Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy											Date: May 2021	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604558N *I New Design SSN*							
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
Total Program Element	2,623.689	309.212	242.108	503.252	-	503.252	-	-	-	-	-	-
1947: *New Design SSN HM&E*	1,734.755	77.255	193.259	459.032	-	459.032	-	-	-	-	-	-
1950: *New Design SSN Combat Sys Dev*	810.606	36.011	36.090	36.590	-	36.590	-	-	-	-	-	-
3062: *Submarine Multi-Mission Team Trainer*	47.456	2.998	2.759	7.630	-	7.630	-	-	-	-	-	-
9999: *Congressional Adds*	30.872	192.948	10.000	0.000	-	0.000	-	-	-	-	-	-
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 516												

A. Mission Description and Budget Item Justification

The increase in FY 2022 provides funding for the Tactical Submarine Evolution Plan (TSEP) which includes; the Modified Virginia Subsea & Seabed Warfare (Mod VA SSW) platform, Virginia Class Submarine Undersea Dominance Payload Integration (UDPI) (i.e., Advanced Payloads), Advanced Acoustic Sensors, host ship interaction with large volume UUVs, and future blocks concept designs. More specifically, this increase will support the ramp up in the accelerated development of the Mod VA SSW platform and the evaluation and development of capabilities/technologies for inclusion in the Block VI technical baseline. Funds will be executed at the Virginia Class design yard and numerous sub-vendors and warfare centers designing and developing critical, complex ship components necessary for integrating Mod VA SSW capability and advanced Block VI capabilities into the baseline class design. FY 2022 increase in Proj 3062 reflects a realignment from OPN LI 5661, supporting integration of DEVSECOPS in Submarine Multi-Mission Team Trainers (SMMTTs).

The U.S. Navy must maintain a submarine fleet that is of sufficient capability and numbers to defend American interests. The VIRGINIA Class Submarine, formerly the New Attack Submarine (New SSN), is being designed to fulfill this need. It will counter potential threats in a multi- mission capable submarine that has the ability to provide covert, sustained combat presence in denied waters. The primary goal of the program is to develop an affordable yet capable submarine by evaluating a broad range of system and technology alternatives, and pursuing significant capability and improved performance enhancements while managing technical risk. This Program Element (PE) provides the technology, prototype components, and systems engineering needed to design and construct the VIRGINIA Class Submarine and build its Hull, Mechanical and Electrical (HM&E) systems and Command, Control, Communications, and Intelligence (C3I) System. This PE directly supports the following VIRGINIA Class Submarine missions: (1) covert strike warfare (STRIKE); (2) anti-submarine warfare (ASW); (3) covert intelligence collection/surveillance (ISR), indication and warning (I&W), and electronic warfare (EW); (4) anti-surface ship warfare (ASUW); (5) special warfare; (6) covert mine warfare; and (7) battle group support.

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604558N *I New Design SSN*

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	321.010	259.443	317.698	-	317.698
Current President's Budget	309.212	242.108	503.252	-	503.252
Total Adjustments	-11.798	-17.335	185.554	-	185.554
• Congressional General Reductions	-	-1.155			
• Congressional Directed Reductions	-	-26.180			
• Congressional Rescissions	-	-			
• Congressional Adds	-	10.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.007	0.000			
• SBIR/STTR Transfer	-11.791	0.000			
• Program Adjustments	0.000	0.000	191.188	-	191.188
• Rate/Misc Adjustments	0.000	0.000	-5.634	-	-5.634

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2020	FY 2021
Project: 9999: *Congressional Adds*		
Congressional Add: *Future capability development*	96.474	0.000
Congressional Add: *Design risk reduction*	96.474	0.000
Congressional Add: *Out-of-Autoclave Technology for Submarines*	0.000	10.000
Congressional Add Subtotals for Project: 9999	192.948	10.000
Congressional Add Totals for all Projects	192.948	10.000

Change Summary Explanation

FY 2022 increases are driven by expanded investments to support the Tactical Submarine Evolution Plan (TSEP). Specifically, accelerating development of the Modified Virginia Subsea & Seabed Warfare (Mod VA SSW) platform to support the design and prototyping efforts necessary to achieve the program schedule. This includes a large prototyping effort focused on multiple complex ship components at multiple sub-vendors located around the country, as discussed in Project 1947.

FY 2022 adjustment of $5.1M realigns submarine training funding from OPN LI 5661 to support Submarine Multi-Mission Team Trainer (SMMTT) development for Development Security Operations (DEVSECOPS) implementation of latest Advanced Processor Build (APB) and Technical Insertion (TI), and new sensor/ payload capabilities related to VIRGINIA Class Attack Centers.

The FY 2022 funding request was reduced by $0.212 million to account for the availability of prior year execution balances.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy											Date: May 2021	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604558N / *New Design SSN*				Project (Number/Name) 1947 / *New Design SSN HM&E*			
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
1947: *New Design SSN HM&E*	1,734.755	77.255	193.259	459.032	-	459.032	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 516

A. Mission Description and Budget Item Justification

The increase in the FY 2022 provides funding for the Tactical Submarine Evolution Plan (TSEP) which includes; the Modified Virginia Subsea & Seabed Warfare (Mod VA SSW) platform, Virginia Class Submarine Undersea Dominance Payload Integration (UDPI), Advanced Acoustic Sensors, host ship interaction with large volume UUVs, and future block concept design. More specifically, this increase will support the ramp up in design and prototyping efforts of the Mod VA SSW platform and development of Block VI technical baseline. Funds will be executed at the Virginia Class design yard and numerous sub-vendors and warfare centers designing and developing critical, complex ship components necessary for integrating Mod VA SSW capability and advanced Block VI capabilities into the baseline class design.

This project encompasses all the ship system development efforts for the VIRGINIA Class Submarine and the Technology Insertion Program for reducing costs and upgrading performance of future hulls by virtue of improvements in ship design and systems. Technology development implementation and logistics for developmental items, and VIRGINIA Class test & evaluation are included. The thrust of these efforts will be to develop and apply multiple advanced system technologies which are integrated into the design of the VIRGINIA Class Submarine. Technologies developed in this program will be considered for applicability to the COLUMBIA Program (CLB) for commonality opportunities. New technologies are being transitioned from industry and government research and development programs where doing so offers substantial performance improvement and/or affordability payoffs. Transition opportunities include those from the Defense Advanced Research Projects Agency (DARPA) and Office of Naval Research (ONR) Future Naval Capabilities Program.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**
Title: New Design SSN HM&E	70.329	183.199	446.352	0.000	446.352
Articles:	-	-	-	-	-
FY 2021 Plans: -Continue and greatly expand VIRGINIA Class Submarine Undersea Dominance Payload Integration (UDPI) efforts to modify the current host ship systems (to include electrical, hydraulic, fluid systems, safety and security testing) in support of launching payloads from multiple different hull/ocean interfaces. Funding will be used for the non-recurring engineering (NRE) efforts to modify the Block V VIRGINIA Class design to support hosting of various advanced payloads. Additional UDPI efforts include; vendor component development, specification and diagram changes, design disclosure and ILS product reviews - all of which are required to support integrating the identified advanced payload systems into the technical baseline for a Block V insertion. Further details available at the appropriate classification level. Other related Tactical Submarine Evolution Plan (TSEP) efforts include:					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1947 / *New Design SSN HM&E*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
-Commence NRE and design efforts for Advanced Acoustic Sensors. -Continue efforts on Subsea Seabed Warfare (SSW) specific to VIRGINIA Class host ship integration. -Continue efforts to include concepts beyond Block V for host ship interaction with large volume UUVs. -Continue and expand efforts for Block VI preliminary design and concept development. -Complete installation of SDIP components and modifications during PSA. -Complete SAS integration and installation during PSA. -Continue development of HM&E systems concepts technologies, including obsolescence redesign and performance improvement, for integration into VIRGINIA Class Block V Technical Baseline. -Continue transition of products from the Office of Naval Research Manufacturing Technology Program (MANTECH) and transition of products from ONR FNC Programs.					
FY 2022 Base Plans: -Accelerate the design and prototyping of the Modified Virginia Subsea & Seabed Warfare (Mod VA SSW) platform to introduce significant SSW capability into a Virginia Class submarine. -Continue expanded Virginia Class Submarine Undersea Dominance Payload Integration (UDPI) design efforts to modify the current host ship systems (to include electrical, hydraulic, fluid systems, safety and security testing) in support of launching payloads from multiple different hull/ocean interfaces. Efforts include non-recurring engineering (NRE) to support hosting of various advanced payloads, NRE to support development of a reconfigurable space (RCS) within the VPM, vendor component development, specification and diagram changes, design disclosure, and ILS product reviews - all of which are required to support integrating the identified advanced payload systems into the technical baseline for a Block V and Block VI insertion. -Continue development of HM&E systems concepts technologies, including obsolescence redesign and performance improvement, for integration into Virginia Class Block VI Technical Baseline. -Continue transition of products from the Office of Naval Research Manufacturing Technology Program (MANTECH) and transition of products from ONR FNC Programs. -In accordance with the TSEP, preliminary design of advanced capability insertions in support of establishing the Block VI technical baseline. Efforts will include: -Preliminary design, integration and critical item testing of components for Advanced Acoustic Sensors and organic advanced undersea warfare capabilities; -Preliminary design and integration of host ship modifications to support interaction and hosting of multiple types of UUVs via multiple ocean interfaces; -Preliminary design and integration of SAS; -Preliminary design of evolved sail designs and improved hull treatment integration;					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1947 / *New Design SSN HM&E*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
-The evaluation, maturation, and integration of these candidate capabilities will continue in FY 2022 and 2023 in support of readiness for Block VI construction start, currently scheduled for FY 2024. -Further details available at the appropriate classification level. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The large FY 2022 increase is specifically targeted towards the Modified Virginia Subsea & Seabed Warfare (Mod VA SSW) platform and the ramp up planned for the design and prototyping efforts necessary to achieve the program schedule. This includes a large prototyping effort focused on multiple complex ship components at multiple sub-vendors located around the country.					
Title: TEST AND EVALUATION	6.926	10.060	12.680	0.000	12.680
Articles:	-	-	-	-	-
FY 2021 Plans: -Continue work associated with previous test events (IOT&E, Arctic, Dry-Deck Shelter, Block III FOT&E). This consists of documenting and testing fixes to deficiencies identified during previously completed Developmental and Operational Testing as well as addressing recommendations noted by the Oversight Community from OSD. -Analyze the data and publish the reports, from the PCU SOUTH DAKOTA (SSN 790) pre-PSA new construction trials of the modified ship components, that were tested at-sea, in order to establish the baseline performance. These trials consisted of a Weapon System Accuracy Trial (WSAT 1), an Acoustic Trial (ACTRL 1), an Underwater Electromagnetic Trial (UEM 1), and a Hydrodynamic Performance Trial (HPT 1). This information derived will be used to fully develop the next phase of testing which will be accomplished post-PSA. -Commence execution, data analysis, and publishing of preliminary reports, from the USS SOUTH DAKOTA (SSN 790) post-PSA trials in order to fully characterize the ship signature and re-baselined performance. These trials will consist of an Acoustic Trial (ACTRL 2), an Underwater Electromagnetic Trial (UEM 2), a Hydrodynamic Performance Trial (HPT2), a Tactical Weapons Proficiency Assist (TWPA), and UWDC Tactical Development (TACDEV) Exercises, along with performance assessments and Future Naval Capability (FNC) testing. The post-PSA trials will be modified to ensure full evaluation of the technology insertion changes (made during PSA) is done without requiring repeat testing already accomplished during the pre-PSA trials. The testing, data analysis, and report generation will continue into FY 2022. -Finalize plans for the test and evaluation phase of the Acoustic Superiority initiatives to meet current and future warfare requirements.					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1947 / *New Design SSN HM&E*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
-Continue efforts to develop the FOT&E plan, to include the Cybersecurity test strategy, for Block V. The Cybersecurity test strategy will be planned and executed in coordination with the COLUMBIA Class IOT&E Cybersecurity test strategy. -Complete the development of the Combined Shock and Submergence Test Report and Validation Report. -Continue development of the Block V Transient Shock Analysis Verification and Validation Plan, as well as, the Block V Vulnerability Assessment Report to meet the LFT&E legislation mandated in Title 10 USC 2366.					
FY 2022 Base Plans: -Continue work associated with previous test events (IOT&E, Arctic, Dry-Deck Shelter, Block III FOT&E). This consists of documenting and testing fixes to deficiencies identified during previously completed Developmental and Operational Testing as well as addressing recommendations noted by the Oversight Community from OSD. -Complete execution, data analysis, and publishing of preliminary as well as final reports, from the USS SOUTH DAKOTA (SSN 790) post-PSA trials in order to fully characterize the ship signature and re-baselined performance. These trials will consist of an Acoustic Trial (ACTRL 2), an Underwater Electromagnetic Trial (UEM 2), a Hydrodynamic Performance Trial (HPT2), a Tactical Weapons Proficiency Assist (TWPA), and UWDC Tactical Development (TACDEV) Exercises, along with performance assessments and Future Naval Capability (FNC) testing. The post-PSA trials will be modified to ensure full evaluation of the technology insertion changes (made during PSA) is done without requiring repeat testing already accomplished during the pre-PSA trials. -Finalize plans for the test and evaluation phase of the Acoustic Superiority initiatives to meet current and future warfare requirements. -Continue efforts to develop the FOT&E plan, to include the Cybersecurity test strategy, for Block V. The Cybersecurity test strategy will be planned and executed in coordination with the COLUMBIA Class IOT&E Cybersecurity test strategy. -Continue development of the Block V Transient Shock Analysis Verification and Validation Plan, as well as, the Block V Vulnerability Assessment Report to meet the LFT&E legislation mandated in Title 10 USC 2366.					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: Increase from FY 2021 to FY 2022 represents finalization of the test and evaluation phase for Acoustic Superiority initiatives. This increase support completion of test and evaluation and publishing of reports from USS SOUTH DAKOTA (SSN790) Post Shakedown Availability (PSA) Trials of the modified ship components in					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1947 / *New Design SSN HM&E*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
order to fully characterize the ship signature and re-baselined performance to meet current and future warfare requirements.					
Accomplishments/Planned Programs Subtotals	77.255	193.259	459.032	0.000	459.032

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• SCN/2013: *Virginia Class Submarine*	8,334.733	6,776.400	6,369.647	-	6,369.647	-	-	-	-	-	-
• OMN/0204283N: *Sub Ops & Safety*	10.836	10.875	8.371	-	8.371	-	-	-	-	-	-
• OPN/0942: *Virginia Class Support Equipment*	28.465	22.868	22.669	-	22.669	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

The VIRGINIA Class Submarine Program has implemented Integrated Product and Process Development (IPPD). The traditional distinct phasing of the design process has been replaced with the continuous concurrent engineering IPPD process. The IPPD approach has facilitated a smoother transition from design to manufacturing and has reduced the number of changes typically encountered during construction of the lead and early follow-on ships. In September 1997, Congress passed a law allowing General Dynamics Electric Boat (GDEB) and Northrop Grumman Newport News (NGNN), now Huntington Ingalls Industries - Newport News Shipbuilding (HII-NNS), to team for production of the first four VIRGINIA Class Submarines. Under the teaming agreement, GDEB remained the design yard for the VIRGINIA Class Submarine and HII-NNS became a part of the IPPD process. The Program Office is managing two Multi-Year Procurement (MYP) contracts. The first is for the Block III (FY09-13) ships. The second is for the Block IV (FY14-18) ships awarded April 2014. All Block I, II and III ships (SSNs 774-791) have been delivered. Ten Block IV ships are awarded and under construction. The program has awarded the fourth MYP (Block V) contract, incorporating Acoustic Superiority (AS) modifications and Virginia Payload Module (VPM).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1947 / *New Design SSN HM&E*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Component Development	WR	NSWC : Carderock, MD	272.883	5.266	Nov 2019	11.571	Oct 2020	14.534	Oct 2021	-		14.534	-	-	-
Component Development	WR	NUWC : Newport, RI	121.701	1.480	Nov 2019	9.698	Oct 2020	12.182	Oct 2021	-		12.182	-	-	-
Component Development	WR	NRL : Washington, DC	9.416	0.360	Nov 2019	0.791	Oct 2020	0.997	Oct 2021	-		0.997	-	-	-
Component Development	C/CPFF	Electric Boat : Groton, CT	1,003.036	61.251	Nov 2019	150.243	Nov 2020	404.905	Nov 2021	-		404.905	-	-	-
Component Development	C/CPFF	Progeny Applied : Manassas, VA	0.000	0.000		7.162	Dec 2020	9.027	Dec 2021	-		9.027	-	-	-
Component Development	SS/CPFF	Applied Research Laboratory : Penn State University	26.793	0.990	Dec 2019	2.175	Dec 2020	2.742	Dec 2021	-		2.742	-	-	-
Component Development	SS/FP	National Shipbuilding Research Program : Not Specified	5.739	0.500	Mar 2020	0.500	Mar 2021	0.630	Mar 2022	-		0.630	-	-	-
Component Development	Various	Miscellaneous : Not Specified	25.360	0.482	Dec 2019	1.059	Dec 2020	1.335	Dec 2021	-		1.335	-	-	-
		Subtotal	1,464.928	70.329		183.199		446.352		-		446.352	-	-	N/A

Remarks

FY 2022 increases supports accelerated design of HM&E product development for the Modified Virginia Subsea & Seabed Warfare (Mod VA SSW) platform, Virginia Class Submarine Undersea Dominance Payload Integration (UDPI), Advanced Acoustic Sensors, host ship interaction with large volume UUVs, and future block concept design for future blocks of Virginia Class.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation - DT&E	WR	NSWC : Carderock, MD	93.609	2.010	Nov 2019	2.917	Nov 2020	3.677	Nov 2021	-		3.677	-	-	-
Test and Evaluation - LFT&E	WR	NSWC : Carderock, MD	5.807	0.650	Nov 2019	0.905	Nov 2020	1.141	Nov 2021	-		1.141	-	-	-
Test and Evaluation - DT&E	WR	NUWC : Newport, RI	138.658	0.966	Nov 2019	1.398	Nov 2020	1.762	Nov 2021	-		1.762	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604558N / *New Design SSN*	Project (Number/Name) 1947 / *New Design SSN HM&E*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation - OT&E	PO	COMOPTEVFOR : Norfolk, VA	19.197	0.374	Nov 2019	0.533	Nov 2020	0.672	Nov 2021	-		0.672	-	-	-
Test and Evaluation - LFT&E	C/CPFF	Electric Boat : Groton, CT	2.620	0.325	Dec 2019	0.462	Nov 2020	0.582	Nov 2021	-		0.582	-	-	-
Test and Evaluation - LFT&E	WR	NUWC : Newport,RI	0.250	0.125	Nov 2019	0.181	Nov 2020	0.228	Nov 2021	-		0.228	-	-	-
Test and Evaluation - DT&E	C/CPFF	NUWC : Newport, RI - CORE Team	9.686	2.476	Dec 2019	3.664	Nov 2020	4.618	Nov 2021	-		4.618	-	-	-
		Subtotal	269.827	6.926		10.060		12.680		-		12.680	-	-	N/A

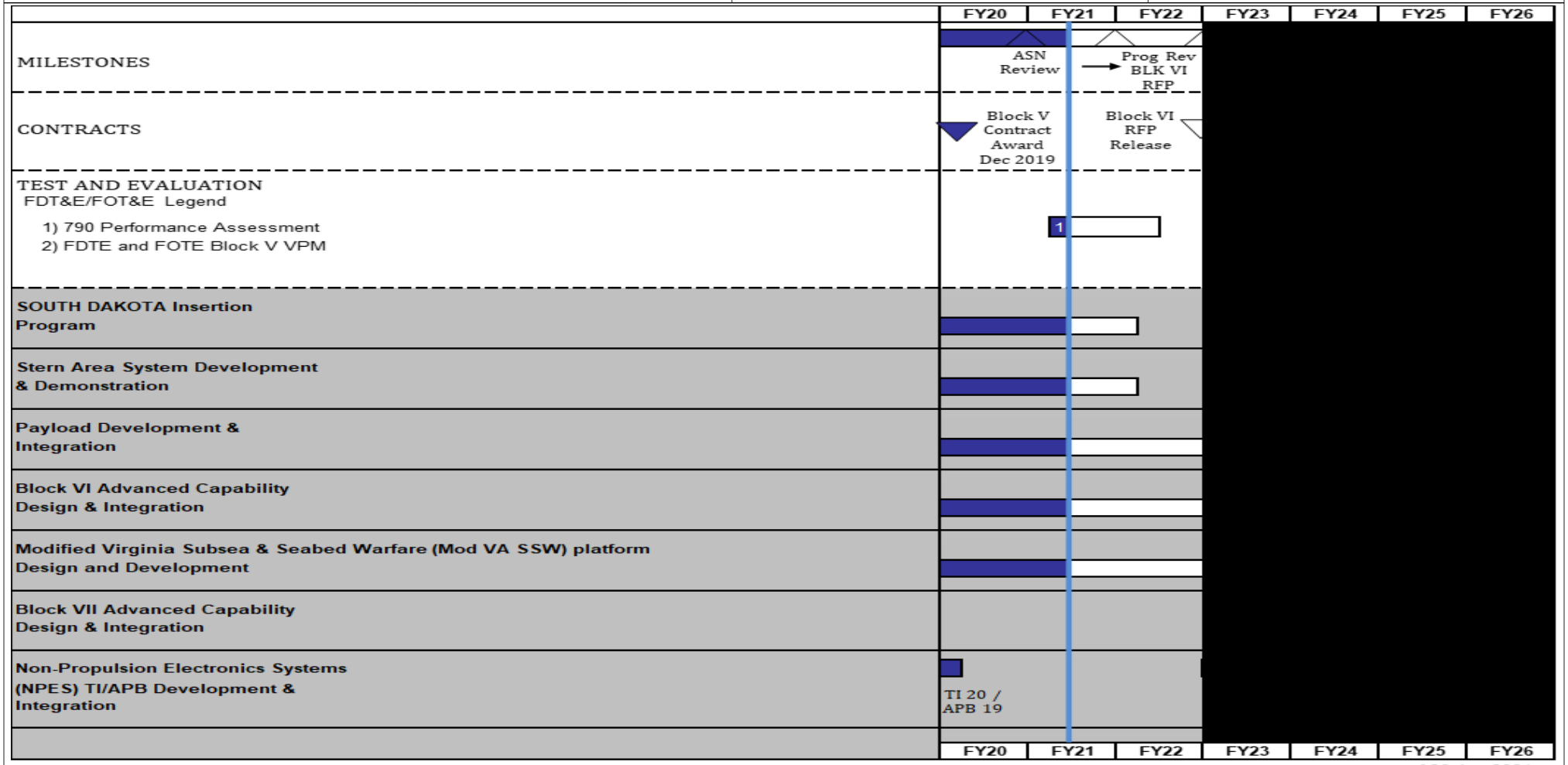
Remarks

FY 2022 Test and Evaluation increase supports the completion of data analysis, and report publication, from the USS SOUTH DAKOTA (SSN 790) post-PSA trials in order to establish the baseline performance. These efforts represent the completion of the test and evaluation phase of the Acoustic Superiority initiatives.

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,734.755	77.255		193.259		459.032		-		459.032	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1947 / *New Design SSN HM&E*



as of 30 Apr 2021

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1947 / *New Design SSN HM&E*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1947				
MILESTONE: VCS FY 20 Gate 6	4	2020	4	2020
MILESTONE: VCS FY 21 Gate 6	4	2021	4	2021
MILESTONE: VCS FY 22 Gate 6	4	2022	4	2022
MILESTONE: Prog Rev Block VI RFP	3	2022	3	2022
CONTRACTS: Block V Contract Award	1	2020	1	2020
CONTRACTS: Block VI RFP Release	4	2022	4	2022
TEST & EVALUATION: U/R 790 Performance Assessment	1	2021	2	2022
SOUTH DAKOTA Insertion Program	1	2020	1	2022
Stern Area System Development & Demonstration	1	2020	1	2022
Payload Development & Integration	1	2020	4	2022
Block VI Advanced Capability Design & Integration	1	2020	4	2022
Modified Virginia Subsea & Seabed Warfare (Mod VA SSW) platform Design and Development	1	2020	4	2022
Non-Propulsion Electronics Systems (NPES) TI20/APB19 Development & Integration	1	2020	1	2020

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy											Date: May 2021	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604558N / *New Design SSN*				Project (Number/Name) 1950 / *New Design SSN Combat Sys Dev*			
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
1950: *New Design SSN Combat Sys Dev*	810.606	36.011	36.090	36.590	-	36.590	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 516

A. Mission Description and Budget Item Justification

This project provides the engineering development required to outfit each ship of the VIRGINIA Class Submarine with a combat system which satisfies ORD requirements in all 7 mission areas, namely; ASW, STRIKE, ISR, Covert Mine Warfare, Battle Group Support, ASUW, and Special Warfare. The fully integrated combat system, otherwise referred to as the Non-Propulsion Electronics System (NPES), is composed of a collection of functional sub-systems, such as sonar, navigation, exterior communications, weapons launch, Large Vertical Array, Submarine Warfare Federated Tactical System (SWFTS) virtualization, Electronic Warfare Next Generation Architecture, etc., which evolve over the life of the program due to either competitive selection of new suppliers, component obsolescence replacement, increased technical performance, or improvements in reliability. Non-recurring engineering activity is needed to perform platform integration of the components, software modification to accommodate electronic data exchange, unique submarine environment qualification and update of all logistics products.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Sonar, Combat Control, and Architecture (S/CC/A) Subsystems	21.583	22.130	22.351	0.000	22.351
Articles:	-	-	-	-	-
Description: Continue development of S/CC/A System Improvements necessary to maintain VIRGINIA Class ORD compliance, counter CYBER threats, and maintain commonality with in-service submarine designs.					
FY 2021 Plans: -Continue TI-24 S/CC/A detailed design, programmed to be the configuration for the last 2 VCS Blk V hulls (SSN810 & SSN811) and leveraged by the Columbia Class 2nd hull (SSBN 827). -Initiate platform integration studies and analysis of a completely re-architected NPES infrastructure and conduct critical item testing of key enabling electronics components. -Conduct find, fix, and defect correction efforts associated with first time Large Vertical Array sonar at-sea performance testing.					
FY 2022 Base Plans: -Complete TI-24 S/CC/A detailed design, programmed to be the configuration for the last 2 VCS Blk V hulls (SSN810 & SSN811) and leveraged by the Columbia Class 2nd hull (SSBN 827). -Continue platform integration studies and analysis of a completely re-architected NPES infrastructure and conduct critical item testing of key enabling electronics components.					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1950 / *New Design SSN Combat Sys Dev*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
-Complete find, fix, and defect correction efforts associated with first time Large Vertical Array sonar at-sea performance testing. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Slight increase from FY 2021 to FY 2022 reflects inflation.					
Title: C3I Systems Engineering	14.428	13.960	14.239	0.000	14.239
Articles:	-	-	-	-	-
FY 2021 Plans: -Initiate NPES interfacing system software re-factoring to support the re-architected configuration that enables virtualization (separation of hardware/software dependency). -Conduct platform integration of the next generation inertial navigators, and Time Frequency Distribution System at COATS. -Conduct at-sea testing of the BPS-17 RADAR. -Initiate hotel services design change GFI stemming from re-allocation of space-weight-power in conjunction with the NPES re-architecture initiative. ***FY 2022 Base Plans:*** -Initiate design of next generation displays in the Command and Control Center to mitigate obsolescence risk associated with existing glass. -Complete design of improved speed log automated sensor fail-over and integrate within the inertial navigation suite & NPES network. -Complete design of the fiber optic backbone and Command and Control System Module (CCSM) power distribution for the virtualization enabled, CYBER hardened TI-24 and beyond architecture. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Slight increase from FY 2021 to FY 2022 reflects inflation.					
Accomplishments/Planned Programs Subtotals	36.011	36.090	36.590	0.000	36.590

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1950 / *New Design SSN Combat Sys Dev*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• SCN/2013: *VA CL*	8,334.733	6,776.400	6,369.647	-	6,369.647	-	-	-	-	-	-
• O&M,N/0204283N: *Sub Ops & Safety*	10.836	10.875	8.371	-	8.371	-	-	-	-	-	-
• OPN/0942: *VA CL Support Equipment*	28.465	22.868	22.669	-	22.669	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

The VIRGINIA Class Submarine Program has implemented Integrated Product and Process Development (IPPD). The traditional distinct phasing of the design process has been replaced with the continuous concurrent engineering IPPD process. The IPPD approach has facilitated a smoother transition from design to manufacturing and has reduced the number of changes typically encountered during construction of the lead and early follow-on ships. In September 1997, Congress passed a law allowing General Dynamics Electric Boat (GDEB) and Northrop Grumman Newport News (NGNN), now Huntington Ingalls Industries - Newport News Shipbuilding (HII-NNS), to team for production of the first four VIRGINIA Class Submarines. Under the teaming agreement, GDEB remained the design yard for the VIRGINIA Class Submarine and HII-NNS became a part of the IPPD process. The Program Office is managing two Multi-Year Procurement (MYP) contracts. The first is for the Block III (FY09-13) ships. The second is for the Block IV (FY14-18) ships awarded April 2014. All Block I, II and III ships (SSNs 774-791) have been delivered. Ten Block IV ships are awarded and under construction. The program has awarded the fourth MYP (Block V) contract, incorporating Acoustic Superiority (AS) modifications and Virginia Payload Module (VPM).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1950 / *New Design SSN Combat Sys Dev*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Unique Virginia Class Improvements	Various	Various : Various	94.171	3.749	Feb 2020	3.350	Feb 2021	6.014	Feb 2022	-		6.014	-	-	-
Tech Insertion/Advanced Processing Build (TI/APB) Integration	Various	Various : TBD	11.144	6.131	Nov 2019	5.850	Nov 2020	5.400	Nov 2021	-		5.400	-	-	-
Photonics	C/CPIF	Kollmorgen : Northampton, MA	62.336	0.808	Jan 2020	0.950	Jan 2021	0.000		-		0.000	-	-	-
Large Vertical Array South Dakota Improvement Program	Various	Various : TBD	11.443	4.799	Nov 2019	4.250	Oct 2020	3.500	Jan 2022	-		3.500	-	-	-
Platform Integration	SS/CPFF	Electric Boat : Groton, CT	64.001	5.449	Nov 2019	5.950	Nov 2020	4.900	Nov 2021	-		4.900	-	-	-
Photonics	C/CPIF	Lockheed Martin : Manassas, VA	0.500	0.000		0.000		0.986	Dec 2021	-		0.986	-	-	-
Virtualization Enabling Architecture Development	Various	Various : TBD	10.168	4.550	Nov 2019	5.100	Nov 2020	4.613	Nov 2021	-		4.613	-	-	-
Technical Direction Agent	WR	NUWC : Newport, RI	327.884	5.480	Nov 2019	5.845	Oct 2020	5.861	Nov 2021	-		5.861	-	-	-
Systems Engineering	WR	NSWC : Carderock, MD	14.889	0.420	Nov 2019	0.450	Oct 2020	1.300	Nov 2021	-		1.300	-	-	-
Acoustic Intercept & Sonar	C/CPFF	Progeny Applied : Manassas, VA	1.135	0.400	Jan 2020	0.425	Jan 2021	0.000		-		0.000	-	-	-
High Frequency & Sonar Sensors	C/CPFF	Applied Research Lab : University of Texas	0.700	0.455	Nov 2019	0.485	Nov 2020	0.000		-		0.000	-	-	-
Systems Engineering	WR	SSC : Charleston, SC	11.377	1.345	Nov 2019	1.275	Nov 2020	1.980	Nov 2021	-		1.980	-	-	-
Systems Engineering	WR	NUWC : Keyport, WA	14.235	0.875	Nov 2019	0.825	Oct 2020	0.575	Nov 2021	-		0.575	-	-	-
Miscellaneous	Various	Various : Various	147.067	0.600	Dec 2019	0.500	Jan 2021	1.461	Jan 2022	-		1.461	-	-	-
		Subtotal	771.050	35.061		35.255		36.590		-		36.590	-	-	N/A

Remarks

Estimates associated with the time varying non-recurring developmental scope of work tied to this project, not indices tied to inflation.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604558N / *New Design SSN*	Project (Number/Name) 1950 / *New Design SSN Combat Sys Dev*	

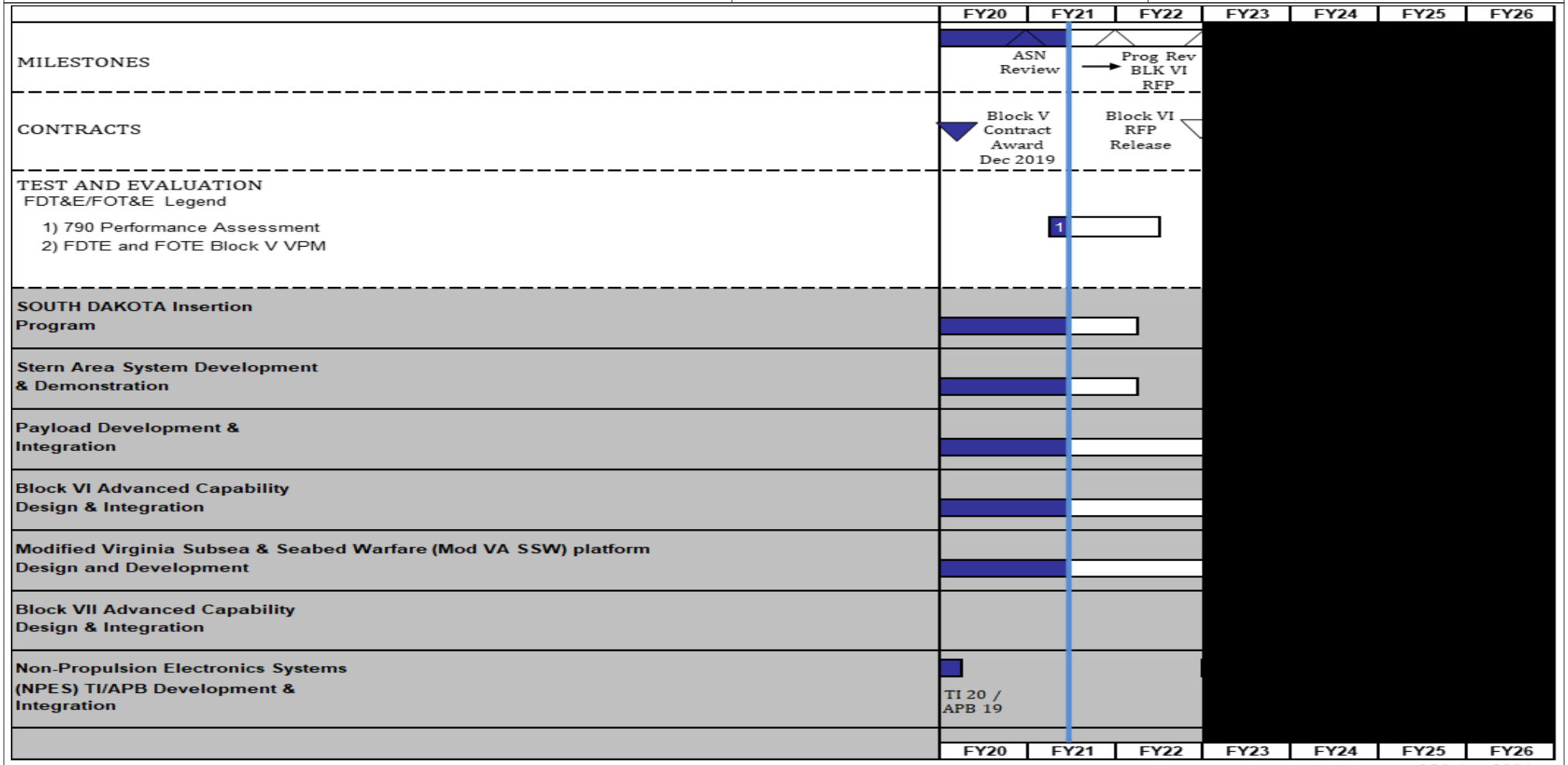
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Support Services/ETS	C/CPAF	SEAPORT : Rockville, MD	39.556	0.950	Dec 2019	0.835	Dec 2020	0.000		-		0.000	-	-	-
		Subtotal	39.556	0.950		0.835		0.000		-		0.000	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	810.606	36.011		36.090		36.590		-		36.590	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1950 / *New Design SSN Combat Sys Dev*



as of 30 Apr 2021

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1950 / *New Design SSN Combat Sys Dev*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1950				
MILESTONE: VCS FY20 Gate 6	4	2020	4	2020
MILESTONE: VCS FY21 Gate 6	4	2021	4	2021
MILESTONE: VCS FY22 Gate 6	4	2022	4	2022
MILESTONE: Prog Rev Block VI RFP	3	2022	3	2022
CONTRACTS: Block V Contract Award	1	2020	1	2020
CONTRACTS: Block VI RFP Release	4	2022	4	2022
TEST & EVALUATION: U/R 790 Performance Assessment	1	2021	2	2022
SOUTH DAKOTA Improvement Program	1	2020	1	2022
Stern Area System Development & Demonstration	1	2020	1	2022
Payload Development & Integration	1	2020	4	2022
Block VI Advanced Capability Design & Integration	1	2020	4	2022
Modified Virginia Subsea & Seabed Warfare (Mod VA SSW) platform Design and Development	1	2020	4	2022
Non-Propulsion Electronics Systems (NPES) TI20/APB19 Development & Integration	1	2020	1	2020

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604558N / *New Design SSN*	Project (Number/Name) 3062 / *Submarine Multi-Mission Team Trainer*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3062: *Submarine Multi-Mission Team Trainer*	47.456	2.998	2.759	7.630	-	7.630	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

To achieve desired submarine force readiness levels, it is necessary to construct highly sophisticated shore based Combat System Team Trainers capable of training personnel in all aspects of submarine approach, attack and surveillance operations in a controlled, simulated environment. The Combat Control System (CCS) AN/BYG-1 and sonar system AN/BQQ-10 are installed on SSN, SSBN and SSGN class submarines. These tactical systems are planned for future upgrades with the next hardware and software revisions which will provide enhanced War Fighter capabilities. The Tactical Acoustic Rapid COTS (commercial-off-the-shelf) Insertion (ARCI) phased upgrades are also being installed with future revisions. The Advanced Processing Builds (APB) and Technical Insertion (TI) sensors, which feed technology insertion into the CCS/Acoustic development, directly impact the trainers.

The Submarine Multi-Mission Team Trainer (SMMTT) supports operator, employment, strike, and Battle Group training for enlisted and officer pipelines. The SMMTT provides operators and combat teams the opportunity to train ashore, prior to, and between deployments. The shore based training provides a means of maintaining team proficiency in stand alone or in combined team mode prior to ship deployment.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Submarine Multi-Mission Team Trainer	2.998	2.759	7.630	0.000	7.630
Articles:	-	-	-	-	-
Description: To achieve desired submarine force readiness levels, it is necessary to construct highly sophisticated shore based Combat System Team Trainers capable of training personnel in all aspects of submarine approach, attack and surveillance operations in a controlled, simulated environment.					
FY 2021 Plans: Develop implementation of latest Advanced Processor Build (APB), Technical Insertion (TI) and associated training displays. These efforts include visualization of new sensor developments and simulations to match advancements in tactical systems supported by SMMTT. These efforts will also integrate the APB into the SMMTT baseline along with integrating the Sonar Sensors WSQ-9, Low Cost Conformal Array (LCCA) and Large Vertical Array (LVA). FY2021 also adds Torpedo Reference Model simulation with payload APB 5+ Software Build to the portfolio.					
FY 2022 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 3062 / *Submarine Multi-Mission Team Trainer*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Develop implementation of latest Advanced Processor Build (APB), Technical Insertion (TI) and associated training displays. These efforts include visualization of new sensor developments and simulations to match advancements in tactical systems supported by SMMTT. The SMMTT baseline includes integration of WSQ-9, Low Cost Conformal Array (LCCA), Large Vertical Array (LVA), Large Aperture Bow (LAB) Array and Torpedo Reference Model simulation. FY2022 adds Development Security Operations (DEVSECOPS) implementation of latest Advanced Processor Build (APB) and Technical Insertion (TI) into the Submarine Attack Center baseline. This effort includes new sensor developments and simulations to match advancements in tactical systems supported in Submarine Attack Centers. This effort updates Virtual/New Targets, Improved Payloads and New Electronic Warfare sensors. This effort will follow the delivery of tactical software to the Fleet on a quarterly basis as required by the Fleet. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding increases by 4.871 in FY2022 due to the addition of Development Security Operations (DEVSECOPS) implementation of latest Advanced Processor Build (APB) and Technical Insertion (TI) into the Submarine Attack Center baseline. This increase in RDTE is a zero sum internal realignment from OPN 5661.					
Accomplishments/Planned Programs Subtotals	2.998	2.759	7.630	0.000	7.630

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• OPN/5661: *Submarine Training Device Mods*	67.229	69.240	75.813	-	75.813	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

The SMMTT program software development is accounted for in this RDTEN line. All production kits are procured in OPN PE 0804731N BLI 566100.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 3062 / *Submarine Multi-Mission Team Trainer*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Component Development	Reqn	NSWC/CD : Bethesda, MD	33.358	1.316	Dec 2019	1.259	Dec 2020	0.936	Dec 2021	-		0.936	-	-	-
Component Development	C/CPFF	ARL UT : UT Austin, TX	3.593	0.336	Jan 2020	0.300	Jan 2021	0.370	Jan 2022	-		0.370	-	-	-
Component Development	Reqn	NUWC/NPT : Newport, RI	10.505	1.346	Jan 2020	1.200	Oct 2020	5.824	Oct 2021	-		5.824	-	-	-
Component Development	C/CPFF	ARL Penn : Phildelphia, PA	0.000	0.000		0.000		0.500	Jan 2022	-		0.500	-	-	-
		Subtotal	47.456	2.998		2.759		7.630		-		7.630	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	47.456	2.998		2.759		7.630		-		7.630	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 3062 / *Submarine Multi-Mission Team Trainer*

PB22_RDTEN_0604558N_Apr 2021 3062 R4 NATIVE SUBMIT 30 April 2021 R4 3062-SMMTT (22) Native

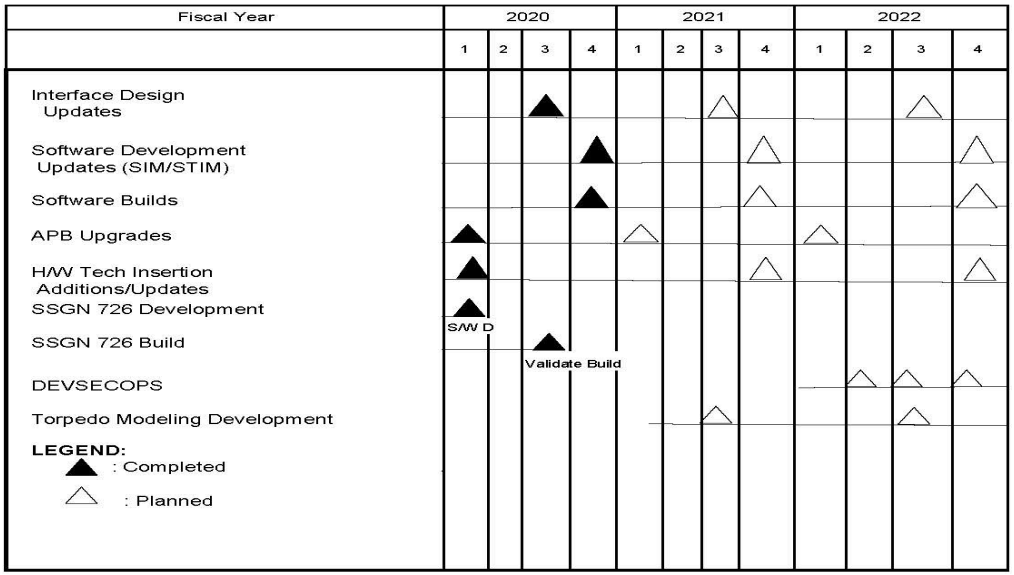


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 3062 / *Submarine Multi-Mission Team Trainer*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3062				
Interface design updates: Interface Design Updates	3	2021	3	2022
Software Development Updates: Software Development Updates (SIM/STIM)	4	2021	4	2022
Software Builds: Software Builds	4	2021	4	2022
Advanced Processing Build(APB) Upgrades: Advanced Processing Build (APB) Upgrades	1	2021	1	2022
Hardware Tech Insertion Updates: Hardware Tech Insertion Updates	1	2021	4	2022
DEVSECOPS: DEVSECOPS	1	2022	4	2022
Torpedo Modeling Development: Torpedo Modeling Development	1	2021	3	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604558N / *New Design SSN*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
9999: *Congressional Adds*	30.872	192.948	10.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The FY20 RDT&E Congressional add for Future Capability Development was applied to existing contracts and government activities to continue design and development of the Modified Virginia Subsea & Seabed Warfare (Mod VA SSW) platform.

This FY20 RDT&E Congressional add for Design Risk Reduction was applied to existing efforts to continue design and development of the Modified Virginia Subsea & Seabed Warfare (Mod VA SSW) platform and to support design risk reduction.

This FY21 RDT&E Congressional add for Out-of-Autoclave technology development will support completion of qualifications for potential use in production of Virginia Class components.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021
Congressional Add: Future capability development ***FY 2020 Accomplishments:*** N/A ***FY 2021 Plans:*** N/A	96.474	0.000
Congressional Add: Design risk reduction ***FY 2020 Accomplishments:*** N/A ***FY 2021 Plans:*** N/A	96.474	0.000
Congressional Add: Out-of-Autoclave Technology for Submarines ***FY 2020 Accomplishments:*** N/A ***FY 2021 Plans:*** -Funding for Out-of-Autoclave technology development will support completion of technology qualifications for potential use in production of Bow Conformal Array, Large Vertical Array, and Virginia Payload Module components.	0.000	10.000
Congressional Adds Subtotals	192.948	10.000

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 9999 / *Congressional Adds*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• SCN/2013: *Virginia Class Submarine*	8,334.733	4,235.880	6,887.359	-	6,887.359	-	-	-	-	-	-
• OMN/0204283N: *Sub Ops & Safety*	11.462	12.003	13.515	-	13.515	-	-	-	-	-	-
• OPN/0942: *Virginia Class Support Equipment*	28.465	22.868	22.964	-	22.964	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Maximizing leverage of FY20 and FY21 Congressional adds to reduce risk and incorporate advanced technology into the program of record.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 9999 / *Congressional Adds*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Electronic support measure full spectrum digitalization	C/CPFF	Progeny Systems : Manassas, VA	11.577	0.000		0.000		0.000		-		0.000	-	-	-
SBIR Increase	TBD	Various : Various	19.295	0.000		0.000		0.000		-		0.000	-	-	-
Future Capability Development	TBD	Various : Various	0.000	96.474	Apr 2020	0.000		0.000		-		0.000	-	-	-
Design Risk Reduction	TBD	Various : Various	0.000	96.474	Apr 2020	0.000		0.000		-		0.000	-	-	-
Out-of-Autoclave Technology for Submarines	TBD	Various : Various	0.000	0.000		10.000	Jun 2021	0.000		-		0.000	-	-	-
		Subtotal	30.872	192.948		10.000		0.000		-		0.000	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	30.872	192.948		10.000		0.000		-		0.000	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 9999 / *Congressional Adds*

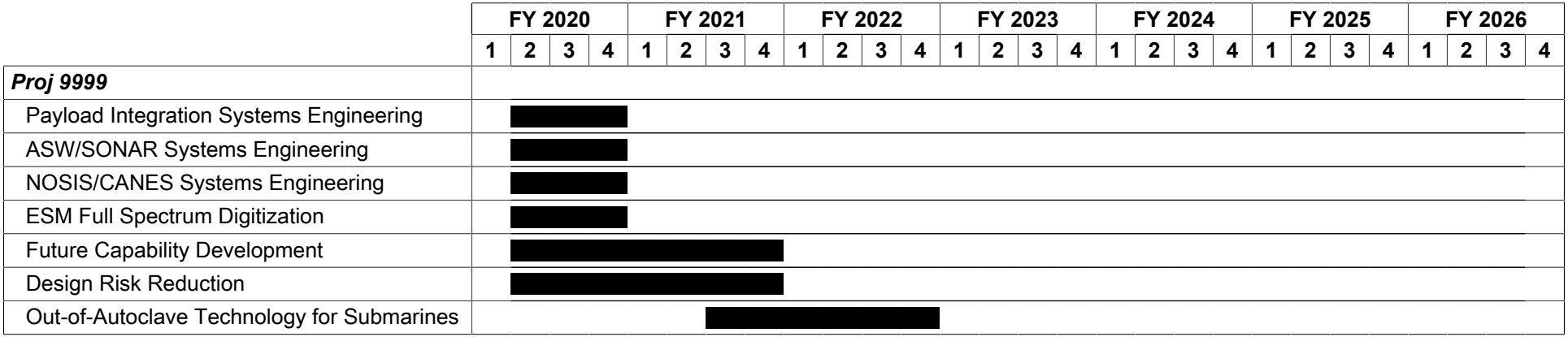


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 9999				
Payload Integration Systems Engineering	2	2020	4	2020
ASW/SONAR Systems Engineering	2	2020	4	2020
NOSIS/CANES Systems Engineering	2	2020	4	2020
ESM Full Spectrum Digitization	2	2020	4	2020
Future Capability Development	2	2020	4	2021
Design Risk Reduction	2	2020	4	2021
Out-of-Autoclave Technology for Submarines	3	2021	4	2022