award Date	October 1, 2019	
Definitization Date	September 28, 2019	
Order Number		
CAGE Code/CAGE Legal Name	7X6A9 / Lockheed Martin Space	
Contract Title	FY20 Production and Deployed Systems Support (P&DSS)	
Contract Address	Titusville, FL	
Contracts/Effort Price, Quantity, and Performance (\$M)		
Initial Target Price	Current Target Price	
611.6	1,247.9	
Initial Ceiling Price	Current Ceiling Price	
611.6	605.8	
Contract's EAC	PM's EAC	
1,098.0	1,130.0	
Initial Quantity	Current Quantity	Delivered Quantity
BAC	BCWP	ACWP
1,108.5	778.2	759.9
BCWS	Cost Variance	Schedule Variance
800.0	18.3	(21.8)

Contract Notes:

The FY 2020 P&DSS contract specifies a ceiling price that applies to the Fixed Price Incentive Production CLINs.

Initial Target Price and Current Target Price represent the total contract values. Ceiling Prices reflect the value of the Fixed Price CLINs, which are the only CLINs with ceilings. Therefore, Ceiling Prices will be lower than Target Price for this contract.

Cost Variance:

The favorable net change in the cost variance is due to: 1) experience and efficiencies gained through learning curve, additionally having minimal issues and repairs; 2) no overtime for extended period due to Covid restrictions; 3) lower than expected Travel and Living costs resulting from the Covid travel restrictions; 4) favorable PPRD rate adjustments; and 5) extended overlap of FY18/FY19 with FY20 Build contracts. The cumulative cost variance remains favorable and is expected to be sufficient to achieve schedule recovery.

Schedule Variance:

The unfavorable net change in the schedule variance is primarily due to: 1) materials and hardware acquisition delays driven by fluctuating and unpredictable production demand; 2) delayed invoice timing for the performance based payments; 3) delayed deliverables from subcontractors; and 4) a material variance. All delays are being actively managed and expected to be resolved within program resources.

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Contract Data (\$TYM)		
Contract Number	N00030-20-C-0100	
Effort Number		
Modification Number	P00016	
Award Date	October 1, 2020	
Definitization Date	October 1, 2020	
Order Number		
CAGE Code/CAGE Legal Name	7X6A9 / Lockheed Martin Space	
Contract Title	FY21 Production and Deployed Systems Support (P&DSS)	
Contract Address	Titusville, FL	
Contracts/Effort Price, Quantity, and Performance (\$M)		
Initial Target Price	Current Target Price	
657.7	1,233.9	
Initial Ceiling Price	Current Ceiling Price	
Contract's EAC	PM's EAC	
1,095.3	1,101.0	
Initial Quantity	Current Quantity	Delivered Quantity
BAC	BCWP	ACWP
1,106.2	590.8	573.5
BCWS	Cost Variance	Schedule Variance
591.6	17.4	(0.8)

Contract Notes:

The FY 2021 P&DSS contract specifies a ceiling price that applies to the Fixed Price Incentive Production CLINs.

Initial Target Price and Current Target Price represent the total contract values. Ceiling Prices reflect the value of the Fixed Price CLINs, which are the only CLINs with ceilings. Therefore, Ceiling Prices will be lower than Target Price for this contract.

Cost Variance:

The favorable net change in the cost variance is due to: 1) an increase beyond plan in equitability adjustments; 2) vendor invoicing delays; 3) labor not accruing as planned; and 3) support/labor mix requirements. The cumulative cost variance remains favorable and is expected to be sufficient to achieve schedule recovery.

Schedule Variance:

The unfavorable net change in the schedule variance is primarily due to settlement delays for several subcontractors, all of which have now been remedied and the variance is expected to improve as work is performed. All delays are being actively managed and expected to be resolved within program resources.

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Contract Data (\$TYM)		
Contract Number	N00030-16-C-0008	
Effort Number		
Modification Number	P00005	
Award Date	February 2, 2016	
Definitization Date	February 2, 2016	
Order Number		
CAGE Code/CAGE Legal Name	Q92260 / Charles Stark Draper Laboratory	
Contract Title	FY 16 Guidance SPALT	
Contract Address	Cambridge, MA	
Contracts/Effort Price, Quantity, and Performance (\$M)		
Initial Target Price	Current Target Price	
163.6	163.6	
Initial Ceiling Price	Current Ceiling Price	
41.1	41.1	
Contract's EAC	PM's EAC	
156.4	156.4	
Initial Quantity	Current Quantity	Delivered Quantity
BAC	BCWP	ACWP
155.0	140.4	142.1
BCWS	Cost Variance	Schedule Variance
142.2	(1.7)	(1.8)

Contract Notes:

The FY 2016 Guidance SPALT contract specifies a ceiling price that applies to the Fixed Price Incentive Production CLIN only (Item 0001). The remainder of the contract does not have a ceiling price.

THIS IS THE FINAL SUBMISSION FOR THIS EFFORT.

Cost Variance:

The unfavorable net change in the cumulative cost variance is due to: 1) support hours for program management were more than anticipated and 2) additional resources required to work on instrument production test equipment. This cost variance is expected to be managed within program resources.

Schedule Variance:

The unfavorable net change in the schedule variance is due to: Delay from late delivery on previous annual sensor procurements. All schedule delays are expected to be managed within program resources.

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Contract Data (\$TYM)		
Contract Number	N00030-17-C-0008	
Effort Number		
Modification Number	P00003	
Award Date	February 1, 2017	
Definitization Date	January 26, 2017	
Order Number		
CAGE Code/CAGE Legal Name	Q92260 / Charles Stark Draper Laboratory	
Contract Title	FY 17 Guidance SPALT	
Contract Address	Cambridge, MA	
Contracts/Effort Price, Quantity, and Performance (\$M)		
Initial Target Price	Current Target Price	
53.5	370.2	
Initial Ceiling Price	Current Ceiling Price	
61.7	287.8	
Contract's EAC	PM's EAC	
350.8	355.5	
Initial Quantity	Current Quantity	Delivered Quantity
BAC	BCWP	ACWP
349.5	324.3	326.4
BCWS	Cost Variance	Schedule Variance
330.6	(6.3)	(2.1)

Contract Notes:

The FY 2017 Guidance SPALT contract specifies a ceiling price that applies to the Fixed Price Incentive Production CLINs only (Item 0001, 0002, 0006, and 0007). The remainder of the contract is comprised of option CLINs that do not have a ceiling price.

Cost Variance:

The unfavorable net change in the cumulative cost variance is due to: 1) a greater than planned engineering and quality and management support due to subcontractor delivery delays; 2) Forward Pricing Rate Package causing an increase in reportable actuals going forward with build inefficiencies; and 3) production subassemblies being transferred from previous contracts in this effort.

Schedule Variance:

The unfavorable net change in the schedule variance is due to: 1) Delays to production efforts on previous contracts have cascaded to the current contracted deliveries; 2) a previous Stop Work Order during delivery of previous effort's procured units to re-qualify new hardware, unfavorably shifted the forecasted delivery schedule for the current units; 3) delayed vendor long lead material receipts on previous contracts has led to receipt delays on the current effort. All schedule delays are expected to be managed within program resources.

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Contract Data (\$TYM)		
Contract Number	N00030-19-C-0008	
Effort Number		
Modification Number	P00006	
Award Date	February 25, 2019	
Definitization Date	February 25, 2019	
Order Number		
CAGE Code/CAGE Legal Name	Q92260 / Charles Stark Draper Laboratory	
Contract Title	FY 19 Guidance SPALT	
Contract Address	Cambridge, MA	
Contracts/Effort Price, Quantity, and Performance (\$M)		
Initial Target Price	Current Target Price	
391.8	391.8	
Initial Ceiling Price	Current Ceiling Price	
231.2	231.2	
Contract's EAC	PM's EAC	
355.5	345.8	
Initial Quantity	Current Quantity	Delivered Quantity
BAC	BCWP	ACWP
353.4	197.6	187.0
BCWS	Cost Variance	Schedule Variance
214.1	10.6	(16.5)

Contract Notes:

The FY 2019 Guidance SPALT contract specifies a ceiling price that applies to the Fixed Price Incentive Production CLINs only (Item 0002). The remainder of the contract is comprised of option CLINs that do not have a ceiling price.

THIS IS THE FIRST SUBMISSION FOR THIS EFFORT.

Cost Variance:

The favorable net change in the cumulative cost variance is due to: 1) early under-execution of LOE hours associated with Program Management; and 2) a delay in billing invoices from an accelerated partial delivery of vendor material. All other costs are expected to be managed within program resources.

Schedule Variance:

The unfavorable net change in the schedule variance is due to: 1) delays both with sourcing and delivering raw material; and 2) staffing shortfalls preventing final inspections. All schedule delays are expected to be managed within program resources.

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Technologies and Systems Engineering

Significant Technical Risks

Significant Technical Risks	
Current Estimate (December 2021)	
1.	Disparity between OSD approved and industry realized inflation indices has an effect on the strategic weapons systems' operational engineering support and the ability to maintain a broad range of engineering knowledge and skill sets required to support the strategic weapon system.
2.	Industrial base concerns in regards to solid rocket motor manufacturers and their suppliers. The industrial base has been reduced to one primary manufacturer/supplier which is Northrup Grumman. This manufacturing base has a secondary effect on the Navy as they are the sole consumer of solid rocket motor production and could impact future budgets as they will be the only government entity requiring this technology and manufacturing.

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Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	28	28	28	100.00%
Production	533	533	533	100.00%
Total Program Quantity Delivered	561	561	561	100.00%

Expended and Appropriated (TY \$M)

Total Acquisition Cost: 43263.36

Expended to Date: 42050.04

Percent Expended: 97.2%

Total Funding Years: 47

Years Appropriated: 45

Percent Years Appropriated: 95.7%

Appropriated to Date: 41652.56

Percent Appropriated: 96.3%

The above data is current as of April 18, 2022.

Deliveries and Expenditures Notes:

The deliveries identified in this section are for the TRIDENT II (D5) missile equipment sections. While the TRIDENT II (D5) Missile program is over 90% delivered and expended, it has been decided by the Assistant Secretary of the Navy (Research, Development and Acquisition) the current APB is to remain open as the TRIDENT II (D5) missile will be sustained throughout the entire life of the OHIO Class submarine, and will also be the initial payload for the Ship, Submersible, Ballistic, Nuclear (SSBN) 826 COLUMBIA Class submarine.

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Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	10/30/1983	10/30/1983
Approved Quantity	21	21
Reference	Milestone II ADM	Milestone II ADM
Start Year	1983	1983
End Year	1987	1987

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Operating and Support Costs

Total Program O&S Cost Compared with Baseline

	Current APB Objective (BY\$)	Current APB Threshold (BY\$)	Current Estimate (BY\$)	Current Estimate (TY\$)	Deviation
Total O&S (\$Millions)	N/A	N/A	30901.3	78669.3	N/A

Note: O&S Costs begin to include WPN for D5 Life Extension 2 (D5LE2) starting in FY2023.

O&S Cost Breakdown

Allocate O&S estimate by each weapon system (or system variants) acquired by the program) into the CAPE Cost Categories. Add a fresh column for each variant/system.

Category (BY\$ Million)	Trident II Missile
Unit-Level Manpower	--
Unit Operations	--
Maintenance	0.234
Sustaining Support	1.112
Continued System Improvements	--
Other	0.003
Total O&S	1.348

Cost Estimate Source: The TRIDENT II (D5) missile Strategic Weapon System (SWS) achieved Milestone I in October 1977; Milestone II in October 1983; and Milestone III in April 1987. At that time, program life cycle cost estimates and SCPs were not required. At the request of the Assistant Secretary of the Navy (Research, Development & Acquisition) (ASN RD&A), SSP submitted an Internal ICE for only the acquisition portion of the TRIDENT II (D5) Life Extension Program, therefore no O&S cost estimate is available. ASN (RD&A) has determined the current APB is to remain open to support the SSBN 826 COLUMBIA Class submarine.

O&S Cost Notes:

- a. Disposal/Demilitarization Cost Estimate and Source of Estimate:

Disposal Estimate: 187.1 (BY 1983 \$M) / Source of Estimate: POE

O&S Costs for TRIDENT II (D5) missile include 1st, 2nd, and 3rd stage rocket motor disposal. At this time, these are the only disposal/demilitarization costs anticipated for the TRIDENT II (D5) missile. Any further disposal/demilitarization costs will be determined once final decisions have been made in regards to the SSBN 826 COLUMBIA Class program. The costs displayed in this section reflect infrastructure costs required for maintaining a disposal program.

- b. Sustainment Strategy:

With the collaboration of SSP and its industry partners, life cycle sustainment is the basic premise of the TRIDENT II (D5) missile program and its life extension. The strategy is to reduce O&S costs, provide a full range of logistics support, maintain critical reliability and accuracy requirements and implement the Shipboard Systems Integration (SSI) refresh schedule. A total of 533 TRIDENT II (D5) missiles have been procured for this program that will support the OHIO-Class submarine through FY 2042. The TRIDENT II (D5) missile will be the initial SWS for the Ship, Submersible, Ballistic, Nuclear (SSBN) 826 COLUMBIA Class submarine.

The TRIDENT II (D5) missile SWS is completing its 32nd year of deployment and has reached its original design life goal. Like any other aging weapon system, increased maintenance and repair will be required to sustain a safe, reliable, and accurate SWS. SSP's "Cradle to Grave" responsibility requires a broad

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range of engineering knowledge and unique skill sets to support the Navy's primary nuclear deterrent system. As such, engineering support spanning all phases of the weapon system life cycle is provided by one organization (SSP). Operational Engineering Support is required for the establishment of a "closed loop" system which includes the following: 1) collecting data from the Fleet; 2) measuring weapons system performance; 3) analyzing the data collected to identify performance deficiencies; 4) investigating problems identified; 5) developing solutions to resolve the deficiencies and problems; and 6) implementing corrective actions to the Fleet. The SSP life cycle budget maintains the industrial base and expertise in the workforce and ensures those skill sets will be available for the follow-on SSBN 826 COLUMBIA Class submarine.

c. Antecedent System(s) O&S Costs:

The TRIDENT II (D5) weapon system replaced the TRIDENT I (C4) weapon system. O&S costs and assumptions for the TRIDENT I (C4) system are not available.

While the TRIDENT II (D5) Missile program procured 533 WPN missiles there will never be a time when SSP will support a total of 533 missiles in a given year. This is due to the flight test program as every year a certain number of missiles are tested for reliability and accuracy.

Annual O&S Costs are broken down into these categories:

Maintenance: Provides for the repair, overhaul, and missile processing of the TRIDENT II (D5) Missile's SWS at the Strategic Weapons Facilities (SWFs).

Sustaining Support: Provides for the sustainment of the TRIDENT II (D5) Missile's SWS to include Shipboard Modernization Program, replacement of aging rocket motors, tooling and test equipment, modifications required for treaty obligations, SWS training at the SWFs, and salaries and benefits for the SSP employees.

Indirect Support: Provides for real property maintenance including funding for recurring maintenance, major repair projects, and minor construction in support of the Fleet Ballistic Missiles and TRIDENT II (D5) facilities. The last year of funding for these efforts was FY 2003.

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