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**Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	2,932.901	233.335	486.938	307.585	-	307.585	272.911	261.180	260.056	268.565	Continuing	Continuing
1947: <i>New Design SSN HM&amp;E</i>	1,812.010	186.113	442.718	267.895	-	267.895	222.307	211.384	211.503	219.477	Continuing	Continuing
1950: <i>New Design SSN Combat Sys Dev</i>	846.617	34.923	36.590	31.365	-	31.365	42.155	41.349	39.964	40.374	Continuing	Continuing
3062: <i>Submarine Multi-Mission Team Trainer</i>	50.454	2.652	7.630	8.325	-	8.325	8.449	8.447	8.589	8.714	Continuing	Continuing
9999: <i>Congressional Adds</i>	223.820	9.647	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	233.467

**Program MDAP/MAIS Code:**  
**Project MDAP/MAIS Code(s):** 516

**A. Mission Description and Budget Item Justification**

FY 2023 funding provides for the continued execution of the Tactical Submarine Evolution Plan (TSEP) which includes; Virginia Class Submarine Undersea Dominance Payload Integration (UDPI) (i.e., Advanced Payloads), Advanced Acoustic Sensors, and future blocks concept designs. FY 2023 will support the evaluation and development of capabilities/technologies for inclusion in the Virginia Class 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 advanced Block VI capabilities into the baseline class design. FY 2023 decreases in Proj 1947 reflect the reprioritization of design efforts supporting future undersea warfare capabilities and a realignment of funds to prioritize class obsolescence and sustainment. FY 2023 increases in Proj 3062 reflect continued 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.

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<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
Previous President's Budget	242.108	503.252	0.000	-	0.000
Current President's Budget	233.335	486.938	307.585	-	307.585
Total Adjustments	-8.773	-16.314	307.585	-	307.585
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-16.314			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-8.773	0.000			
• Program Adjustments	0.000	0.000	0.000	-	0.000
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000
• Adjustments to Budget Year	-	-	307.585	-	307.585

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 9999: *Congressional Adds*

Congressional Add: *Out-of-Autoclave Technology for Submarines*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	<b>FY 2021</b>	<b>FY 2022</b>
	9.647	0.000
	9.647	0.000
	9.647	0.000

**Change Summary Explanation**

The FY 2023 funding request was reduced by \$5.000 million to account for the availability of prior year execution balances.

FY 2023 decreases are driven by the reprioritization of design efforts supporting future undersea warfare capabilities and the realignment of funds to prioritize obsolescence and sustainment across the Virginia Class portfolio. Funds are realigned to OPN LI 0941 and OPN LI 0942 to support Virginia Class obsolescence and wholeness for ship control modernization backfit, periodic technical refresh of Commercial of the Shelf (COTS) technologies, battery management upgrades, material condition monitoring, Hull Mechanical & Electrical (HM&E) system sustainment, diesel generator control panel laptops, weapons launch handling system refresh, IAH propulsor backfit, modified tailcone, Weapon Launch Consoles Integrated Enclosure (WLCIE) refresh, and pressure hull casting replacements.

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FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2023 Navy **Date:** April 2022

<b>Appropriation/Budget Activity</b> 1319 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>				<b>Project (Number/Name)</b> 1947 / <i>New Design SSN HM&amp;E</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
1947: <i>New Design SSN HM&amp;E</i>	1,812.010	186.113	442.718	267.895	-	267.895	222.307	211.384	211.503	219.477	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**Project MDAP/MAIS Code:** 516

**A. Mission Description and Budget Item Justification**

FY 2023 decreases in Proj 1947 reflect the reprioritization of design efforts supporting future undersea warfare capabilities and a realignment of funds to prioritize class obsolescence and sustainment. FY 2023 funding provides for the continued execution of the Tactical Submarine Evolution Plan (TSEP) which includes; Virginia Class Submarine Undersea Dominance Payload Integration (UDPI) (i.e., Advanced Payloads), Advanced Acoustic Sensors, and future blocks concept designs. FY 2023 will support the development of capabilities/technologies for inclusion in the Virginia Class 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 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)**

	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
<b>Title:</b> New Design SSN HM&E	176.053	430.038	253.873	0.000	253.873
<b>Articles:</b>	-	-	-	-	-
<b>FY 2022 Plans:</b>					
-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, vendor component development, specification and diagram changes, design disclosure, and ILS product reviews - all of which are required to					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Navy	<b>Date:</b> April 2022
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<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 1947 / <i>New Design SSN HM&amp;E</i>
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**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
<p>support integrating the identified advanced payload systems into the technical baseline for a Block V and Block VI insertion.</p> <ul style="list-style-type: none"> <li>-Continue development of HM&amp;E systems concepts technologies, including obsolescence redesign and performance improvement, for integration into Virginia Class Block VI Technical Baseline.</li> <li>-Continue transition of products from the Office of Naval Research Manufacturing Technology Program (MANTECH) and transition of products from ONR FNC Programs.</li> <li>-In accordance with the TSEP, preliminary design of advanced capability insertions in support of establishing the Block VI technical baseline. Efforts will include:                             <ul style="list-style-type: none"> <li>-Preliminary design, integration and critical item testing of components for Advanced Acoustic Sensors and organic advanced undersea warfare capabilities;</li> <li>-Preliminary design and integration of host ship modifications to support interaction and hosting of multiple types of UUVs via multiple ocean interfaces;</li> <li>-Preliminary design of improved hull treatment integration;</li> </ul> </li> <li>-The continued evaluation, maturation, and integration of these candidate capabilities supports readiness for Block VI construction start.</li> <li>-Further details available at the appropriate classification level.</li> </ul> <p><b><i>FY 2023 Base Plans:</i></b></p> <ul style="list-style-type: none"> <li>-Continue 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, 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 Block V and Block VI insertion.</li> <li>-Continue development of HM&amp;E systems concepts technologies, including obsolescence redesign and performance improvement, for integration into Virginia Class Block VI Technical Baseline.</li> <li>-Continue transition of products from the Office of Naval Research Manufacturing Technology Program (MANTECH) and transition of products from ONR FNC Programs.</li> <li>-In accordance with the TSEP, preliminary design of advanced capability insertions in support of establishing the Block VI technical baseline. Efforts will include:                             <ul style="list-style-type: none"> <li>-Preliminary design, integration and critical item testing of components for Advanced Acoustic Sensors and organic advanced undersea warfare capabilities;</li> </ul> </li> </ul>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2023 Navy **Date:** April 2022

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 1947 / <i>New Design SSN HM&amp;E</i>
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**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
<p>-Preliminary design and integration of host ship modifications to support interaction and hosting of multiple types of UUVs via multiple ocean interfaces;</p> <p>-Preliminary design of improved hull treatment integration;</p> <p>-The continued evaluation, maturation, and integration of these candidate capabilities will support readiness for Block VI construction start.</p> <p>-Further details available at the appropriate classification level.</p> <p><b>FY 2023 OCO Plans:</b> N/A</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> The FY 2023 decrease accounts for the reprioritization of design efforts supporting future undersea warfare capabilities and the realignment of funds to prioritize obsolescence and sustainment across the Virginia Class portfolio. Regarding obsolescence and sustainment, funds are realigned to OPN LI 0941 and OPN LI 0942 to support Virginia Class obsolescence and wholeness for ship control modernization backfit, periodic technical refresh of Commercial of the Shelf (COTS) technologies, battery management upgrades, material condition monitoring, HM&amp;E system sustainment, diesel generator control panel laptops, weapons launch handling system refresh, IAH propulsor backfit, modified tailcone, Weapon Launch Consoles Integrated Enclosure (WLCIE) refresh, and pressure hull casting replacements.</p>					
<p><b>Title:</b> TEST AND EVALUATION</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2022 Plans:</b> -Continue work associated with previous test events (IOT&amp;E, Arctic, Dry-Deck Shelter, Block III FOT&amp;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 (HPT 2), 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.</p>	10.060	12.680	14.022	0.000	14.022
	-	-	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Navy		<b>Date:</b> April 2022
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
<p>-Continue efforts to develop the FOT&amp;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&amp;E Cybersecurity test strategy.</p> <p>-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&amp;E legislation mandated in Title 10 USC 2366.</p> <p>-Provide updates to the VA Class Program Protection Plan (PPP) to account for changes to the Cybersecurity Testing Strategy and update to the Platform Level Criticality Analysis.</p> <p><b>FY 2023 Base Plans:</b></p> <p>-Continue work associated with previous test events (IOT&amp;E, Arctic, Dry-Deck Shelter, Block III FOT&amp;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.</p> <p>-Continue efforts to develop the FOT&amp;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&amp;E Cybersecurity test strategy.</p> <p>-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&amp;E legislation mandated in Title 10 USC 2366.</p> <p>-Provide updates to the VA Class Program Protection Plan (PPP) to account for changes to the Cybersecurity Testing Strategy and update to the Platform Level Criticality Analysis.</p> <p><b>FY 2023 OCO Plans:</b></p> <p>N/A</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b></p> <p>Increase from FY 2022 to FY 2023 represents continuation of work associated with previous test events (IOT&amp;E, Arctic, Dry-Deck Shelter, Block III FOT&amp;E) in order to fully characterize performance to meet current and future warfare requirements along with additional efforts supporting PPP update.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	186.113	442.718	267.895	0.000	267.895

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• SCN/2013: <i>Virginia Class Submarine</i>	6,776.400	6,339.647	6,864.537	-	6,864.537	8,334.854	8,747.033	7,778.226	7,515.906	7,815.279	152,448.166

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Navy	<b>Date:</b> April 2022
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<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 1947 / <i>New Design SSN HM&amp;E</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OMN/0204283N: <i>Sub Ops &amp; Safety</i>	10.875	9.024	8.885	-	8.885	9.315	9.344	9.484	9.503	Continuing	Continuing
• OPN/0942: <i>Virginia</i> <i>Class Support Equipment</i>	22.868	22.669	32.300	-	32.300	32.076	43.597	52.098	39.771	Continuing	Continuing

**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).

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 1947 / <i>New Design SSN HM&amp;E</i>
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<b>Product Development (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Component Development	WR	NSWC : Carderock, MD	278.149	11.571	Oct 2020	14.534	Oct 2021	14.346	Oct 2022	-		14.346	Continuing	Continuing	Continuing
Component Development	WR	NUWC : Newport, RI	123.181	9.698	Oct 2020	12.182	Oct 2021	12.024	Oct 2022	-		12.024	Continuing	Continuing	Continuing
Component Development	WR	NRL : Washington, DC	9.776	0.791	Oct 2020	0.997	Oct 2021	0.984	Oct 2022	-		0.984	Continuing	Continuing	Continuing
Component Development	C/CPFF	Electric Boat : Groton, CT	1,064.287	143.097	Nov 2020	388.591	Nov 2021	212.963	Nov 2022	-		212.963	Continuing	Continuing	Continuing
Component Development	C/CPFF	Progeny Applied : Manassas, VA	0.000	7.162	Dec 2020	9.027	Dec 2021	8.910	Dec 2022	-		8.910	Continuing	Continuing	Continuing
Component Development	SS/CPFF	Applied Research Laboratory : Penn State University	27.783	2.175	Dec 2020	2.742	Dec 2021	2.706	Dec 2022	-		2.706	Continuing	Continuing	Continuing
Component Development	SS/FP	National Shipbuilding Research Program : Not Specified	6.239	0.500	Mar 2021	0.630	Mar 2022	0.622	Mar 2023	-		0.622	Continuing	Continuing	Continuing
Component Development	Various	Miscellaneous : Not Specified	25.842	1.059	Dec 2020	1.335	Dec 2021	1.318	Dec 2022	-		1.318	Continuing	Continuing	Continuing
<b>Subtotal</b>			1,535.257	176.053		430.038		253.873		-		253.873	Continuing	Continuing	N/A

**Remarks**  
 The FY 2023 decrease accounts for the reprioritization of design efforts supporting future undersea warfare capabilities and the realignment of funds to prioritize obsolescence and sustainment across the Virginia Class portfolio. Regarding obsolescence and sustainment, funds are realigned to OPN LI 0941 and OPN LI 0942 to support Virginia Class obsolescence and wholeness for ship control modernization backfit, periodic technical refresh of Commercial of the Shelf (COTS) technologies, battery management upgrades, material condition monitoring, HM&E system sustainment, diesel generator control panel laptops, weapons launch handling system refresh, IAH propulsor backfit, modified tailcone, Weapon Launch Consoles Integrated Enclosure (WLCIE) refresh, and pressure hull casting replacements.

<b>Test and Evaluation (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test and Evaluation - DT&E	WR	NSWC : Carderock, MD	95.619	2.917	Nov 2020	3.677	Nov 2021	4.066	Nov 2022	-		4.066	Continuing	Continuing	Continuing
Test and Evaluation - LFT&E	WR	NSWC : Carderock, MD	6.457	0.905	Nov 2020	1.141	Nov 2021	1.262	Nov 2022	-		1.262	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 1947 / <i>New Design SSN HM&amp;E</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test and Evaluation - DT&E	WR	NUWC : Newport, RI	139.624	1.398	Nov 2020	1.762	Nov 2021	1.948	Nov 2022	-		1.948	Continuing	Continuing	Continuing
Test and Evaluation - OT&E	PO	COMOPTEVFOR : Norfolk, VA	19.571	0.533	Nov 2020	0.672	Nov 2021	0.743	Nov 2022	-		0.743	Continuing	Continuing	Continuing
Test and Evaluation - LFT&E	C/CPFF	Electric Boat : Groton, CT	2.945	0.462	Nov 2020	0.582	Nov 2021	0.644	Nov 2022	-		0.644	Continuing	Continuing	Continuing
Test and Evaluation - LFT&E	WR	NUWC : Newport, RI	0.375	0.181	Nov 2020	0.228	Nov 2021	0.252	Nov 2022	-		0.252	Continuing	Continuing	Continuing
Test and Evaluation - DT&E	C/CPFF	NUWC : Newport, RI - CORE Team	12.162	3.664	Nov 2020	4.618	Nov 2021	5.107	Nov 2022	-		5.107	Continuing	Continuing	Continuing
<b>Subtotal</b>			276.753	10.060		12.680		14.022		-		14.022	Continuing	Continuing	N/A

**Remarks**  
Increase from FY 2022 to FY 2023 represents continuation of work associated with previous test events (IOT&E, Arctic, Dry-Deck Shelter, Block III FOT&E) in order to fully characterize performance to meet current and future warfare requirements along with additional efforts supporting PPP update.

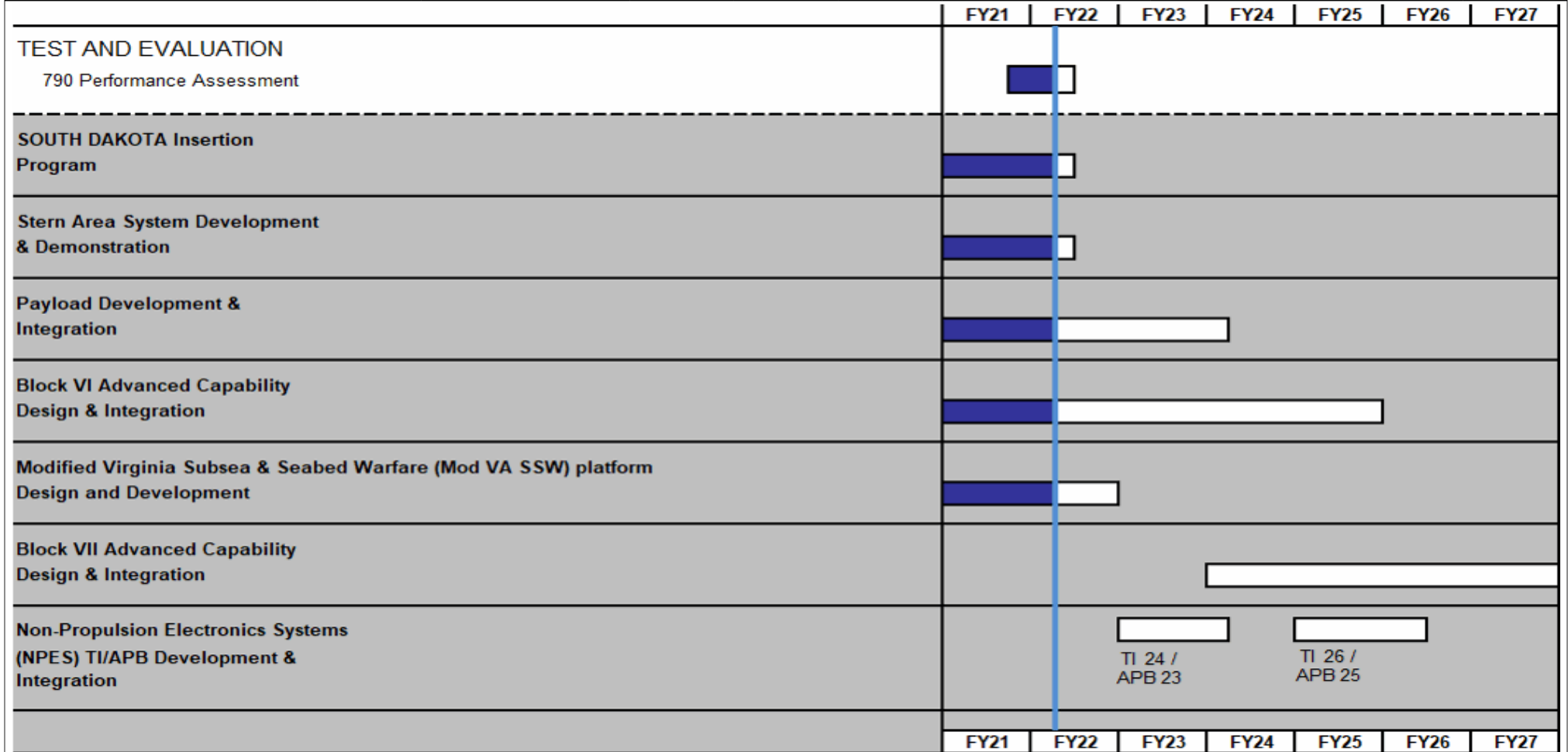
	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	1,812.010	186.113	442.718	267.895	-	267.895	Continuing	Continuing	N/A

**Remarks**

**UNCLASSIFIED**

**Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 1947 / <i>New Design SSN HM&amp;E</i>
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as of 03 Mar 2022

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**Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 1947 / <i>New Design SSN HM&amp;E</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 1947</i></b>				
TEST & EVALUATION: U/R 790 Performance Assessment	4	2021	2	2022
SOUTH DAKOTA Insertion Program	1	2021	2	2022
Stern Area System Development & Demonstration	1	2021	2	2022
Payload Development & Integration	1	2021	4	2024
Block VI Advanced Capability Design & Integration	1	2021	4	2025
Modified Virginia Subsea & Seabed Warfare (Mod VA SSW) platform Design and Development	1	2021	4	2022
NPES TI24/APB23 Development & Integration	1	2023	1	2024
NPES TI26/APB25 Development & Integration	1	2025	2	2026

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Navy										<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 1319 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>				<b>Project (Number/Name)</b> 1950 / <i>New Design SSN Combat Sys Dev</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
1950: <i>New Design SSN Combat Sys Dev</i>	846.617	34.923	36.590	31.365	-	31.365	42.155	41.349	39.964	40.374	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
<b>Project MDAP/MAIS Code:</b> 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)**

	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
<b>Title:</b> C3I Systems Engineering	13.509	14.239	12.303	0.000	12.303
<b>Articles:</b>	-	-	-	-	-
<b>FY 2022 Plans:</b>					
-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.					
<b>FY 2023 Base Plans:</b>					
-Continue design of next generation displays in the Command and Control Center to mitigate obsolescence risk associated with existing glass.					
- Perform end-to-end system of systems design and certification testing of the re-designed navigation distribution suite and safety of flight ship control system operating within the enhanced TI-24 cyber environment.					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Navy	<b>Date:</b> April 2022
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<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 1950 / <i>New Design SSN Combat Sys Dev</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
<p>- Conduct platform level studies designed to rebalance Command and Control Systems Module power, cooling, weight, and fiber cabling conduit among subsystem Structurally Integrated Enclosures, necessary to sustain NPES modernization/tech refresh.</p> <p><b>FY 2023 OCO Plans:</b> N/A</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Decrease from FY 2022 to FY 2023 reflects a reallocation of efforts to account for Program execution.</p>					
<p><b>Title:</b> Sonar, Combat Control, and Architecture (S/CC/A) Subsystems</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> 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.</p> <p><b>FY 2022 Plans:</b> -Complete TI-24 S/CC/A detailed design, programmed to be the configuration for the last 2 VCS Blk V hulls (SSN810 &amp; 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. -Complete find, fix, and defect correction efforts associated with first time Large Vertical Array sonar at-sea performance testing.</p> <p><b>FY 2023 Base Plans:</b> -Deliver Government Furnished Information (GFI) to the shipbuilder which defines the space, weight, power, and cooling requirements for all TI-24 NPES configuration. -Initiate Environmental Qualification Testing of the COTS electronics in the TI-24 re-architected NPES. -Conduct design and prototyping of the inboard signal processing suite required for the Bow Conformal Array. -Perform S/CC/A trade studies on Tactical Submarine Evolution Program (TSEP) candidate war fighting capabilities.</p> <p><b>FY 2023 OCO Plans:</b> N/A</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Decrease from FY 2022 to FY 2023 reflects a reallocation of efforts to account for Program execution.</p>	21.414	22.351	19.062	0.000	19.062
	-	-	-	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	34.923	36.590	31.365	0.000	31.365

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Navy		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 1950 / <i>New Design SSN Combat Sys Dev</i>

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2023</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• SCN/2013: VA CL	6,776.400	6,369.647	6,864.537	-	6,864.537	8,334.854	8,747.033	7,778.226	7,515.906	7,815.279	152,478.166
• O&M,N/0204283N: <i>Sub Ops &amp; Safety</i>	10.875	9.024	8.885	-	8.885	9.315	9.344	9.484	9.503	Continuing	Continuing
• OPN/0942: VA CL <i>Support Equipment</i>	22.868	22.669	32.300	-	32.300	32.076	43.597	52.098	39.771	Continuing	Continuing

**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).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Unique Virginia Class Improvements	Various	Various : Various	97.920	3.350	Feb 2021	6.014	Feb 2022	5.155	Feb 2023	-		5.155	Continuing	Continuing	Continuing
Tech Insertion/Advanced Processing Build (TI/APB) Integration	Various	Lockheed Martin : Manassas, VA	17.275	5.597	Nov 2020	5.400	Nov 2021	4.629	Nov 2022	-		4.629	Continuing	Continuing	Continuing
Photonics	C/CPIF	Kollmorgen : Northampton, MA	63.144	0.950	Jan 2021	0.000		0.000		-		0.000	0.000	64.094	-
Large Vertical Array South Dakota Improvement Program	Various	Various : TBD	16.242	4.066	Oct 2020	3.500	Jan 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Tactical Submarine Evolution Program (TSEP) Advanced Array Studies and Modeling	Various	Lockheed Martin : Manassas, VA	0.000	0.000		0.000		3.000	Oct 2022	-		3.000	0.000	3.000	-
Platform Integration	SS/CPFF	Electric Boat : Groton, CT	69.450	5.693	Nov 2020	4.900	Nov 2021	4.200	Nov 2022	-		4.200	Continuing	Continuing	Continuing
Photonics	C/CPIF	Lockheed Martin : Manassas, VA	0.500	0.000		0.986	Dec 2021	0.845	Dec 2022	-		0.845	Continuing	Continuing	Continuing
Virtualization Enabling Architecture Development	Various	Various : TBD	14.718	4.880	Nov 2020	4.613	Nov 2021	3.954	Nov 2022	-		3.954	Continuing	Continuing	Continuing
Technical Direction Agent	WR	NUWC : Newport, RI	333.364	5.592	Oct 2020	5.861	Nov 2021	5.026	Nov 2022	-		5.026	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : Carderock, MD	15.309	0.450	Oct 2020	1.300	Nov 2021	1.114	Nov 2022	-		1.114	Continuing	Continuing	Continuing
Acoustic Intercept & Sonar	C/CPFF	Progeny Applied : Manassas, VA	1.535	0.425	Jan 2021	0.000		0.000		-		0.000	0.000	1.960	-
High Frequency & Sonar Sensors	C/CPFF	Applied Research Lab : University of Texas	1.155	0.485	Nov 2020	0.000		0.000		-		0.000	0.000	1.640	-
Systems Engineering	WR	SSC : Charleston, SC	12.722	1.275	Nov 2020	1.980	Nov 2021	1.697	Nov 2022	-		1.697	Continuing	Continuing	Continuing
Systems Engineering	WR	NUWC : Keyport, WA	15.110	0.825	Oct 2020	0.575	Nov 2021	0.493	Nov 2022	-		0.493	Continuing	Continuing	Continuing
Miscellaneous	Various	Various : Various	147.667	0.500	Jan 2021	1.461	Jan 2022	1.252	Jan 2023	-		1.252	Continuing	Continuing	Continuing
<b>Subtotal</b>			806.111	34.088		36.590		31.365		-		31.365	Continuing	Continuing	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 1950 / <i>New Design SSN Combat Sys Dev</i>
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<b>Product Development (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

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

<b>Management Services (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor Support Services/ETS	C/CPAF	SEAPORT : Rockville, MD	40.506	0.835	Dec 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			40.506	0.835		0.000		0.000		-		0.000	Continuing	Continuing	N/A

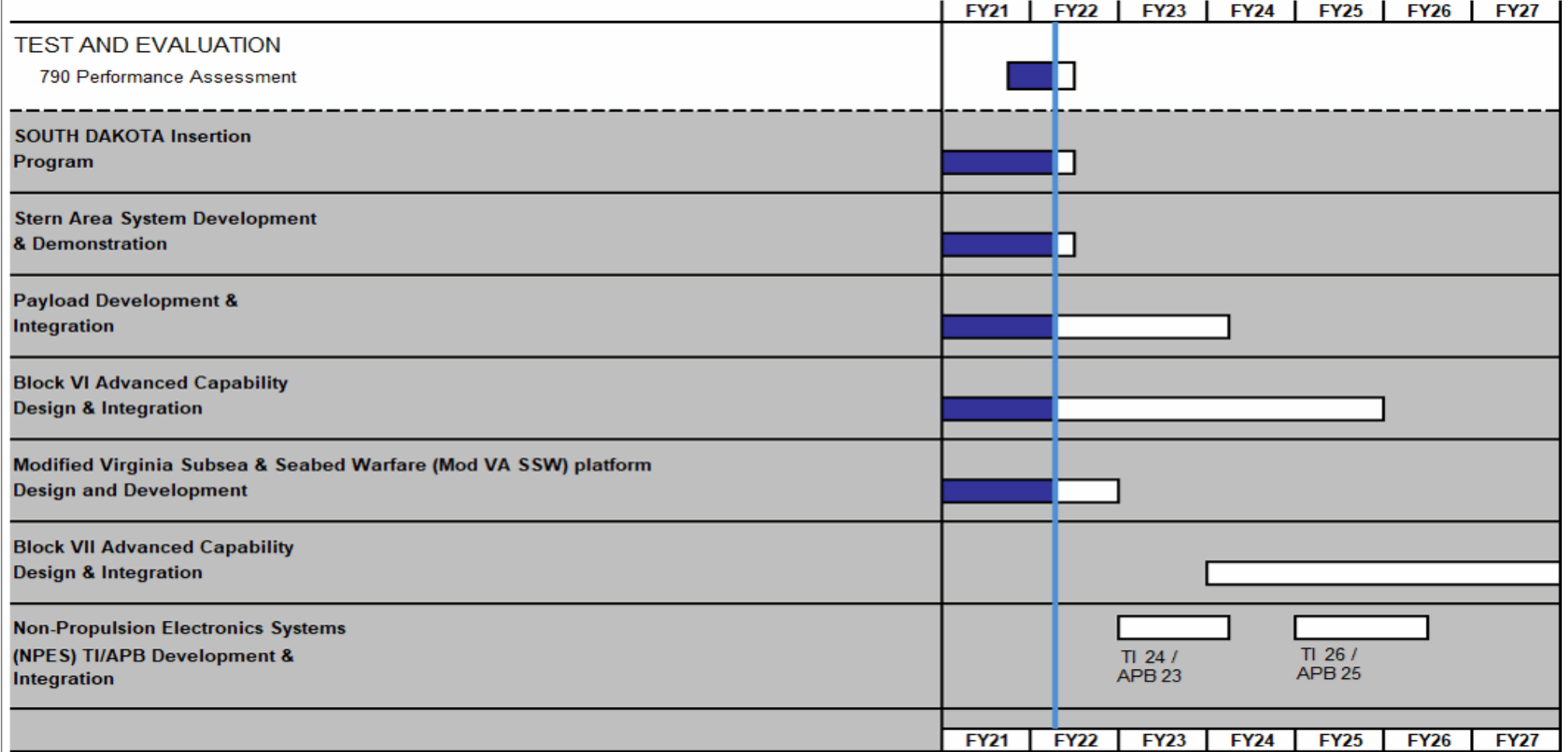
	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	846.617	34.923	36.590	31.365	-	31.365	Continuing	Continuing	N/A

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 1950 / <i>New Design SSN Combat Sys Dev</i>
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as of 03 Mar 2022

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2023 Navy **Date:** April 2022

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 1950 / <i>New Design SSN Combat Sys Dev</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 1950</i></b>				
TEST & EVALUATION: U/R 790 Performance Assessment	4	2021	2	2022
SOUTH DAKOTA Improvement Program	1	2021	2	2022
Stern Area System Development & Demonstration	1	2021	2	2022
Payload Development & Integration	1	2021	4	2024
Block VI Advanced Capability Design & Integration	1	2021	4	2025
Modified Virginia Subsea & Seabed Warfare (Mod VA SSW) platform Design and Development	1	2021	4	2022
NPES TI24/APB 23 Development & Integration	1	2023	1	2024
NPES TI26/APB25 Development & Integration	1	2025	2	2026

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Navy										<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 1319 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>				<b>Project (Number/Name)</b> 3062 / <i>Submarine Multi-Mission Team Trainer</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3062: <i>Submarine Multi-Mission Team Trainer</i>	50.454	2.652	7.630	8.325	-	8.325	8.449	8.447	8.589	8.714	Continuing	Continuing
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)**

	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
<b>Title:</b> Submarine Multi-Mission Team Trainer	2.652	7.630	8.325	0.000	8.325
<b>Articles:</b>	-	-	-	-	-
<b>Description:</b> 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.					
<b>FY 2022 Plans:</b> 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.					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Navy		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 3062 / <i>Submarine Multi-Mission Team Trainer</i>

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
<p>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.</p> <p><b>FY 2023 Base Plans:</b> 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.</p> <p>FY2023 provide 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.</p> <p><b>FY 2023 OCO Plans:</b> N/A</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Increase of \$0.695M from FY 2022 to FY 2023 to support a TYCOMS requirement to design an improved Mine Warfare Acoustic Interface for SMMTT Torpedo Modeling Simulation.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	2.652	7.630	8.325	0.000	8.325

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• OPN/5661: <i>Submarine Training Device Mods</i>	69.216	75.813	80.591	-	80.591	78.938	79.821	81.520	83.080	Continuing	Continuing

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Navy		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 3062 / <i>Submarine Multi-Mission Team Trainer</i>

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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**Remarks**

**D. Acquisition Strategy**

The SMMTT program software development is accounted for in this RDTEN line. All production kits are procured in OPN BLI 5661.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 3062 / <i>Submarine Multi-Mission Team Trainer</i>
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Fiscal Year	2021				2022				2023				2024				2025				2026				2027							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Interface Design Updates			▲				△				△				△				△				△				△				△	
Software Development Updates (SIM/STIM)			▲				△				△				△				△				△				△				△	
Software Builds			▲				△				△				△				△				△				△				△	
APB Upgrades	▲				△				△				△				△				△				△				△			
H/W Tech Insertion					△						△				△				△				△				△				△	
DEVSECOPS						△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Torpedo Modeling Development		▲				△				△				△				△				△				△				△		

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2023 Navy</b>		<b>Date: April 2022</b>
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 3062 / <i>Submarine Multi-Mission Team Trainer</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3062</b>				
Interface design updates: Interface Design Updates	3	2021	3	2027
Software Development Updates: Software Development Updates (SIM/STIM)	4	2021	4	2027
Software Builds: Software Builds	4	2021	4	2027
Advanced Processing Build(APB) Upgrades: Advanced Processing Build (APB) Upgrades	1	2021	1	2027
Hardware Tech Insertion Updates: Hardware Tech Insertion Updates	1	2022	4	2027
DEVSECOPS: DEVSECOPS	2	2022	4	2027
Torpedo Modeling Development: Torpedo Modeling Development	3	2021	3	2027

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Navy										<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 1319 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>				<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
9999: <i>Congressional Adds</i>	223.820	9.647	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	233.467
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

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)**

	<b>FY 2021</b>	<b>FY 2022</b>
<b>Congressional Add:</b> Out-of-Autoclave Technology for Submarines	9.647	0.000
<b>FY 2021 Accomplishments:</b> -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.		
<b>FY 2022 Plans:</b> N/A		
<b>Congressional Adds Subtotals</b>	9.647	0.000

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• SCN/2013: <i>Virginia Class Submarine</i>	6,776.400	6,369.647	6,237.485	-	6,237.485	5,014.393	7,940.182	5,110.390	7,326.598	15,426.787	152,478.166
• OMN/0204283N: <i>Sub Ops &amp; Safety</i>	10.815	9.024	9.047	-	9.047	9.191	9.219	9.386	9.553	Continuing	Continuing
• OPN/0942: <i>Virginia Class Support Equipment</i>	22.868	22.669	32.300	-	32.300	32.076	43.597	52.098	39.771	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

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



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**Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</i>
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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Proj 9999</b>	
Future Capability Development	██████████
Design Risk Reduction	██████████
Out-of-Autoclave Technology for Submarines	████████████████████

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2023 Navy **Date:** April 2022

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604558N / <i>New Design SSN</i>	<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 9999</i></b>				
Future Capability Development	1	2021	4	2021
Design Risk Reduction	1	2021	4	2021
Out-of-Autoclave Technology for Submarines	3	2021	4	2022