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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Navy **Date:** March 2023

| | |
|--|---|
| Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i> | R-1 Program Element (Number/Name) PE 0604558N / <i>New Design SSN</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 2,932.769 | 468.358 | 316.085 | 234.356 | - | 234.356 | 274.988 | 270.025 | 265.831 | 273.298 | Continuing | Continuing |
| 1947: <i>New Design SSN HM&E</i> | 1,998.123 | 425.840 | 267.895 | 187.282 | - | 187.282 | 222.949 | 219.942 | 216.650 | 223.210 | Continuing | Continuing |
| 1950: <i>New Design SSN Combat Sys Dev</i> | 881.540 | 35.154 | 31.365 | 38.572 | - | 38.572 | 43.521 | 41.411 | 40.375 | 41.181 | Continuing | Continuing |
| 3062: <i>Submarine Multi-Mission Team Trainer</i> | 53.106 | 7.364 | 8.325 | 8.502 | - | 8.502 | 8.518 | 8.672 | 8.806 | 8.907 | Continuing | Continuing |
| 9999: <i>Congressional Adds</i> | 0.000 | 0.000 | 8.500 | 0.000 | - | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 8.500 |

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

A. Mission Description and Budget Item Justification

FY 2024 funding provides for the continued execution of Virginia Class Submarine Undersea Dominance Payload Integration (UDPI) (i.e., Advanced Payloads), Advanced Acoustic Sensors, and future blocks concept designs. FY 2024 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 2024 decreases in Proj 1947 reflect the reprioritization of design efforts supporting future undersea warfare capabilities and the planned transition of effort from design to construction.

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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| Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i> | R-1 Program Element (Number/Name) PE 0604558N / <i>New Design SSN</i> |
|--|---|

| B. Program Change Summary (\$ in Millions) | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 486.938 | 307.585 | 272.911 | - | 272.911 |
| Current President's Budget | 468.358 | 316.085 | 234.356 | - | 234.356 |
| Total Adjustments | -18.580 | 8.500 | -38.555 | - | -38.555 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | 8.500 | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | -0.025 | 0.000 | | | |
| • SBIR/STTR Transfer | -18.555 | 0.000 | | | |
| • Program Adjustments | 0.000 | 0.000 | -40.119 | - | -40.119 |
| • Rate/Misc Adjustments | 0.000 | 0.000 | 1.564 | - | 1.564 |

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

Project: 9999: *Congressional Adds*

Congressional Add: *Precision maneuvering units*

| | FY 2022 | FY 2023 |
|---|----------------|----------------|
| | 0.000 | 8.500 |
| Congressional Add Subtotals for Project: 9999 | 0.000 | 8.500 |
| Congressional Add Totals for all Projects | 0.000 | 8.500 |

Change Summary Explanation

The FY 2024 decrease accounts for the reprioritization of design efforts to properly align funds to the Submarine In Service program for investment in early battery failure mitigations for operational submarines. Additionally, this decrease reflects the planned transition of effort from design to construction.

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| Appropriation/Budget Activity 1319 / 5 | | | | | R-1 Program Element (Number/Name) PE 0604558N / <i>New Design SSN</i> | | | | Project (Number/Name) 1947 / <i>New Design SSN HM&E</i> | | | |
|--|-------------|---------|---------|--------------|---|---------------|---------|---------|---|---------|------------------|------------|
| COST (\$ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
| 1947: <i>New Design SSN HM&E</i> | 1,998.123 | 425.840 | 267.895 | 187.282 | - | 187.282 | 222.949 | 219.942 | 216.650 | 223.210 | Continuing | Continuing |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

Project MDAP/MAIS Code: 516

A. Mission Description and Budget Item Justification

FY 2024 decreases in Proj 1947 reflect the reprioritization of design efforts supporting future undersea warfare capabilities and the planned transition of effort from design to construction. FY 2024 funding provides for the continued execution of Virginia Class Submarine Undersea Dominance Payload Integration (UDPI) (i.e., Advanced Payloads), Advanced Acoustic Sensors, and future blocks concept designs. FY 2024 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 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 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|---------|---------|--------------|-------------|---------------|
| Title: New Design SSN HM&E | 413.160 | 253.873 | 176.313 | 0.000 | 176.313 |
| Articles: | - | - | - | - | - |
| <i>FY 2023 Plans:</i> | | | | | |
| -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. | | | | | |
| -Continue development of HM&E systems concepts technologies, including obsolescence redesign and performance improvement, for integration into Virginia Class Block VI Technical Baseline. | | | | | |

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

| | | | | | |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each) | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|

-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;
- The continued evaluation, maturation, and integration of these candidate capabilities will support readiness for Block VI construction start.
- Further details available at the appropriate classification level.

FY 2024 Base Plans:

- 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.
- 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.
- Continue design, integration and critical item testing of components for Advanced Acoustic Sensors and organic advanced undersea warfare capabilities;
- Continue design and integration of host ship modifications to support interaction and hosting of multiple types of UUVs via multiple ocean interfaces;
- The continued evaluation, maturation, and integration of these candidate capabilities will support readiness for Block VI construction start.
- Further details available at the appropriate classification level.

FY 2024 OCO Plans:

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy | | Date: March 2023 |
| Appropriation/Budget Activity 1319 / 5 | R-1 Program Element (Number/Name) PE 0604558N / <i>New Design SSN</i> | Project (Number/Name) 1947 / <i>New Design SSN HM&E</i> |

| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each) | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| N/A | | | | | |
| <p><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> The FY 2024 decrease accounts for the reprioritization of design efforts to properly align funds to the Submarine In Service program for investment in early battery failure mitigations for operational submarines. Additionally, this decrease reflects the refinement of scope associated with the establishment of the Block VI technical baseline and the planned transition of effort from design to construction.</p> | | | | | |
| <p><i>Title:</i> TEST AND EVALUATION</p> | 12.680 | 14.022 | 10.969 | 0.000 | 10.969 |
| <p align="right"><i>Articles:</i></p> | - | - | - | - | - |
| <p><i>FY 2023 Plans:</i> -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. -Conduct the Hydrodynamic Performance Trial (HPT 2) and Future Naval Capability (FNC) testing on USS SOUTH DAKOTA (SSN 790) that was deferred in FY 2022. -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 Vulnerability Assessment Report to include all three aspects of Survivability: Susceptibility, Vulnerability, and Recoverability, as well as, the Block V Transient Shock Analysis Verification and Validation to meet the LFT&E legislation mandated in Title 10 USC 2366. -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. -Support integration of the Conventional Prompt Strike (CPS) Program into our Warfare Requirements and Test plans to meet Class Operational Capabilities.</p> | | | | | |
| <p><i>FY 2024 Base Plans:</i> -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. -Publish the Hydrodynamic Performance Trial (HPT 2) and Future Naval Capability (FNC) testing final reports for USS SOUTH DAKOTA (SSN 790).</p> | | | | | |

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

| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each) | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 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. -Continue development of the Block V Vulnerability Assessment Report to include all three aspects of Survivability: Susceptibility, Vulnerability, and Recoverability, as well as, the Block V Transient Shock Analysis Verification and Validation Report to meet the LFT&E legislation mandated in Title 10 USC 2366. -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. - Support integration of the Conventional Prompt Strike (CPS) Program into our Warfare Requirements and Test plans to meet Class Operational Capabilities. FY 2024 OCO Plans: N/A FY 2023 to FY 2024 Increase/Decrease Statement: The decrease noted from FY 2023 to FY 2024 represents completion of the testing and evaluation of the testing on the USS SOUTH DAKOTA (SSN 790). | | | | | |
| Accomplishments/Planned Programs Subtotals | 425.840 | 267.895 | 187.282 | 0.000 | 187.282 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • SCN/2013: <i>Virginia Class Submarine</i> | 6,339.647 | 6,864.537 | 10,513.684 | - | 10,513.684 | 10,163.748 | 8,739.108 | 8,483.697 | 7,688.725 | 10,147.368 | 167,990.662 |
| • OMN/0204283N: <i>Sub Ops & Safety</i> | 8.191 | 8.624 | 9.319 | - | 9.319 | 9.564 | 9.742 | 9.794 | 9.747 | Continuing | Continuing |
| • OPN/0942: <i>Virginia Class Support Equipment</i> | 22.669 | 32.300 | 32.076 | - | 32.076 | 43.597 | 52.098 | 39.771 | 40.568 | 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

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy **Date:** March 2023

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

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 currently managing two Multi-Year Procurement (MYP) contracts. One for the Block IV (FY14-18) ships and one for the Block V (FY19-23) ships. All Block I, II and III ships, as well as the first three Block IV ships (SSNs 774-794) have been delivered. The remaining seven Block IV ships are awarded and under construction. The program's fourth MYP (Block V) contract, incorporates Acoustic Superiority (AS) modifications and Virginia Payload Module (VPM).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy **Date:** March 2023

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

| Product Development (\$ in Millions) | | | | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 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 | 289.720 | 14.534 | Oct 2021 | 14.346 | Oct 2022 | 10.252 | Oct 2023 | - | | 10.252 | Continuing | Continuing | Continuing |
| Component Development | WR | NUWC : Newport, RI | 132.879 | 12.182 | Oct 2021 | 12.024 | Oct 2022 | 8.593 | Oct 2023 | - | | 8.593 | Continuing | Continuing | Continuing |
| Component Development | WR | NRL : Washington, DC | 10.567 | 0.997 | Oct 2021 | 0.984 | Oct 2022 | 0.703 | Oct 2023 | - | | 0.703 | Continuing | Continuing | Continuing |
| Component Development | C/CPFF | Electric Boat : Groton, CT | 1,207.384 | 371.713 | Nov 2021 | 212.963 | Nov 2022 | 147.077 | Nov 2023 | - | | 147.077 | Continuing | Continuing | Continuing |
| Component Development | C/CPFF | Progeny Applied : Manassas, VA | 7.162 | 9.027 | Dec 2021 | 8.910 | Dec 2022 | 6.367 | Dec 2023 | - | | 6.367 | Continuing | Continuing | Continuing |
| Component Development | SS/CPFF | Applied Research Laboratory : Penn State University | 29.958 | 2.742 | Dec 2021 | 2.706 | Dec 2022 | 1.934 | Dec 2023 | - | | 1.934 | Continuing | Continuing | Continuing |
| Component Development | SS/FP | National Shipbuilding Research Program : Not Specified | 6.739 | 0.630 | Mar 2022 | 0.622 | Mar 2023 | 0.445 | Mar 2024 | - | | 0.445 | Continuing | Continuing | Continuing |
| Component Development | Various | Miscellaneous : Not Specified | 26.901 | 1.335 | Dec 2021 | 1.318 | Dec 2022 | 0.942 | Dec 2023 | - | | 0.942 | Continuing | Continuing | Continuing |
| Subtotal | | | 1,711.310 | 413.160 | | 253.873 | | 176.313 | | - | | 176.313 | Continuing | Continuing | N/A |

Remarks
 The FY 2024 decrease accounts for the reprioritization of design efforts to properly align funds to the Submarine In Service program for investment in early battery failure mitigations for operational submarines. Additionally, this decrease reflects the refinement of scope associated with the establishment of the Block VI technical baseline and the planned transition of effort from design to construction.

| Test and Evaluation (\$ in Millions) | | | | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 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 | | | |
| Developmental Test & Evaluation (DT&E) | WR | NSWC : Carderock, MD | 98.536 | 3.677 | Nov 2021 | 4.066 | Nov 2022 | 3.181 | Nov 2023 | - | | 3.181 | Continuing | Continuing | Continuing |
| Live Fire Test & Evaluation (LFT&E) | WR | NSWC : Carderock, MD | 7.362 | 1.141 | Nov 2021 | 1.262 | Nov 2022 | 0.987 | Nov 2023 | - | | 0.987 | Continuing | Continuing | Continuing |
| Developmental Test & Evaluation (DT&E) | WR | NUWC : Newport, RI | 141.022 | 1.762 | Nov 2021 | 1.948 | Nov 2022 | 1.524 | Nov 2023 | - | | 1.524 | Continuing | Continuing | Continuing |

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy **Date:** March 2023

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

| Test and Evaluation (\$ in Millions) | | | | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 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 | | | |
| Operational Test & Evaluation (OT&E) | PO | COMOPTEVFOR : Norfolk, VA | 20.104 | 0.672 | Nov 2021 | 0.743 | Nov 2022 | 0.581 | Nov 2023 | - | | 0.581 | Continuing | Continuing | Continuing |
| Live Fire Test & Evaluation (LFT&E) | C/CPFF | Electric Boat : Groton, CT | 3.407 | 0.582 | Nov 2021 | 0.644 | Nov 2022 | 0.504 | Nov 2023 | - | | 0.504 | Continuing | Continuing | Continuing |
| Live Fire Test & Evaluation (LFT&E) | WR | NUWC : Newport, RI | 0.556 | 0.228 | Nov 2021 | 0.252 | Nov 2022 | 0.197 | Nov 2023 | - | | 0.197 | Continuing | Continuing | Continuing |
| Developmental Test & Evaluation (DT&E) | C/CPFF | NUWC : Newport, RI - CORE Team | 15.826 | 4.618 | Nov 2021 | 5.107 | Nov 2022 | 3.995 | Nov 2023 | - | | 3.995 | Continuing | Continuing | Continuing |
| Subtotal | | | 286.813 | 12.680 | | 14.022 | | 10.969 | | - | | 10.969 | Continuing | Continuing | N/A |

Remarks
The decrease noted from FY 2023 to FY 2024 represents completion of the testing and evaluation of the testing on the USS SOUTH DAKOTA (SSN 790).

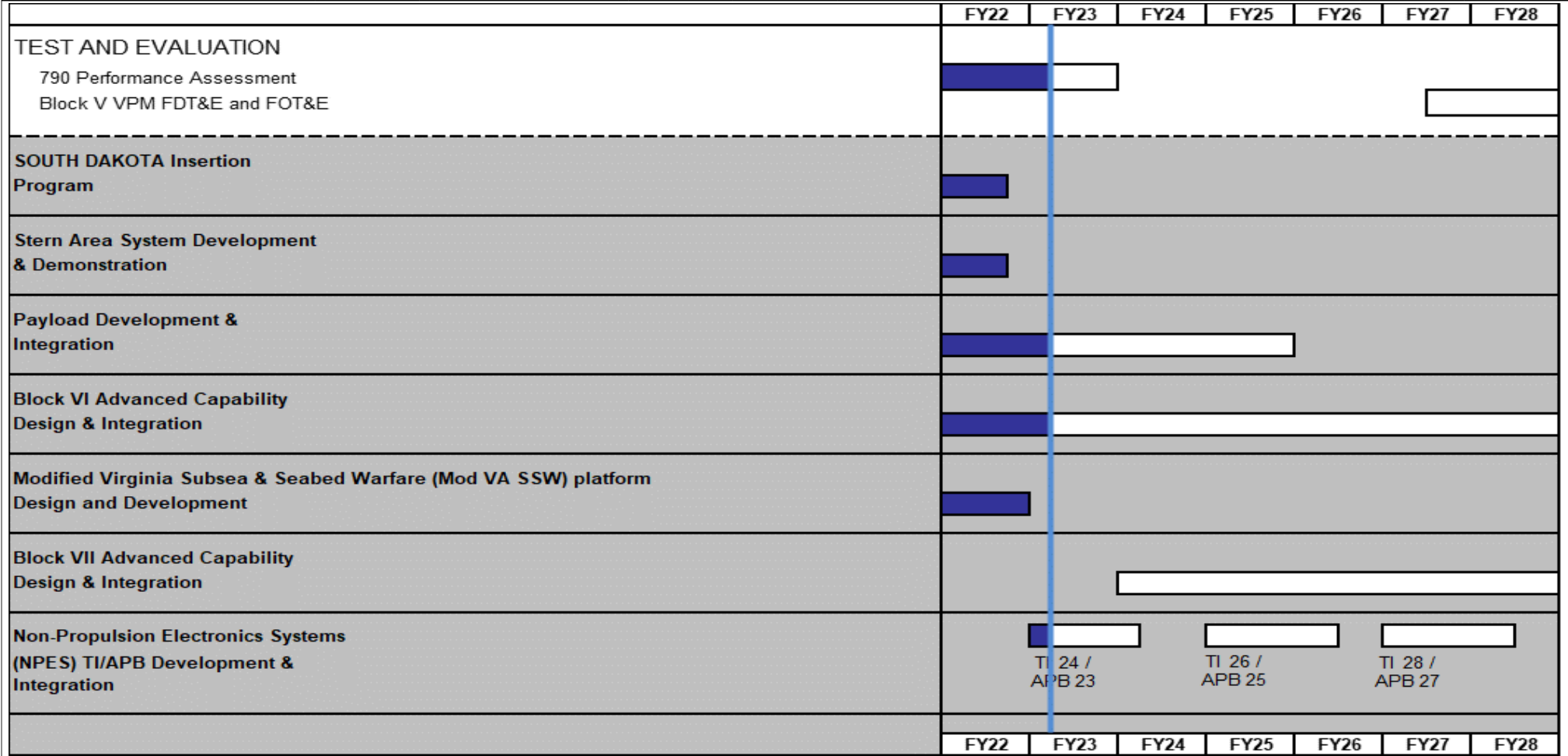
| | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | 1,998.123 | 425.840 | 267.895 | 187.282 | - | 187.282 | Continuing | Continuing | N/A |

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy **Date:** March 2023

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|--|---|---|
| Appropriation/Budget Activity 1319 / 5 | R-1 Program Element (Number/Name) PE 0604558N / <i>New Design SSN</i> | Project (Number/Name) 1947 / <i>New Design SSN HM&E</i> |
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as of 22 Feb 2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy **Date:** March 2023

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

Schedule Details

| Events by Sub Project | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| <i>Proj 1947</i> | | | | |
| TEST & EVALUATION: U/R 790 Performance Assessment | 1 | 2022 | 4 | 2023 |
| SOUTH DAKOTA Insertion Program | 1 | 2022 | 2 | 2022 |
| Stern Area System Development & Demonstration | 1 | 2022 | 2 | 2022 |
| Payload Development & Integration | 1 | 2022 | 4 | 2025 |
| Block VI Advanced Capability Design & Integration | 1 | 2022 | 4 | 2028 |
| Modified Virginia Subsea & Seabed Warfare (Mod VA SSW) platform Design and Development | 1 | 2022 | 4 | 2022 |
| NPES TI24/APB23 Development & Integration | 1 | 2023 | 1 | 2024 |
| TEST & EVALUATION: FDTE and FOTE Block V VPM | 3 | 2027 | 3 | 2028 |
| NPES TI26/APB25 Development & Integration | 1 | 2025 | 2 | 2026 |
| Block VII Advanced Capability Design & Integration | 1 | 2024 | 4 | 2028 |
| NPES TI28/APB27 Development & Integration | 1 | 2027 | 2 | 2028 |

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy | | | | | | | | | | Date: March 2023 | | |
| Appropriation/Budget Activity 1319 / 5 | | | | | R-1 Program Element (Number/Name) PE 0604558N / <i>New Design SSN</i> | | | | Project (Number/Name) 1950 / <i>New Design SSN Combat Sys Dev</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
| 1950: <i>New Design SSN Combat Sys Dev</i> | 881.540 | 35.154 | 31.365 | 38.572 | - | 38.572 | 43.521 | 41.411 | 40.375 | 41.181 | Continuing | Continuing |
| 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 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| Title: Sonar, Combat Control, and Architecture (S/CC/A) Subsystems | 21.474 | 19.062 | 24.476 | 0.000 | 24.476 |
| 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 2023 Plans: | | | | | |
| -Deliver Government Furnished Information (GFI) to the shipbuilder for the S/CC/A components of the TI-24 NPES configuration. | | | | | |
| -Complete Environmental Qualification Testing of the Commercial Off the Shelf (COTS) electronics in the S/CC/A TI-24 configured NPES. | | | | | |
| -Perform S/CC/A trade studies and bench test prototyping on Tactical Submarine Evolution Program (TSEP) candidate war fighting capabilities. | | | | | |
| FY 2024 Base Plans: | | | | | |
| -Initiate design and component selection for the TI-26 S/CC/A configuration. | | | | | |
| -Perform structured technical collaboration of the Undersea Technical Innovation Consortium members tasked with re-architecture of the Submarine Warfare Federated Tactical System (SWFTS) and decompose artifacts into S/CC/A distributed procurement specifications. | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy | Date: March 2023 |
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| | | |
|--|---|---|
| Appropriation/Budget Activity 1319 / 5 | R-1 Program Element (Number/Name) PE 0604558N / <i>New Design SSN</i> | Project (Number/Name) 1950 / <i>New Design SSN Combat Sys Dev</i> |
|--|---|---|

| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each) | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|---------|---------|--------------|-------------|---------------|
| <p>-Conduct land based testing at the System of Systems level to assess impacts to latency, senescence, and time/navigation data distribution following enhanced cyber hardening and resiliency measures.</p> <p>-Conduct land based testing at the System of Systems level to assess failover performance in a common computing environment employing a Platform as a Service (PaaS) architecture.</p> <p>FY 2024 OCO Plans: N/A</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase from FY 2023 to FY 2024 accounts for the increased engineering work scope associated with TI-26 development and Block VI NPES design definition.</p> | | | | | |
| <p>Title: C3I Systems Engineering</p> <p align="right">Articles:</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> -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. - 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>FY 2024 Base Plans:</p> <ul style="list-style-type: none"> -Produce updated NPES-wide Government Furnished Information (GFI) required by the shipbuilder to make platform compatible changes to the power, cooling, and cabling systems for the TI-26 configuration. -Initiate Environmental Qualification Testing of the electronics assemblies and Structurally Integrated Enclosure bays containing TI-26 pedigree hardware. -Perform land based critical item-level testing of the flight critical Ship Control interfaces with all NPES GFE equipment. -Perform engineering trades studies associated with potential Class design NPES changes in support of Block VI technical baseline definition. <p>FY 2024 OCO Plans: N/A</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p> | 13.680 | 12.303 | 14.096 | 0.000 | 14.096 |
| | - | - | - | - | - |

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy | | Date: March 2023 |
| Appropriation/Budget Activity 1319 / 5 | R-1 Program Element (Number/Name) PE 0604558N / <i>New Design SSN</i> | Project (Number/Name) 1950 / <i>New Design SSN Combat Sys Dev</i> |

| | | | | | |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each) | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
| Increase from FY 2023 to FY 2024 accounts for the increased engineering work scope associated with TI-26 development and Block VI NPES design definition. | | | | | |
| Accomplishments/Planned Programs Subtotals | 35.154 | 31.365 | 38.572 | 0.000 | 38.572 |

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

| <u>Line Item</u> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • SCN/2013: <i>Virginia Class Submarine</i> | 6,339.647 | 6,864.537 | 10,513.684 | - | 10,513.684 | 10,163.748 | 8,739.108 | 8,483.697 | 7,688.725 | 10,147.368 | 167,990.662 |
| • O&M,N/0204283N: <i>Sub Ops & Safety</i> | 8.191 | 8.624 | 9.319 | - | 9.319 | 9.564 | 9.742 | 9.794 | 9.747 | Continuing | Continuing |
| • OPN/0942: <i>Virginia Class Support Equipment</i> | 22.669 | 32.300 | 32.076 | - | 32.076 | 43.597 | 52.098 | 39.771 | 40.568 | 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 currently managing two Multi-Year Procurement (MYP) contracts. One for the Block IV (FY14-18) ships and one for the Block V (FY19-23) ships. All Block I, II and III ships, as well as the first three Block IV ships (SSNs 774-794) have been delivered. The remaining seven Block IV ships are awarded and under construction. The program's fourth MYP (Block V) contract, incorporates Acoustic Superiority (AS) modifications and Virginia Payload Module (VPM).

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy | | | | | | | | | | | | Date: March 2023 | | | |
|---|------------------------|--|-------------|---|------------|---------|------------|---|------------|-------------|------------|------------------|------------------|------------|--------------------------|
| 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 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 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 | 101.270 | 4.578 | Feb 2022 | 5.155 | Feb 2023 | 7.404 | Feb 2024 | - | | 7.404 | Continuing | Continuing | Continuing |
| Tech Insertion/Advanced Processing Build (TI/APB) Integration | Various | Lockheed Martin : Manassas, VA | 22.872 | 5.400 | Nov 2021 | 4.629 | Nov 2022 | 6.308 | Nov 2023 | - | | 6.308 | Continuing | Continuing | Continuing |
| Photonics | C/CPIF | Kollmorgen : Northampton, MA | 64.094 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 64.094 | - |
| Large Vertical Array South Dakota Improvement Program | Various | Lockheed Martin : Manassas, VA | 20.308 | 3.500 | Oct 2021 | 0.000 | | 0.000 | | - | | 0.000 | Continuing | Continuing | Continuing |
| Advanced Array Studies and Modeling | Various | Lockheed Martin : Manassas, VA | 0.000 | 0.000 | | 3.000 | Oct 2022 | 5.257 | Oct 2023 | - | | 5.257 | 0.000 | 8.257 | - |
| Platform Integration | SS/CPFF | Electric Boat : Groton, CT | 75.143 | 4.900 | Nov 2021 | 4.200 | Nov 2022 | 1.920 | Nov 2023 | - | | 1.920 | Continuing | Continuing | Continuing |
| Photonics | C/CPIF | Lockheed Martin : Manassas, VA | 0.500 | 0.986 | Dec 2021 | 0.845 | Dec 2022 | 1.006 | Dec 2023 | - | | 1.006 | Continuing | Continuing | Continuing |
| Virtualization Enabling Architecture Development | Various | Various : TBD | 19.598 | 4.613 | Nov 2021 | 3.954 | Nov 2022 | 6.034 | Nov 2023 | - | | 6.034 | Continuing | Continuing | Continuing |
| Technical Direction Agent | WR | NUWC : Newport, RI | 338.956 | 5.861 | Nov 2021 | 5.026 | Nov 2022 | 6.205 | Nov 2023 | - | | 6.205 | Continuing | Continuing | Continuing |
| Systems Engineering | WR | NSWC : Carderock, MD | 15.759 | 1.300 | Nov 2021 | 1.114 | Nov 2022 | 1.211 | Nov 2023 | - | | 1.211 | Continuing | Continuing | Continuing |
| Acoustic Intercept & Sonar | C/CPFF | Progeny Applied : Manassas, VA | 1.960 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 1.960 | - |
| High Frequency & Sonar Sensors | C/CPFF | Applied Research Lab : University of Texas | 1.640 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 1.640 | - |
| Systems Engineering | WR | SSC : Charleston, SC | 13.997 | 1.980 | Nov 2021 | 1.697 | Nov 2022 | 1.353 | Nov 2023 | - | | 1.353 | Continuing | Continuing | Continuing |
| Systems Engineering | WR | NUWC : Keyport, WA | 15.935 | 0.575 | Nov 2021 | 0.493 | Nov 2022 | 0.686 | Nov 2023 | - | | 0.686 | Continuing | Continuing | Continuing |
| Miscellaneous | Various | Various : Various | 148.167 | 1.461 | Jan 2022 | 1.252 | Jan 2023 | 1.188 | Jan 2024 | - | | 1.188 | Continuing | Continuing | Continuing |
| Subtotal | | | 840.199 | 35.154 | | 31.365 | | 38.572 | | - | | 38.572 | Continuing | Continuing | N/A |

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy **Date:** March 2023

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

| Product Development (\$ in Millions) | | | | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 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
Increase from FY 2023 to FY 2024 accounts for the increased engineering workscope associated with TI-26 development and Block VI NPES design definition. Estimates associated with the time varying non-recurring developmental scope of work tied to this project, not indices tied to inflation.

| Management Services (\$ in Millions) | | | | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 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 | 41.341 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | Continuing | Continuing | Continuing |
| Subtotal | | | 41.341 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | Continuing | Continuing | N/A |

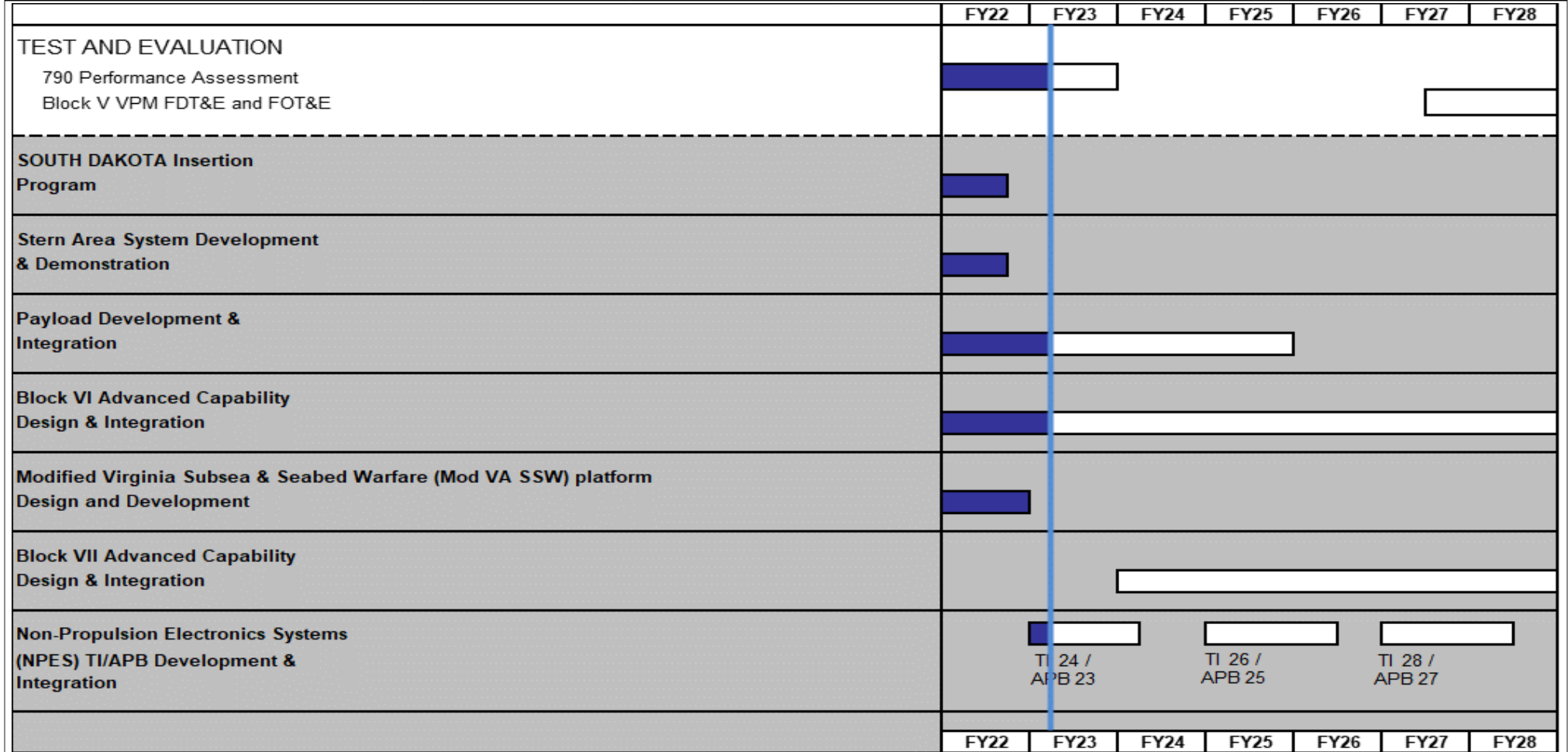
| Prior Years | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|----------------|--|----------------|--------|---------------------|--------|--------------------|--------|----------------------|-------------------------|-------------------|---------------------------------|
| Project Cost Totals | | | 881.540 | 35.154 | 31.365 | 38.572 | - | 38.572 | Continuing | Continuing | N/A | |

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy **Date:** March 2023

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



as of 22 Feb 2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy **Date:** March 2023

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

Schedule Details

| Events by Sub Project | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| <i>Proj 1950</i> | | | | |
| TEST & EVALUATION: U/R 790 Performance Assessment | 1 | 2022 | 4 | 2023 |
| SOUTH DAKOTA Improvement Program | 1 | 2022 | 2 | 2022 |
| Stern Area System Development & Demonstration | 1 | 2022 | 2 | 2022 |
| Payload Development & Integration | 1 | 2022 | 4 | 2025 |
| Block VI Advanced Capability Design & Integration | 1 | 2022 | 4 | 2028 |
| Modified Virginia Subsea & Seabed Warfare (Mod VA SSW) platform Design and Development | 1 | 2022 | 4 | 2022 |
| NPES TI24/APB 23 Development & Integration | 1 | 2023 | 1 | 2024 |
| TEST & EVALUATION: FDTE and FOTE Block V VPM | 3 | 2027 | 3 | 2028 |
| NPES TI26/APB25 Development & Integration | 1 | 2025 | 2 | 2026 |
| Block VII Advanced Capability Design & Integration | 1 | 2024 | 4 | 2028 |
| NPES TI28/APB27 Development & Integration | 1 | 2027 | 2 | 2028 |

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|--|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy | | | | | | | | | | Date: March 2023 | | |
| Appropriation/Budget Activity 1319 / 5 | | | | | R-1 Program Element (Number/Name) PE 0604558N / <i>New Design SSN</i> | | | | Project (Number/Name) 3062 / <i>Submarine Multi-Mission Team Trainer</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
| 3062: <i>Submarine Multi-Mission Team Trainer</i> | 53.106 | 7.364 | 8.325 | 8.502 | - | 8.502 | 8.518 | 8.672 | 8.806 | 8.907 | 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)

| | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Title: Submarine Multi-Mission Team Trainer | 7.364 | 8.325 | 8.502 | 0.000 | 8.502 |
| 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 2023 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. 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. FY2023 continues Development Security Operations (DEVSECOPS) implementation of latest Advanced Processor Build (APB) and Technical Insertion (TI) into the Submarine Attack Center baseline. This effort | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy | | Date: March 2023 |
| Appropriation/Budget Activity 1319 / 5 | R-1 Program Element (Number/Name) PE 0604558N / <i>New Design SSN</i> | Project (Number/Name) 3062 / <i>Submarine Multi-Mission Team Trainer</i> |

| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each) | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <p>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>FY 2024 Base 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. 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>FY2024 continues 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 develops and increases number of Virtual/New Targets, Improved Payloads and Electronic Warfare entities in support of TYCOMS Training requirement, Undersea and Extended Battle Problems. This effort will follow the delivery of tactical software to the Fleet on a quarterly basis as required by the Fleet.</p> <p>FY 2024 OCO Plans: N/A</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase of \$0.177M from FY 2023 to FY 2024 develops and increases number of Virtual/New Targets, Improved Payloads and Electronic Warfare entities available during a training scenario per TYCOM Training requirement, Undersea and Extended Battle Problems.</p> | | | | | |
| Accomplishments/Planned Programs Subtotals | 7.364 | 8.325 | 8.502 | 0.000 | 8.502 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| Line Item | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
| • OPN/5661: <i>Submarine Training Device Mods</i> | 75.813 | 80.591 | 76.954 | - | 76.954 | 80.983 | 82.747 | 84.365 | 86.056 | Continuing | Continuing |

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy | | Date: March 2023 |
| Appropriation/Budget Activity 1319 / 5 | R-1 Program Element (Number/Name) PE 0604558N / <i>New Design SSN</i> | Project (Number/Name) 3062 / <i>Submarine Multi-Mission Team Trainer</i> |

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

| <u>Line Item</u> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u> <u>Base</u> | <u>FY 2024</u> <u>OCO</u> | <u>FY 2024</u> <u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|

Remarks

D. Acquisition Strategy

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy **Date:** March 2023

| | | |
|--|---|--|
| Appropriation/Budget Activity 1319 / 5 | R-1 Program Element (Number/Name) PE 0604558N / <i>New Design SSN</i> | Project (Number/Name) 3062 / <i>Submarine Multi-Mission Team Trainer</i> |
|--|---|--|

| Fiscal Year | 2022 | | | | 2023 | | | | 2024 | | | | 2025 | | | | 2026 | | | | 2027 | | | | 2028 | | | |
|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|
| | 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 | | ▲ | | | | | △ | | | | △ | | | | △ | | | | △ | | | | △ | | | | △ | |
| Develop New Targets | | | | | | | | | △ | | | △ | | | | △ | | | | △ | | | | △ | | | | △ |

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|---|---|--|
| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy | | Date: March 2023 |
| Appropriation/Budget Activity 1319 / 5 | R-1 Program Element (Number/Name) PE 0604558N / <i>New Design SSN</i> | Project (Number/Name) 3062 / <i>Submarine Multi-Mission Team Trainer</i> |

Schedule Details

| Events by Sub Project | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Proj 3062 | | | | |
| Interface design updates: Interface Design Updates | 3 | 2022 | 3 | 2028 |
| Software Development Updates: Software Development Updates (SIM/STIM) | 4 | 2022 | 4 | 2028 |
| Software Builds: Software Builds | 4 | 2022 | 4 | 2028 |
| Advanced Processing Build(APB) Upgrades: Advanced Processing Build (APB) Upgrades | 1 | 2022 | 1 | 2028 |
| Hardware Tech Insertion Updates: Hardware Tech Insertion Updates | 1 | 2022 | 4 | 2028 |
| DEVSECOPS: DEVSECOPS | 2 | 2022 | 4 | 2028 |
| Torpedo Modeling Development: Torpedo Modeling Development | 3 | 2022 | 3 | 2028 |
| Develop New Targets: Develop New Targets | 1 | 2024 | 4 | 2028 |

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| | | | | | | | | | | | | |
|--|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy | | | | | | | | | | Date: March 2023 | | |
| Appropriation/Budget Activity 1319 / 5 | | | | | R-1 Program Element (Number/Name) PE 0604558N / <i>New Design SSN</i> | | | | Project (Number/Name) 9999 / <i>Congressional Adds</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
| 9999: <i>Congressional Adds</i> | 0.000 | 0.000 | 8.500 | 0.000 | - | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 8.500 |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

This FY23 RDT&E Congressional add for Advanced Submarine Control (ASC) using Precision Maneuvering Unit (PMU) technology targets performance and reliability improvements, as well as decreasing total ownership cost, to the Virginia Class Submarine Secondary Propulsion Unit (SPU) design. Improvements aim to create a PMU to replace SPU's as the secondary propulsion system.

B. Accomplishments/Planned Programs (\$ in Millions)

| | FY 2022 | FY 2023 |
|--|----------------|----------------|
| Congressional Add: Precision maneuvering units | 0.000 | 8.500 |
| FY 2022 Accomplishments: N/A | | |
| FY 2023 Plans: Transition of prototype technology to support insertion into future VIRGINIA Class construction baselines. | | |
| Congressional Adds Subtotals | 0.000 | 8.500 |

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

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy **Date:** March 2023

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

| Proj 9999 | FY 2022 | | | | FY 2023 | | | | FY 2024 | | | | FY 2025 | | | | FY 2026 | | | | FY 2027 | | | | FY 2028 | | | | | | | |
|---|----------------|----|----|----|----------------|----|----|----|----------------|----|----|----|----------------|----|----|----|----------------|----|----|----|----------------|----|----|----|----------------|----|----|----|--|--|--|--|
| | 1Q | 2Q | 3Q | 4Q | 1Q | 2Q | 3Q | 4Q | 1Q | 2Q | 3Q | 4Q | 1Q | 2Q | 3Q | 4Q | 1Q | 2Q | 3Q | 4Q | 1Q | 2Q | 3Q | 4Q | 1Q | 2Q | 3Q | 4Q | | | | |
| Precision Maneuvering Unit (PMU) Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

2024PB - 0604558N - 9999

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy **Date:** March 2023

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

Schedule Details

| Events by Sub Project | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| <i>Proj 9999</i> | | | | |
| Precision Maneuvering Unit (PMU) Development: Precision Maneuvering Unit (PMU) Development | 2 | 2023 | 4 | 2023 |