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Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-178



Trident II (D-5) Sea-Launched Ballistic Missile UGM 133A (Trident II Missile)

As of FY 2020 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Sensitivity Originator

No originator information is available at this time.

Common Acronyms and Abbreviations for MDAP Programs

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

RDT&E - Research, Development, Test, and Evaluation

SAR - Selected Acquisition Report

SCP - Service Cost Position

TBD - To Be Determined

TY - Then Year

UCR - Unit Cost Reporting

U.S. - United States

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

USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)

Program Information

Program Name

Trident II (D-5) Sea-Launched Ballistic Missile UGM 133A (Trident II Missile)

DoD Component

Navy

Responsible Office

VADM Johnny Wolfe
Strategic Systems Programs
1250-10th Street, SE
Suite 3600; Washington Navy Yard
Washington, DC 20374-5127

Phone: 202-433-7001

Fax: 202-433-5326

DSN Phone: 288-7001

DSN Fax: 288-5326

Date Assigned: May 4, 2018

SP00@SSP.NAVY.MIL

References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated July 15, 1987

Approved APB

Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated September 10, 2011

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 sea-based 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.

Executive Summary

Program Highlights Since Last Report

In April 2018, the Explosive Handling Wharf #2, located at Bangor, WA, received its Authority to Operate as scheduled. This facility is critical to meeting workload demands of the Pacific fleet.

In June 2018, the program completed the first operational flight test (Commander Evaluation Test 1) of the TRIDENT II (D5) Life Extension missile, four months ahead of schedule.

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 stays viable and costs under control. The current budget maintains buying 12 rocket motor sets per year.

The PM continues to monitor the disparity between 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.

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
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 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. Pending that decision, the backfit efforts were removed from the TRIDENT II (D5) Missile program.
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 2001. 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.
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.

Threshold Breaches

APB Breaches

Schedule		<input checked="" type="checkbox"/>
Performance		<input type="checkbox"/>
Cost	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
O&S Cost		<input type="checkbox"/>
Unit Cost	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

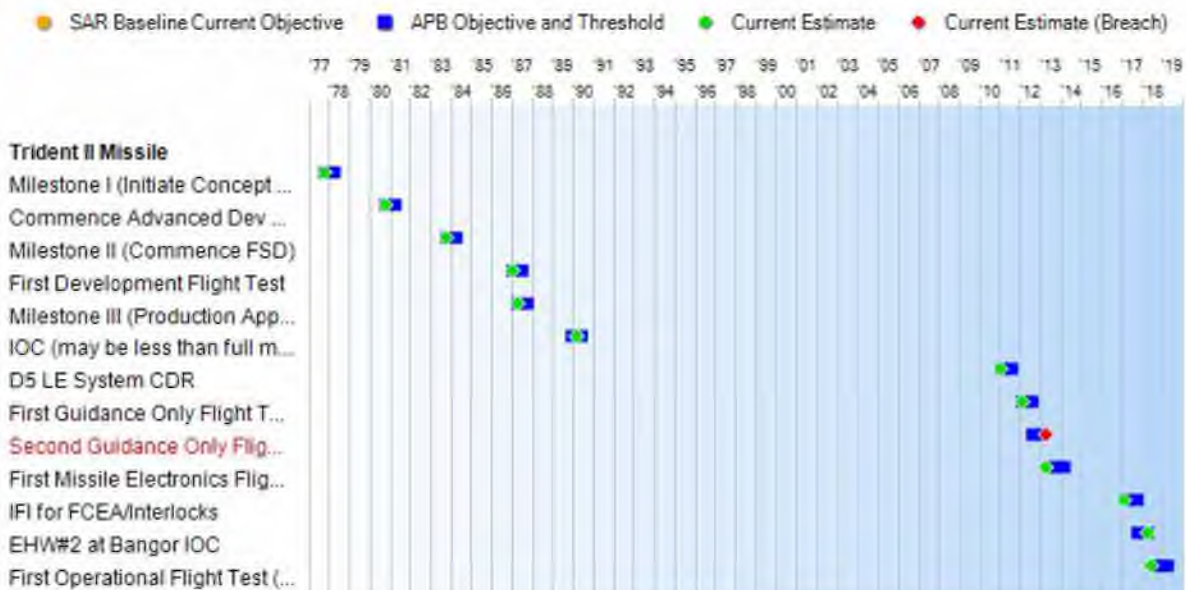
Explanation of Breach

This schedule breach was previously reported in the December 2014 SAR.

Nunn-McCurdy Breaches

Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold	Current Estimate	
Milestone I (Initiate Concept Definition)	Oct 1977	Oct 1977	Apr 1978	Oct 1977
Commence Advanced Dev Phase	Oct 1980	Oct 1980	Apr 1981	Oct 1980
Milestone II (Commence FSD)	Oct 1983	Oct 1983	Apr 1984	Oct 1983
First Development Flight Test	Jan 1987	Jan 1987	Jul 1987	Jan 1987
Milestone III (Production Approval)/ Award Initial Missile Production	Apr 1987	Apr 1987	Oct 1987	Apr 1987
IOC (may be less than full msl outload)	Dec 1989	Dec 1989	Jun 1990	Mar 1990
D5 LE System CDR	N/A	Feb 2011	Aug 2011	Jan 2011
First Guidance Only Flight Test (DASO-23)	N/A	Feb 2012	Aug 2012	Feb 2012
Second Guidance Only Flight Test (DASO-24)	N/A	Aug 2012	Feb 2013	Apr 2013¹
First Missile Electronics Flight Test (PTM-1/DASO-25)	N/A	Sep 2013	Mar 2014	Apr 2013
IFI for FCEA/Interlocks	N/A	Apr 2017	Oct 2017	Feb 2017
EHW#2 at Bangor IOC	N/A	Oct 2017	Apr 2018	Apr 2018
First Operational Flight Test (CET)	N/A	Oct 2018	Apr 2019	Jun 2018 (Ch-1)

¹ APB Breach

Change Explanations

(Ch-1) First Operational Flight Test changed from October 2018 to June 2018 due to boat availabilities allowing for an earlier flight test.

Acronyms and Abbreviations

CDR - Critical Design Review
CET - Commander Evaluation Test
D5 LE - D5 Life Extension
DASO - Demonstration and Shakedown Operation
Dev - Development
EHW - Explosive Handling Wharf
FCEA - Flight Control Electronics Assembly
FSD - Full Scale Development
IFI - Initial Fleet Introduction
MSL - missile
PTM - Proofing Test Missile

Performance

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

Track to Budget

RDT&E

Appn	BA	PE		
Navy	1319	07	0101221N	
	Project		Name	
	0951		JOINT WARHEAD FUZE SUSTAINMENT PROGRAM	
Navy	1319	04	0603371N	
	Project		Name	
	0951		TRIDENT II/TRIDENT II	(Sunk)
Navy	1319	04	0604327N	
	Project		Name	
	9611		HARD AND DEEPLY BURIED TARGET DEFEAT SYSTEM/Advanced Conventional Strike Capability Demonstration	(Sunk)
Navy	1319	04	0604363N	
	Project		Name	
	0951		TRIDENT II/TRIDENT II	(Sunk)

Procurement

Appn	BA	PE		
Navy	1507	01	0101228N	
	Line Item		Name	
	1150		TRIDENT II (D-5) Missile	(Sunk)
	1250		TRIDENT II MODS	(Shared)

Notes

The funding profile for Proc (Weapons Proc, Navy (WPN)) does not match that found in the FY 2020 PB controls for WPN after FY 2011. Beginning in FY 2012, WPN funding is shared between Acquisition and O&S costs in the SAR and, hence, the O&S costs are not reflected in the TRIDENT II (D5) missile acquisition.

MILCON

Appn	BA	PE		
Navy	1205	01	0202576N	
	Project		Name	
			Facilities Restoration and MOD- Grounds	(Shared) (Sunk)
Navy	1205	01	0203176N	
	Project		Name	
			Facilities Restoration and MOD- Fleet Ops	(Shared) (Sunk)
Navy	1205	01	0212176N	
	Project		Name	
	68436990		Fleet Ballistic Missile	
Navy	1205	01	0212576N	
	Project		Name	
			Facilities New Footprint	(Shared) (Sunk)

Navy 1205 01 0703676N

Project**Name**

Facility Restoration and MOD - Maint and Prod

(Shared) (Sunk)

Navy 1205 01 0703967N

Project**Name**

60042117 Missile Motor Magazines

Navy 1205 01 0712976N

Project**Name**

60495822 Facilities - D5 Missile Motor Receipt/Storage Facility

Navy 1205 01 0805976N

Project**Name**

Facility Restoration and MOD - Training

(Shared) (Sunk)

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 1983 \$M			BY 1983 \$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	8434.9	8783.9	9662.3	8793.2	9453.2	10126.0	10155.8
Procurement	17588.5	18406.7	20247.4	18482.6	25396.9	30643.5	31133.2
Flyaway	--	--	--	14155.6	--	--	23891.3
Recurring	--	--	--	14155.6	--	--	23891.3
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	4327.0	--	--	7241.9
Other Support	--	--	--	4303.4	--	--	7206.5
Initial Spares	--	--	--	23.6	--	--	35.4
MILCON	532.9	757.6	833.4	656.8	668.4	1220.3	1041.7
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	26556.3	27948.2	N/A	27932.6	35518.5	41989.8	42330.7

Cost Notes

If an independent Cost Estimate, Component Cost Estimate, or Program Office Estimate has been completed for the program in the previous year, list any program risks identified in the estimates, the potential impacts of the risks on the program cost, and approaches to mitigate the 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		30	28
Procurement		815	533
Total		845	561

Cost and Funding**Funding Summary**

Appropriation Summary									
FY 2020 President's Budget / December 2018 SAR (TYS M)									
Appropriation	Prior	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
RDT&E	10043.1	62.2	23.2	25.1	2.2	0.0	0.0	0.0	10155.8
Procurement	28074.6	576.5	647.6	603.1	496.6	434.3	300.5	0.0	31133.2
MILCON	921.4	69.8	50.5	0.0	0.0	0.0	0.0	0.0	1041.7
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2020 Total	39039.1	708.5	721.3	628.2	498.8	434.3	300.5	0.0	42330.7
PB 2019 Total	39044.7	744.2	684.0	612.7	483.5	434.3	37.7	0.0	42041.1
Delta	-5.6	-35.7	37.3	15.5	15.3	0.0	262.8	0.0	289.6

Quantity Summary										
FY 2020 President's Budget / December 2018 SAR (TYS M)										
Quantity	Undistributed	Prior	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Development	28	0	0	0	0	0	0	0	0	28
Production	0	533	0	0	0	0	0	0	0	533
PB 2020 Total	28	533	0	0	0	0	0	0	0	561
PB 2019 Total	28	533	0	0	0	0	0	0	0	561
Delta	0	0	0	0	0	0	0	0	0	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding							
1319 RDT&E Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1978	--	--	--	--	--	--	5.0
1979	--	--	--	--	--	--	5.0
1980	--	--	--	--	--	--	25.6
1981	--	--	--	--	--	--	96.7
1982	--	--	--	--	--	--	198.4
1983	--	--	--	--	--	--	351.0
1984	--	--	--	--	--	--	1447.3
1985	--	--	--	--	--	--	1982.6
1986	--	--	--	--	--	--	1942.3
1987	--	--	--	--	--	--	1565.3
1988	--	--	--	--	--	--	1029.7
1989	--	--	--	--	--	--	546.5
1990	--	--	--	--	--	--	169.5
1991	--	--	--	--	--	--	43.0
1992	--	--	--	--	--	--	2.2
1993	--	--	--	--	--	--	0.4
1994	--	--	--	--	--	--	--
1995	--	--	--	--	--	--	0.5
1996	--	--	--	--	--	--	0.3
1997	--	--	--	--	--	--	--
1998	--	--	--	--	--	--	--
1999	--	--	--	--	--	--	--
2000	--	--	--	--	--	--	--
2001	--	--	--	--	--	--	--
2002	--	--	--	--	--	--	--
2003	--	--	--	--	--	--	--
2004	--	--	--	--	--	--	--
2005	--	--	--	--	--	--	--
2006	--	--	--	--	--	--	--
2007	--	--	--	--	--	--	19.4
2008	--	--	--	--	--	--	--
2009	--	--	--	--	--	--	--
2010	--	--	--	--	--	--	14.0
2011	--	--	--	--	--	--	21.7
2012	--	--	--	--	--	--	41.5
2013	--	--	--	--	--	--	56.2
2014	--	--	--	--	--	--	83.8
2015	--	--	--	--	--	--	81.7
2016	--	--	--	--	--	--	93.4
2017	--	--	--	--	--	--	111.9

Trident II Missile

December 2018 SAR

2018	--	--	--	--	--	--	108.2
2019	--	--	--	--	--	--	62.2
2020	--	--	--	--	--	--	23.2
2021	--	--	--	--	--	--	25.1
2022	--	--	--	--	--	--	2.2
Subtotal	28	--	--	--	--	--	10155.8

Annual Funding							
1319 RDT&E Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 1983 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1978	--	--	--	--	--	--	7.2
1979	--	--	--	--	--	--	6.5
1980	--	--	--	--	--	--	30.1
1981	--	--	--	--	--	--	104.2
1982	--	--	--	--	--	--	203.1
1983	--	--	--	--	--	--	343.9
1984	--	--	--	--	--	--	1368.5
1985	--	--	--	--	--	--	1818.1
1986	--	--	--	--	--	--	1731.2
1987	--	--	--	--	--	--	1355.1
1988	--	--	--	--	--	--	862.6
1989	--	--	--	--	--	--	439.3
1990	--	--	--	--	--	--	130.9
1991	--	--	--	--	--	--	32.1
1992	--	--	--	--	--	--	1.6
1993	--	--	--	--	--	--	0.3
1994	--	--	--	--	--	--	--
1995	--	--	--	--	--	--	0.3
1996	--	--	--	--	--	--	0.2
1997	--	--	--	--	--	--	--
1998	--	--	--	--	--	--	--
1999	--	--	--	--	--	--	--
2000	--	--	--	--	--	--	--
2001	--	--	--	--	--	--	--
2002	--	--	--	--	--	--	--
2003	--	--	--	--	--	--	--
2004	--	--	--	--	--	--	--
2005	--	--	--	--	--	--	--
2006	--	--	--	--	--	--	--
2007	--	--	--	--	--	--	10.7
2008	--	--	--	--	--	--	--
2009	--	--	--	--	--	--	--
2010	--	--	--	--	--	--	7.4
2011	--	--	--	--	--	--	11.2
2012	--	--	--	--	--	--	21.1
2013	--	--	--	--	--	--	28.2
2014	--	--	--	--	--	--	41.5
2015	--	--	--	--	--	--	39.9
2016	--	--	--	--	--	--	44.9
2017	--	--	--	--	--	--	52.8
2018	--	--	--	--	--	--	50.0
2019	--	--	--	--	--	--	28.2
2020	--	--	--	--	--	--	10.3
2021	--	--	--	--	--	--	10.9
2022	--	--	--	--	--	--	0.9

Subtotal	28	--	--	--	--	--	8793.2
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Annual Funding								
1507 Procurement Weapons 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	
1985	--	--	--	--	--	160.8	160.8	
1986	--	--	--	--	--	508.4	508.4	
1987	21	1051.6	--	--	1051.6	295.2	1346.8	
1988	66	1710.0	--	--	1710.0	323.5	2033.5	
1989	66	1586.8	--	--	1586.8	252.2	1839.0	
1990	41	1114.2	--	--	1114.2	286.4	1400.6	
1991	52	1242.9	--	--	1242.9	269.5	1512.4	
1992	28	817.6	--	--	817.6	279.3	1096.9	
1993	21	719.6	--	--	719.6	258.5	978.1	
1994	24	989.2	--	--	989.2	111.5	1100.7	
1995	18	606.5	--	--	606.5	58.9	665.4	
1996	6	186.5	--	--	186.5	324.2	510.7	
1997	7	209.1	--	--	209.1	108.1	317.2	
1998	5	150.8	--	--	150.8	117.7	268.5	
1999	5	189.3	--	--	189.3	126.4	315.7	
2000	12	362.7	--	--	362.7	122.7	485.4	
2001	12	355.2	--	--	355.2	81.9	437.1	
2002	12	378.8	--	--	378.8	154.0	532.8	
2003	12	553.5	--	--	553.5	19.5	573.0	
2004	12	640.0	--	--	640.0	0.9	640.9	
2005	5	612.9	--	--	612.9	102.4	715.3	
2006	--	708.9	--	--	708.9	196.3	905.2	
2007	--	766.7	--	--	766.7	147.4	914.1	
2008	12	862.6	--	--	862.6	179.2	1041.8	
2009	24	889.2	--	--	889.2	178.9	1068.1	
2010	24	867.8	--	--	867.8	184.4	1052.2	
2011	24	935.7	--	--	935.7	177.5	1113.2	
2012	24	624.7	--	--	624.7	131.8	756.5	
2013	--	420.5	--	--	420.5	180.8	601.3	
2014	--	463.4	--	--	463.4	202.4	665.8	
2015	--	454.0	--	--	454.0	203.0	657.0	
2016	--	397.1	--	--	397.1	206.2	603.3	
2017	--	403.9	--	--	403.9	210.2	614.1	
2018	--	408.5	--	--	408.5	234.3	642.8	
2019	--	427.9	--	--	427.9	148.6	576.5	
2020	--	436.7	--	--	436.7	210.9	647.6	
2021	--	442.1	--	--	442.1	161.0	603.1	
2022	--	351.0	--	--	351.0	145.6	496.6	
2023	--	344.5	--	--	344.5	89.8	434.3	
2024	--	208.9	--	--	208.9	91.6	300.5	
Subtotal	533	23891.3	--	--	23891.3	7241.9	31133.2	

Annual Funding							
1507 Procurement Weapons Procurement, Navy							
Fiscal Year	Quantity	BY 1983 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1985	--	--	--	--	--	137.7	137.7
1986	--	--	--	--	--	420.7	420.7
1987	21	839.8	--	--	839.8	235.8	1075.6
1988	66	1314.1	--	--	1314.1	248.6	1562.7
1989	66	1173.3	--	--	1173.3	186.5	1359.8
1990	41	796.4	--	--	796.4	204.7	1001.1
1991	52	866.5	--	--	866.5	187.8	1054.3
1992	28	555.9	--	--	555.9	189.9	745.8
1993	21	480.5	--	--	480.5	172.6	653.1
1994	24	647.8	--	--	647.8	73.0	720.8
1995	18	390.9	--	--	390.9	38.0	428.9
1996	6	118.7	--	--	118.7	206.5	325.2
1997	7	131.8	--	--	131.8	68.2	200.0
1998	5	94.0	--	--	94.0	73.3	167.3
1999	5	116.5	--	--	116.5	77.8	194.3
2000	12	220.2	--	--	220.2	74.6	294.8
2001	12	213.0	--	--	213.0	49.1	262.1
2002	12	224.7	--	--	224.7	91.4	316.1
2003	12	321.8	--	--	321.8	11.3	333.1
2004	12	361.3	--	--	361.3	0.5	361.8
2005	5	336.7	--	--	336.7	56.3	393.0
2006	--	379.9	--	--	379.9	105.2	485.1
2007	--	402.2	--	--	402.2	77.3	479.5
2008	12	445.4	--	--	445.4	92.5	537.9
2009	24	452.6	--	--	452.6	91.1	543.7
2010	24	434.3	--	--	434.3	92.3	526.6
2011	24	459.5	--	--	459.5	87.2	546.7
2012	24	302.2	--	--	302.2	63.8	366.0
2013	--	200.6	--	--	200.6	86.2	286.8
2014	--	218.0	--	--	218.0	95.2	313.2
2015	--	210.2	--	--	210.2	94.0	304.2
2016	--	180.6	--	--	180.6	93.7	274.3
2017	--	180.0	--	--	180.0	93.7	273.7
2018	--	178.5	--	--	178.5	102.3	280.8
2019	--	183.3	--	--	183.3	63.6	246.9
2020	--	183.4	--	--	183.4	88.5	271.9
2021	--	182.0	--	--	182.0	66.3	248.3
2022	--	141.7	--	--	141.7	58.7	200.4
2023	--	136.3	--	--	136.3	35.5	171.8
2024	--	81.0	--	--	81.0	35.6	116.6
Subtotal	533	14155.6	--	--	14155.6	4327.0	18482.6

The funding profile for Proc (Weapons Proc, Navy (WPN)) does not match that found in the FY 2020 PB controls for WPN after FY 2011. Beginning in FY 2012, WPN funding is shared between Acquisition and O&S costs in the SAR and, hence, the O&S costs are not reflected in the TRIDENT II (D5) missile acquisition.

Cost Quantity Information 1507 Procurement Weapons Procurement, Navy		
Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned With Quantity) BY 1983 \$M
1985	--	--
1986	--	--
1987	21	737.2
1988	66	1068.2
1989	66	953.0
1990	41	796.4
1991	52	901.9
1992	28	541.8
1993	21	480.5
1994	24	647.8
1995	18	390.9
1996	6	118.7
1997	7	131.9
1998	5	94.0
1999	5	116.5
2000	12	220.4
2001	12	213.1
2002	12	224.7
2003	12	321.8
2004	12	779.6
2005	5	827.3
2006	--	--
2007	--	--
2008	12	628.9
2009	24	1015.2
2010	24	1163.8
2011	24	997.5
2012	24	784.5
2013	--	--
2014	--	--
2015	--	--
2016	--	--
2017	--	--
2018	--	--
2019	--	--
2020	--	--
2021	--	--
2022	--	--

2023	--	--
2024	--	--
<hr/>		
Subtotal	533	14155.6

Annual Funding 1205 MILCON Military Construction, Navy and Marine Corps	
Fiscal Year	TY \$M
	Total Program
1984	79.3
1985	82.4
1986	126.3
1987	21.0
1988	18.1
1989	15.4
1990	7.6
1991	70.5
1992	--
1993	--
1994	--
1995	--
1996	--
1997	--
1998	--
1999	--
2000	5.7
2001	1.1
2002	4.2
2003	7.2
2004	--
2005	--
2006	2.8
2007	--
2008	28.7
2009	--
2010	--
2011	--
2012	78.0
2013	264.4
2014	24.9
2015	83.8
2016	--
2017	--
2018	--
2019	69.8
2020	50.5
Subtotal	1041.7

Annual Funding 1205 MILCON Military Construction, Navy and Marine Corps		
Fiscal Year	BY 1983 \$M	
	Total Program	
1984		72.8
1985		73.4
1986		109.3
1987		17.6
1988		14.6
1989		12.0
1990		5.7
1991		51.3
1992		--
1993		--
1994		--
1995		--
1996		--
1997		--
1998		--
1999		--
2000		3.6
2001		0.7
2002		2.6
2003		4.3
2004		--
2005		--
2006		1.6
2007		--
2008		15.4
2009		--
2010		--
2011		--
2012		38.8
2013		129.7
2014		12.0
2015		39.5
2016		--
2017		--
2018		--
2019		30.4
2020		21.5
Subtotal		656.8

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

Foreign Military Sales

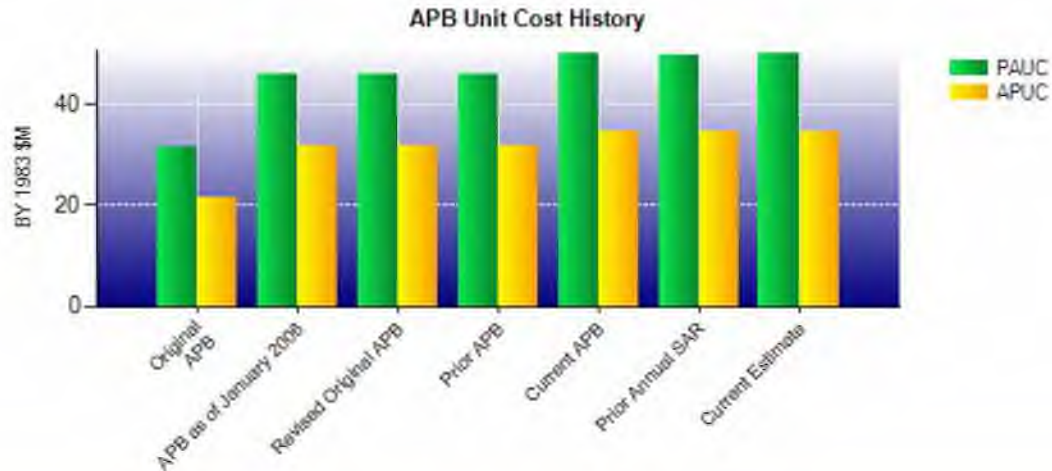
None

Nuclear Costs

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

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 1983 \$M	BY 1983 \$M	% Change
	Current UCR Baseline (Sep 2011 APB)	Current Estimate (Dec 2018 SAR)	
Program Acquisition Unit Cost			
Cost	27948.2	27932.6	
Quantity	561	561	
Unit Cost	49.819	49.791	-0.06
Average Procurement Unit Cost			
Cost	18406.7	18482.6	
Quantity	533	533	
Unit Cost	34.534	34.677	+0.41
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 1983 \$M	BY 1983 \$M	% Change
	Revised Original UCR Baseline (Jun 2002 APB)	Current Estimate (Dec 2018 SAR)	
Program Acquisition Unit Cost			
Cost	25943.7	27932.6	
Quantity	568	561	
Unit Cost	45.676	49.791	+9.01
Average Procurement Unit Cost			
Cost	17155.2	18482.6	
Quantity	540	533	
Unit Cost	31.769	34.677	+9.15



APB Unit Cost History					
Item	Date	BY 1983 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Jul 1987	31.428	21.581	42.034	31.162
APB as of January 2006	Jun 2002	45.676	31.769	66.098	51.266
Revised Original APB	Jun 2002	45.676	31.769	66.098	51.266
Prior APB	Jun 2002	45.676	31.769	66.098	51.266
Current APB	Sep 2011	49.819	34.534	74.848	57.492
Prior Annual SAR	Dec 2017	49.625	34.509	74.940	57.893
Current Estimate	Dec 2018	49.791	34.677	75.456	58.411

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY \$M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
42.034	-0.720	9.302	3.380	0.180	16.068	0.000	5.212	33.422	75.456

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
31.162	-0.695	3.970	3.215	0.175	15.098	0.000	5.486	27.249	58.411

SAR Baseline History					
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate	
Milestone I	N/A	Oct 1977	Oct 1977	Oct 1977	
Milestone II	N/A	Oct 1983	Oct 1983	Oct 1983	
Milestone III	N/A	Mar 1987	Apr 1987	Apr 1987	
IOC	N/A	Dec 1989	Dec 1989	Mar 1990	
Total Cost (TY \$M)	N/A	37645.1	35518.5	42330.7	
Total Quantity	N/A	740	845	561	
PAUC	N/A	50.872	42.034	75.456	

Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	9453.2	25396.9	668.4	35518.5
Previous Changes				
Economic	-39.3	-412.6	+2.4	-449.5
Quantity	-48.0	-6671.1	--	-6719.1
Schedule	+75.3	+1713.6	+108.0	+1896.9
Engineering	-0.8	+93.1	+8.5	+100.8
Estimating	+717.0	+7927.3	+239.6	+8883.9
Other	--	--	--	--
Support	--	+2809.6	--	+2809.6
Subtotal	+704.2	+5459.9	+358.5	+6522.6
Current Changes				
Economic	+1.8	+42.3	+1.5	+45.6
Quantity	--	--	--	--
Schedule	-0.5	--	--	-0.5
Engineering	--	--	--	--
Estimating	-2.9	+119.8	+13.3	+130.2
Other	--	--	--	--
Support	--	+114.3	--	+114.3
Subtotal	-1.6	+276.4	+14.8	+289.6
Total Changes	+702.6	+5736.3	+373.3	+6812.2
CE - Cost Variance	10155.8	31133.2	1041.7	42330.7
CE - Cost & Funding	10155.8	31133.2	1041.7	42330.7

Summary BY 1983 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	8434.9	17588.5	532.9	26556.3
Previous Changes				
Economic	--	--	--	--
Quantity	-40.0	-3930.8	--	-3970.8
Schedule	+32.7	-32.2	+35.1	+35.6
Engineering	+1.3	+50.4	+4.2	+55.9
Estimating	+366.1	+3552.2	+79.3	+3997.6
Other	--	--	--	--
Support	--	+1165.3	--	+1165.3
Subtotal	+360.1	+804.9	+118.6	+1283.6
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	-0.4	--	--	-0.4
Engineering	--	--	--	--
Estimating	-1.4	+44.8	+5.3	+48.7
Other	--	--	--	--
Support	--	+44.4	--	+44.4
Subtotal	-1.8	+89.2	+5.3	+92.7
Total Changes	+358.3	+894.1	+123.9	+1376.3
CE - Cost Variance	8793.2	18482.6	656.8	27932.6
CE - Cost & Funding	8793.2	18482.6	656.8	27932.6

Previous Estimate: December 2017

RDT&E Current Change Explanations	\$M	
	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+1.8
Schedule variance due to re-phasing effort to properly align with the current Mk5A ALT 370 program schedule. (Schedule)	-0.4	-0.5
Decrease to the Mk5 ALT 370 program due to Small Business Innovative Research taxes to meet statutory requirements. (Estimating)	-0.7	-1.5
Adjustment for current and prior escalation. (Estimating)	-0.7	-1.4
RDT&E Subtotal	-1.8	-1.6

Procurement Current Change Explanations	\$M	
	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+42.3
Adjustment for current and prior escalation. (Estimating)	-5.9	-14.0
Increase in order-to-sustain the strategic weapon system (SWS) through the entire life of the OHIO Class and as the initial payload for Ship, Submersible, Ballistic, Navy (SSBN) 826 Columbia Class submarines. (Estimating)	+61.6	+159.3
Congressional reduction to the Mk5A ALT 370 program in FY 2018. (Estimating)	-1.9	-4.0
Revised estimate in the Mk5A program due to a significant decrease in life-of-part buys and commercial off the shelf items required to support assembly. (Estimating)	-9.0	-21.5
Adjustment for current and prior escalation. (Support)	-3.1	-6.3
Increase in Other Support due to 1) funding realignment from Flyaway and O&S Cost to establish an additional Interferometric Fiber-Optic Gyro (IFOG) repair/production capability necessary to repair/produce IFOGs in support of the Guidance System sensor production (+\$9.0); 2) funding realignment from O&S Cost in order to sustain the SWS through the entire life of the OHIO Class and as the initial payload for the SSBN 820 COLUMBIA Class submarines (+\$24.1); and 3) increase in order to sustain the SWS through the entire life of the OHIO Class and as the initial payload for the SSBN 826 COLUMBIA Class submarines (+\$87.5). (Support)	+47.5	+120.6
Procurement Subtotal	+89.2	+276.4

MILCON Current Change Explanations	\$M	
	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+1.5
Funding was re-phased per Congressional direction. (Estimating)	-0.5	0.0
Additional funding for Missile Motor Magazine project required to procure additional storage for aging first and second stage D5 rocket motors designated for disposal. (Estimating)	+6.5	+14.8
Adjustment for current and prior escalation. (Estimating)	-0.7	-1.5
MILCON Subtotal	+5.3	+14.8

Contracts

Contract Identification

Appropriation: Procurement
Contract Name: FY 15 Guidance Strategic Programs Alteration (SPALT)
Contractor: Charles Stark Draper Laboratory
Contractor Location: 55 Technology Square
 Cambridge, MA 02139
Contract Number: N00030-15-C-0003
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: February 02, 2015
Definitization Date: February 02, 2015

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
302.4	41.0	869	302.4	41.0	869	302.4	302.4

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/31/2019)	+2.6	-2.9
Previous Cumulative Variances	-4.4	-3.9
Net Change	+7.0	+1.0

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to 1) incorporation of budget for calendar year 2018 rate escalation across two major independent subcontractors; 2) incorporation of favorable budget for previously unanticipated rework and testing associated with sensors production; 3) initial material availability/receipt for new subcontract at Integrated Support Facility consisting of facility fabrication, material purchase, and engineering labor for sensors testing and low-yield production capabilities.

The favorable net change in the schedule variance is due to the completion of some of the previously delayed work on electronic components and sensor instruments production. Delay was originally from a brief factory shutdown due to quality management issues and late delivery on previous annual sensor procurements. The Interferometric Fiber-Optic Gyro sensor instruments were previously delayed due to a small number of technical production issues; however delivery has resumed. Electronic components continue to be delayed due to availability of material. A subset of the electronic components are still being made for a prior year contract. All schedule delays are expected to be managed within program resources.

Notes

The FY 2015 Guidance 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.

Contract Identification

Appropriation: Procurement
Contract Name: FY 2016 Production and Deployed System Support
Contractor: Lockheed Martin Space Systems
Contractor Location: 1111 Lockheed Martin Way
 Sunnyvale, CA 94089
Contract Number: N00030-15-C-0100
Contract Type: Cost Plus Incentive Fee (CPIF), Fixed Price Incentive(Firm Target) (FPIF)
Award Date: July 07, 2015
Definitization Date: September 30, 2015

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
392.0	671.4	N/A	1485.9	671.4	N/A	1485.9	1485.9

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to contract definitization and the exercise of options and contract modifications as funding became available.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/31/2019)	+30.5	-34.0
Previous Cumulative Variances	+26.8	-32.0
Net Change	+3.7	-2.0

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to 1) fewer hours than planned working Flight Investigation Test/Thermal and Impact Protection System; 2) less support of ongoing Memorandum of Requalification Agreement initiatives than planned. The cumulative cost variance remains very favorable and is expected to be sufficient to achieve schedule recovery.

The unfavorable net change in the schedule variance is due to 1) late Test Missile Kit hardware deliveries; 2) insulation manufacturing equipment refurbishment; 3) FY 2015 Circuit Card Assemblies production issues; 4) rework of Gas Generators; and 5) Test Console tasks delayed due to building availability associated with hurricane damage. These schedule delays are expected to be managed within program resources.

Notes

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

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

Contract Identification

Appropriation: Procurement
Contract Name: FY 16 Guidance Strategic Programs Alteration (SPALT)
Contractor: Charles Stark Draper Lab
Contractor Location: 55 Technology Square
 Cambridge, MA 02139
Contract Number: N00030-16-C-0008
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: February 02, 2016
Definitization Date: February 02, 2016

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
163.6	41.1	869	163.6	41.1	869	163.6	163.6

Contract Variance			
Item	Cost Variance		Schedule Variance
Cumulative Variances To Date (1/31/2019)		-1.8	-4.1
Previous Cumulative Variances		+2.2	0.0
Net Change		-4.0	-4.1

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to 1) Alternate Pendulous Integrating Gyro Accelerometer (AltPIGA) labor transfer from the FY 2015 subcontract to the FY 2016 subcontract for variable production support in several key build areas; 2) additional support of sensors production to recover schedule slip; 3) subcontractor unfavorable rate change. All unfavorable cost variances are expected to be managed within program resources.

The unfavorable cumulative schedule variance is due to 1) Interferometric Fiber-Optic Gyro (IFOG) integration and testing labor that has not taken place due to delayed thermal chamber material availability; 2) late delivery of previous contract's AltPIGA units has limited the downstream need for material, which impacts system credit for material receipt; 3) AltPIGA build inefficiencies and IFOG technical issues have caused delivery slip, however a schedule recovery plan is in place. All schedule delays are expected to be managed within program resources.

Notes

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

Contract Identification

Appropriation: Procurement
Contract Name: FY 17 Guidance Strategic Programs Alteration (SPALT)
Contractor: Charles Stark Draper Laboratory
Contractor Location: 55 Technology Square
 Cambridge, MA 02139
Contract Number: N00030-17-C-0008
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: February 01, 2017
Definitization Date: January 26, 2017

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
53.5	61.7	905	171.5	188.9	905	171.7	171.7

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to contract definitization and the exercising of contract options.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/31/2019)	+3.7	-0.4
Previous Cumulative Variances	-0.4	-0.2
Net Change	+4.1	-0.2

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to 1) Less than planned Alternate Pendulous Integrating Gyro Accelerometer (AltPIGA) subassembly rework and total production labor; 2) Less than planned Interferometric Fiber Optic Gyro (IFOG) variable production labor due to technical issue investigations. Technical investigation team and mitigation plan are in place. All cost risks are being managed within program resources.

The unfavorable net change in the schedule variance is due to a short term delay in the procurement of long lead material. All schedule delays are expected to be managed within program resources.

Notes

The FY 2017 Guidance contract specifies a Ceiling Price that applies to the Fixed Price Incentive Production CLINs only (Items 0001 and 0006). The remainder of the contract is comprised of option CLINs that do not have a Ceiling Price.

Contract Identification

Appropriation: Procurement
Contract Name: TRIDENT II FY 17 Production and Deployed Support
Contractor: Lockheed Martin Space Systems
Contractor Location: 1111 Lockheed Martin Way
 Sunnyvale, CA 94089
Contract Number: N00030-16-C-0100
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Fixed Fee (CPFF)
Award Date: July 14, 2016
Definitization Date: September 30, 2016

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
106.2	654.7	N/A	792.6	654.7	N/A	792.6	792.6

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to contract definitization and the exercising of options.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/31/2019)	+12.5	-34.8
Previous Cumulative Variances	+8.8	-4.2
Net Change	+3.7	-30.6

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to less effort associated with Support Equipment than originally planned, as well as prior year production activities delaying production efforts on the FY 2017 contract. The cumulative cost variance remains favorable and is expected to be sufficient to achieve schedule recovery.

The unfavorable net change in the schedule variance is due to 1) late Test Missile Kit (TMK) hardware deliveries from multiple vendors; 2) delays with previous TMK production builds; and 3) slower transition to FY 2017 motor production activities due to delays on the FY 2016 contract. These schedule delays are expected to be managed within program resources.

Notes

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

Contract Identification

Appropriation: Procurement
Contract Name: TRIDENT II FY 2018 Production and Deployed Support
Contractor: Lockheed Martin Space Systems
Contractor Location: 1111 Lockheed Martin Way
 Sunnyvale, CA 94089
Contract Number: N00030-17-C-0100
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Fixed Fee (CPFF)
Award Date: July 31, 2017
Definitization Date: October 01, 2017

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
418.7	580.0	N/A	418.7	580.0	N/A	1458.6	1458.6

Contract Variance			
Item	Cost Variance		Schedule Variance
Cumulative Variances To Date (1/31/2019)	+12.3		-3.6
Previous Cumulative Variances	--		--
Net Change	+12.3		-3.6

Cost and Schedule Variance Explanations

The favorable cumulative cost variance is due to 1) budget planning resulting from timing of contract modification; and 2) delay in start of hardware requalification due to facility modification and console installation. The cumulative cost variance remains very favorable.

The unfavorable cumulative schedule variance is due to delayed start of procurement efforts. All delays are being actively managed and expected to be within program resources.

Notes

This is the first time this contract is being reported.

The FY 2018 Production and Deployed Support contract specifies a ceiling price that applies to the Firm Fixed Price portion of this contract.

Deliveries and Expenditures

Deliveries					
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered	
Development	28	28	28	100.00%	
Production	529	529	533	99.25%	
Total Program Quantity Delivered	557	557	561	99.29%	

Expended and Appropriated (TY \$M)					
Total Acquisition Cost	42330.7	Years Appropriated			42
Expended to Date	39227.5	Percent Years Appropriated			89.36%
Percent Expended	92.67%	Appropriated to Date			39747.6
Total Funding Years	47	Percent Appropriated			93.90%

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

Notes					
<p>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.</p>					

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	January 22, 2018
Source of Estimate:	POE
Quantity to Sustain:	533
Unit of Measure:	Missile
Service Life per Unit:	43.00 Years
Fiscal Years in Service:	FY 2000 - FY 2042

Total missiles procured for the TRIDENT II (D5) missile program is 561. Of that number, 28 of those missiles were RDT&E missiles, with the remainder of 533 to be procured using Weapons Procurement, Navy (WPN) funding. Strategic Systems Programs (SSP) uses the number of 533 as O&S costs began in FY 2000 and ends in FY 2042. The 28 developmental missiles will not be sustained.

The costs reflected in this section are for FYs 2000-2042. This is due to the fact that TRIDENT II (D5) missile did not have to establish an O&S APB or report O&S costs prior to FY 2000. FY 2000 was the first year that SSP was required to begin showing O&S costs for TRIDENT II (D5) missile in its SAR.

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 will be procured for this program that will support the OHIO-Class submarine through FY 2042. The TRIDENT II (D5) missile will be the initial strategic weapon system (SWS) for the Ship, Submersible, Ballistic, Nuclear (SSBN) 826 COLUMBIA Class submarine.

The TRIDENT II (D5) missile SWS is completing its 29th 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 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 (OES) 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.

The TRIDENT II (D5) missile 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 (ASN) (Research, Development & Acquisition (RDA)), 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 (RDA) has determined the current APB is to remain open to support the SSBN 826 COLUMBIA Class submarine.

Antecedent Information

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.

Annual O&S Costs BY1983 \$M		
Cost Element	Trident II Missile Average Annual Cost Per Missile	TRIDENT I (C-4) (Antecedent) N/A
Unit-Level Manpower	--	--
Unit Operations	--	--
Maintenance	0.231	0.000
Sustaining Support	0.977	0.000
Continuing System Improvements	--	--
Indirect Support	0.003	0.000
Other	--	--
Total	1.211	--

While the TRIDENT II (D5) missile program will procure 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 SSI efforts, 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.

Item	Total O&S Cost \$M			
	Trident II Missile		TRIDENT I (C-4) (Antecedent)	
	Current Production APB Objective/Threshold	Current Estimate		
Base Year	N/A	N/A	27757.9	N/A
Then Year	N/A	N/A	68157.6	N/A

Equation to Translate Annual Cost to Total Cost

Exact calculation may differ slightly due to rounding:

\$1.211M is the average O&S cost per missile per year (in BY\$)

\$1.211M x 533 missiles = \$645.463M is the average O&S cost for all missiles per year (in BY\$)

\$645.463M x 43 years = \$27,758M is the total O&S cost for all missiles from FY 2000 - 2042 (in BY\$)

O&S Cost Variance		
Category	BY 1983 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2017 SAR	27737.0	
Programmatic/Planning Factors	20.9	Increases due to the following : 1) Sustainment of the SWS through the entire life of the OHIO Class and as the initial payload for the Ship, Submersible, Ballistic, Navy (SSBN) 826 COLUMBIA Class; and 2) Civilian personnel costs attributable to Workforce Reshaping. The PM will continue to update O&S costs as necessary as the budget years roll into the FYDP. An APB update is planned in FY 2025.
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	20.9	
Current Estimate	27757.9	

Disposal Estimate Details

Date of Estimate:	January 28, 2019
Source of Estimate:	POE
Disposal/Demilitarization Total Cost (BY 1983 \$M):	189.2

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.