Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy											Date: April 2022	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604503N / *SSN-688 & Trident Modernization*							
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	1,234.478	93.879	95.693	93.501	-	93.501	94.308	94.362	95.817	96.898	Continuing	Continuing
0219: *Sub Sonar Improvement (ENG)*	1,152.464	65.057	64.080	60.372	-	60.372	61.795	61.684	62.623	63.293	Continuing	Continuing
0775: *Submarine Supt Equip Prog*	82.014	28.822	31.613	33.129	-	33.129	32.513	32.678	33.194	33.605	Continuing	Continuing

Note

Beginning in FY20, funding for the following projects was realigned from PE 0603503N to PE 0604280N: Project 0742 - Sub Integrated Antenna System and Project 1411 - Sub Tactical Communication System.

A. Mission Description and Budget Item Justification

SSN-688 & Trident Modernization delivers block updates to Submarine Sonar systems and develops improved Submarine Electronic Warfare (EW) systems. These development activities ensure all Submarine Classes maintain clear acoustical, tactical, and operational superiority over Submarines and Surface Combatants in Joint Littoral Warfare, Joint Intelligence Surveillance Reconnaissance (ISR), Indications and Warnings, Information Operations including Cyber, and Special Operations Force (SOF) support. Current developments are focused on supporting Joint Littoral Warfare, Regional Sea Denial, Strike Group Support, Diesel Submarine Detection, Joint Surveillance and Peacetime Engagement, Space and Electronic Warfare, Intelligence Collection, Maritime Protection, and Joint Strike.

FY 2023 funding request reflects a net decrease of $2.192 million from FY 2022 to FY 2023. Funding decrease is associated with APB-21 design, integration, and testing efforts associated with TI-22, which transitions Acoustic Rapid COTS Insertion (A-RCI) to Development, Cyber Security, and Operations (DevSecOps) in the Technical Insertion (TI)/Advanced Processing Build (APB) TI/APB process to better align with software development industry standards and meet fleet demands for rapid capability deliveries and increased focus on machine learning, automation, and behavioral analysis, Light Weight Wide Aperture Array (LwWAA) technology refresh development.

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy					Date: April 2022
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604503N *I SSN-688 & Trident Modernization*		
B. Program Change Summary ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
Previous President's Budget	92.682	95.693	0.000	-	0.000
Current President's Budget	93.879	95.693	93.501	-	93.501
Total Adjustments	1.197	0.000	93.501	-	93.501
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	4.695	0.000			
• SBIR/STTR Transfer	-3.498	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	-	-	93.501	-	93.501

Change Summary Explanation

FY 2021 funding request reflects a net decrease of $1.197 million from FY 2020 to FY 2021. Funding decrease is associated with SBIR STTR-FTT assessment and BTR reprogramming.

FY 2023 funding request reflects a decrease of $3.708 million from FY 2022 to FY 2023 for Proj: 0219. Funding decrease is associated with APB-21 design, integration, and testing efforts associated with TI-22, which transitions Acoustic Rapid COTS Insertion (A-RCI) to Development, Cyber Security, and Operations (DevSecOps) in the Technical Insertion (TI)/Advanced Processing Build (APB) TI/APB process to better align with software development industry standards and meet fleet demands for rapid capability deliveries and increased focus on machine learning, automation, and behavioral analysis, Light Weight Wide Aperture Array (LwWAA) technology refresh development. FY 2023 funding request also reflects an increase of $1.516 million from FY 2022 to FY 2023 for Proj: 0775. Funding increase supports Submarine Simultaneous Transmit and Receive (SubSTAR) capability development and conducts the next step of the EW digital transformation for TI-24 performed in coordination with the rest of the SWFTS programs.

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

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604503N / *SSN-688 & Trident Modernization*	Project (Number/Name) 0219 / *Sub Sonar Improvement (ENG)*	

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
0219: *Sub Sonar Improvement (ENG)*	1,152.464	65.057	64.080	60.372	-	60.372	61.795	61.684	62.623	63.293	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The AN/BQQ-10(V) Acoustic Rapid COTS Insertion (A-RCI) aubmarine SONAR system will continue to add new capabilities via Technical Insertion (TI)/Advanced Processing Build (APB) process while working across Submarine Warfare Federated Tactical System (SWFTS) programs to transition to Development Security Operations (DevSecOps) software processes and migrate to a cloud based architecture. The Navy is pursuing a transformation across SWFTS (PE 0604503N Project 0219, PE 0604562N Project 0236, PE 0604777N Project 0253 and PE 0604503N Project 0775) to maximize cyber-resiliency and the speed of capability delivery.

FY 2023 funding request reflects a net increase of $1.379 million from FY 2021 to FY 2022. Funding increase is associated with APB-21 design, integration, and testing efforts associated with TI-22, which transitions Acoustic Rapid COTS Insertion (A-RCI) to Development, Cyber Security, and Operations (DevSecOps) in the TI/APB process to better align with software development industry standards and meet fleet demands for rapid capability deliveries as well as increased focus on machine learning, automation, and behavioral analysis. Increase also associated with design, integration, and testing efforts associated with the Light Weight Wide Aperture Array (LwWAA) technical refresh for Block I/II VIRGINIA Class Submarines.

This program delivers block updates to Sonar Systems installed on SSN 688, 688I, SSN 21, VIRGINIA, SSBN, and SSGN Class Submarines to maintain clear acoustical, tactical, and operational superiority over Submarines and Surface Combatants in all scenarios through detection, classification, localization, and contact following.

Acoustics Rapid COTS Insertion (A-RCI) provides multi-phased evolutionary development geared toward addressing acoustic superiority issues through the rapid introduction of interim development products applicable to all Classes of Submarines.
- A-RCI Phase I and II introduced Towed Array processing improvements
- Phase III introduced Spherical Array processing improvements
- Phase IV provided High Frequency (HF) Array processing improvements for SSN 688I, SSGN, SSBN, VIRGINIA, and SSN 21 Class Submarines.

As part of the Navy's plan to maintain acoustic superiority for in-service submarines, a joint cooperative effort was established to deliver bi-annual Advanced Processing Builds (APBs) to prevent obsolescence and deliver ongoing capability improvements.
- Capabilities in the APBs will be integrated as part of A-RCI certified systems.

Sensor Efforts provide increased operational capabilities for littoral operations, situational awareness, and reliability improvements.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: APB Productionization	14.751	15.046	16.868	0.000	16.868
Articles:	-	-	-	-	-
Description: APB Productionization provides for the transition of APB capability improvements to the Fleet for integration, testing and formal certification. ***FY 2022 Plans:*** -Continue Advanced Processing Build (APB) development and transition of APB software from development to A-RCI for integration, testing, and formal certification. -Ensure continued transition of the SSBN legacy sonar system to the TI/APB model. -Transition development of in-board signal processing associated with the Large Vertical Array (LVA) to VIRGINIA Class modernization. ***FY 2023 Base Plans:*** -Continue Advanced Processing Build (APB) development and transition of APB software from development to A-RCI for integration, testing, and formal certification for SEAWOLF, 688/688I, OHIO, VIRGINIA, and COLUMBIA Class submarines. -Ensure continued transition of the SSBN legacy sonar system to the TI/APB model. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding Increase is associated with the APB development for VIRGINIA and COLUMBIA Class.					
Title: Integration and Testing	46.504	45.156	39.548	0.000	39.548
Articles:	-	-	-	-	-
Description: Integration and Testing provides support to integrate and test APBs into all Submarine Classes containing multiple sensor systems. ***FY 2022 Plans:*** -Continue support of Advanced Processing Builds installed on SSN688I, SSN 21, SSBN, SSGN, and VA Class Submarines. -Continue integration and testing associated with signal processing in support of Large Vertical Array (LVA) on SSBN and VA Class submarines.					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
-Transition A-RCI APB content delivery to SWFTS Continuous Capability Insertion Model through implementation of Development, Cyber Security, and Operations (DevSecOps) and Agile development for flexible APB content releases to fleet platforms. -Design, integrate, and test efforts associated with the Light Weight Wide Aperture Array (LWWAA) technical refresh for Block I/II VIRGINIA Class Submarines. ***FY 2023 Base Plans:*** -Continue support of Advanced Processing Builds installed on SSN688I, SSN 21, SSBN, SSGN, and VA Class Submarines. -Continue integration and testing associated with signal processing in support of Large Vertical Array (LVA) on SSBN and VA Class submarines. -Transition A-RCI APB content delivery to SWFTS Continuous Capability Insertion Model through implementation of Development, Cyber Security, and Operations (DevSecOps) and Agile development for flexible APB content releases to fleet platforms. These efforts increase focus on machine learning, automation, and behavioral analysis. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding decrease associated with completion and closing out of the design, integration, and testing efforts associated with the Light Weight Wide Aperture Array (LWWAA) technical refresh for Block I/II VIRGINIA Class Submarines as well as APB-21 design, integration,and testing efforts associated with TI-22.					
Title: A-RCI Acoustic Superiority Integration	3.802	3.878	3.956	0.000	3.956
Articles:	-	-	-	-	-
Description: Maintain Acoustic Superiority for In-service Submarines to deliver bi-annual Advance Processing Builds (APBs) to prevent obsolescence and deliver emerging capability improvements for current and future threats.					
FY 2022 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
-Continue development of emerging capability improvements for current and future threats by supporting development, integration, and testing of emerging capability improvements in passive long range detection/wide area search for current and future threats in support of Navy SSN/SSBN Acoustic Superiority initiatives. ***FY 2023 Base Plans:*** -Continue development of emerging capability improvements for current and future threats by supporting development, integration, and testing of emerging capability improvements in passive long range detection/wide area search for current and future threats in support of Navy SSN/SSBN Acoustic Superiority initiatives. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding increase is associated with the continuation of A-RCI transition to Development, Security, and Operations (DevSecOps) in the TI/APB process.					
Accomplishments/Planned Programs Subtotals	65.057	64.080	60.372	0.000	60.372

C. Other Program Funding Summary ($ in Millions)

Line Item	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
• OPN/2150: *SSN Acoustic Equipment*	372.822	379.498	446.653	-	446.653	477.433	470.109	465.007	474.247	Continuing	Continuing

Remarks

D. Acquisition Strategy

Acoustic Systems:
-A-RCI utilizes an open architecture and Commercial Off-the-Shelf (COTS) products in support of new and upgraded sonar systems.
-Program Reviews with the Milestone Decision Authority (MDA) are conducted in conjunction with approval for contract production options.

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 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPIF	LMC : Manassas, VA	411.759	25.632	Dec 2020	23.874	Dec 2021	19.369	Dec 2022	-		19.369	Continuing	Continuing	Continuing
Ancillary Hardware Development	SS/CPFF	ARL University of Texas : Austin, TX	50.082	3.185	Mar 2021	3.202	Mar 2022	3.266	Mar 2023	-		3.266	Continuing	Continuing	Continuing
Systems Engineering	SS/CPFF	Johns Hopkins APL : Baltimore, MD	52.266	3.202	Dec 2020	3.319	Dec 2021	3.385	Dec 2022	-		3.385	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	LMC : VA - Keyport	49.801	3.389	Jan 2021	3.413	Jan 2022	3.481	Jan 2023	-		3.481	Continuing	Continuing	Continuing
Primary Hardware Development	C/CPIF	Progeny Systems : Manassas, VA	89.731	6.538	Jan 2021	6.618	Jan 2022	6.750	Jan 2023	-		6.750	Continuing	Continuing	Continuing
Systems Engineering	WR	NUWC : Newport, RI	198.117	10.029	Dec 2020	10.096	Dec 2021	10.297	Dec 2022	-		10.297	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : Carderock, MD	37.869	2.867	Dec 2020	2.972	Dec 2021	3.031	Dec 2022	-		3.031	Continuing	Continuing	Continuing
		Subtotal	889.625	54.842		53.494		49.579		-		49.579	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Software Development	C/CPIF	General Dynamics, AIS : Fairfax, VA	179.784	5.145	Dec 2020	5.333	Dec 2021	5.439	Dec 2022	-		5.439	Continuing	Continuing	Continuing
Primary Software Development	C/CPFF	Sedna Digital, : Manassas, VA	51.704	3.891	Dec 2020	4.034	Dec 2021	4.114	Dec 2022	-		4.114	Continuing	Continuing	Continuing
		Subtotal	231.488	9.036		9.367		9.553		-		9.553	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Test and Evaluation	WR	OPTEVFOR : Norfolk, VA	12.146	0.481	Dec 2020	0.499	Dec 2021	0.508	Dec 2022	-		0.508	Continuing	Continuing	Continuing
		Subtotal	12.146	0.481		0.499		0.508		-		0.508	Continuing	Continuing	N/A

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 0604503N / *SSN-688 & Trident Modernization*	Project (Number/Name) 0219 / *Sub Sonar Improvement (ENG)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Support Services	C/FFP	Alion, BAH, AECOM : Washington, DC	16.486	0.604	Dec 2020	0.626	Dec 2021	0.638	Dec 2022	-		0.638	Continuing	Continuing	Continuing
Travel	WR	NAVSEA : Washington, DC	2.719	0.094	Dec 2020	0.094	Dec 2021	0.094	Dec 2022	-		0.094	Continuing	Continuing	Continuing
		Subtotal	19.205	0.698		0.720		0.732		-		0.732	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
Project Cost Totals	1,152.464	65.057		64.080		60.372		-		60.372	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*

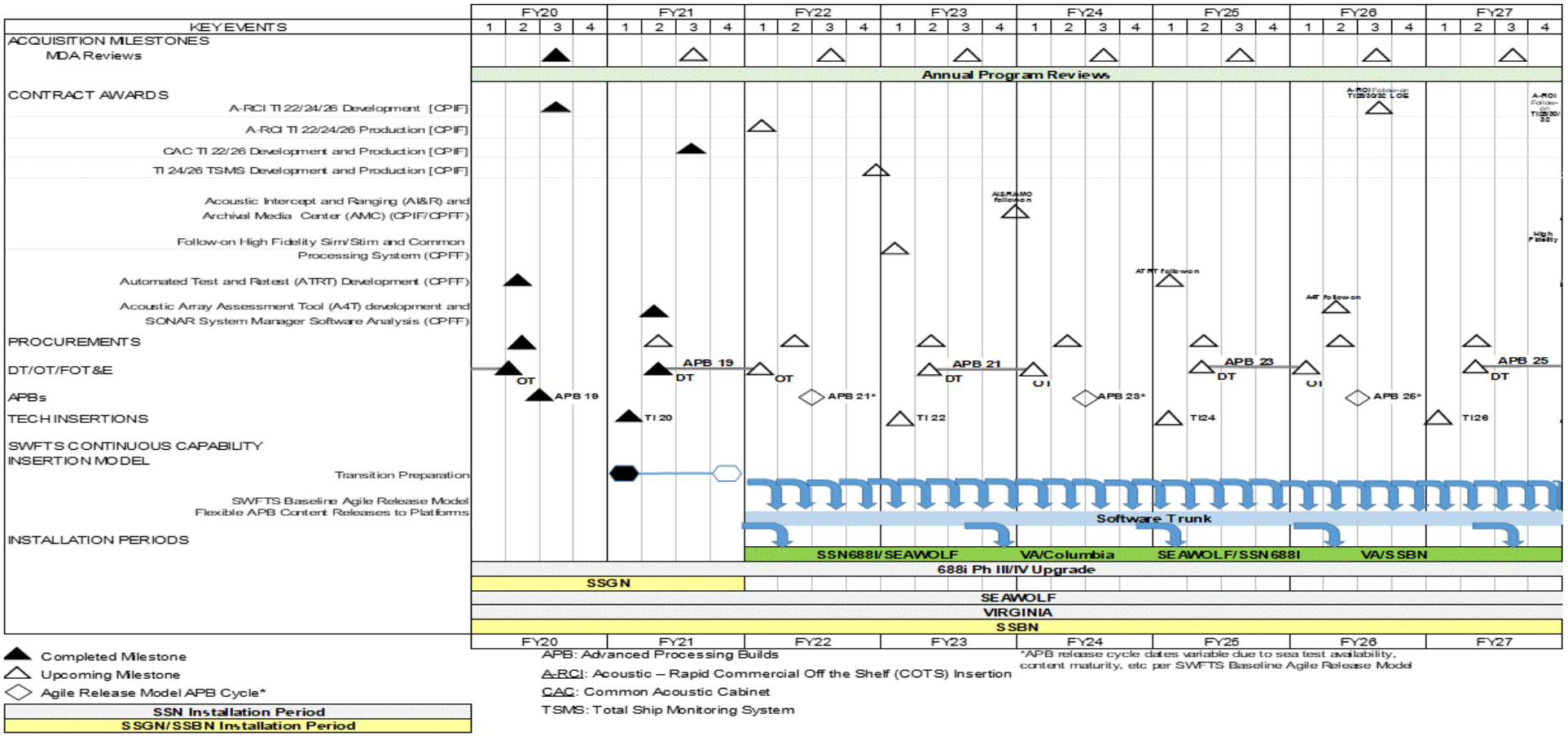

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0219				
ACOUSTICS	3	2021	4	2027
---Acquisition Milestones - Acoustics	3	2021	3	2027
---Annual Program Reviews - Acoustics	1	2021	4	2027
---Contract Awards - Acoustics	3	2021	1	2026
---Procurements - Acoustics	2	2021	2	2023
---DT/OT/FOT&E Tests	3	2021	2	2027
---APB Deliveries	2	2022	3	2027
---Tech Insertions	1	2021	4	2027
---Installation Periods - Acoustics	1	2021	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604503N / *SSN-688 & Trident Modernization*	Project (Number/Name) 0775 / *Submarine Supt Equip Prog*	

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
0775: *Submarine Supt Equip Prog*	82.014	28.822	31.613	33.129	-	33.129	32.513	32.678	33.194	33.605	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

AN/BLQ-10 Electronic Warfare (EW) system will continue to add new capabilities via Technical Insertion (TI)/Advanced Processing Build (APB) process while working across Submarine Warfare Federated Tactical System (SWFTS) programs to transition to Development Security Operations (DevSecOps) software processes and migrate to a cloud based architecture. The Navy is pursuing a transformation across SWFTS (PE 0604503N Project 0219, PE 0604562N Project 0236, PE 0604777N Project 0253 and PE 0604503N Project 0775) to maximize cyber-resiliency and the speed of capability delivery. Major new capabilities include a modern server-based RADAR Wide Band capability, Submarine Simultaneous Transmit and Receive (SubSTAR) Antenna, and upgraded and new tactical software solutions. Funding increase of $1.516M in FY23 supports SubSTAR capability development and conducts the next step of the EW digital transformation for TI-24 performed in coordination with the rest of the SWFTS programs.

The Submarine Support Equipment Program (SSEP) is responsible for the development and improvement of submarine EW systems in support of effective operations in the following mission areas: Joint Littoral Warfare; Joint Intelligence Surveillance Reconnaissance (ISR), Indications and Warnings; Electronic Warfare; Information Operations including Cyber; and Special Operations Force (SOF) support. The rapid proliferation of complex radar, communications and navigation equipment available to potential adversaries creates an increasingly dense and sophisticated electromagnetic environment. Sustained and significant improvements to submarine EW systems are required to maintain tactical ship safety and operational effectiveness. As such, EW was raised to a submarine primary mission area in FY2012 by Commander Submarine Forces, and EW is listed as a Tier 1 modernization requirement by the Submarine Tactical Requirements Group (STRG).

- TI-24 provides the VA Class a server-based Radar Wide Band capability. Additionally, TI-24 looks to improve the basic cloud based architecture developed during TI-20 and TI-22 as well as integrate new generations of EW Payloads. Funding is critical to developing enabling technologies that will provide maximized electronic spectrum digitization and processing, allowing Submarine EW system to continue to pace the threat.

- Submarine Simultaneous Transmit and Receive (SubSTAR) provides submarine low profile masts with the capability to integrate an automatic range finding RADAR with a RADAR band direction finding capability onto a single mast creating redundancy between the masts and reducing counter-detection threats.

- APB-21 continues to bring new capabilities to the AN/BLQ-10 system: Voice to Text, improved Direction Finding for Photonics Masts, EW contact followers, and passive ranging techniques.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Submarine Support Equipment Program	28.822	31.613	33.129	0.000	33.129

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0775 / *Submarine Supt Equip Prog*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Articles:	-	-	-	-	-
FY 2022 Plans: -- In the SWFTS TI/APB model, continue to develop and test a CADF capability for incorporation into the AN/BLQ-10 system to enhance the capabilities of the SSN 688 and 21 class ships. -- Complete development of the PATRIOT Phase C RADAR. -- Continue TI-22 development, design, integration, configuration, architecture documentation and software design. -- Conduct TI-20 testing. -- Continue APB-21 development and integration into TI-20 and TI-22 baselines. -- Update AN/BLQ-10 software baseline changes for SWFTS and NPES, SPR Resolution and Software Enhancement via the APB process to fully utilize the new technology being fielded in TI-22 with broader spectrum digitization. -- Coordinate with ONR and NUWC Newport to develop FNCs to a high technology readiness level and transition to EW systems as appropriate. -- Develop advanced technology demonstrations for feasibility.					
FY 2023 Base Plans: -- In the SWFTS TI/APB model, complete development and test a CADF capability for incorporation into the AN/BLQ-10 system to enhance the capabilities of the SSN 688 and 21 class ships. -- In the SWFTS TI/APB model, commence development of a server-based RADAR wide band capability for incorporation into the AN/BLQ-10 system to enhance the capabilities of the VA class ships. -- Complete TI-22 development, design, integration, configuration, architecture documentation and software design. -- Commence TI-24 development, design, integration, configuration, architecture documentation and software design. -- Continue APB-21 development and integration into TI-20 and TI-22 baselines. -- Update AN/BLQ-10 software baseline changes for SWFTS and NPES, SPR Resolution and Software Enhancement via the APB process to fully utilize the new technology being fielded in TI-22 with broader spectrum digitization. -- Coordinate with ONR and NUWC Newport to develop FNCs to a high technology readiness level and transition to EW systems as appropriate.					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0775 / *Submarine Supt Equip Prog*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
-- Develop advanced technology demonstrations for feasibility. -- Develop and test a prototype SubSTAR capability for backfit and forward fit onto low profile imaging masts. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding increase of $1.516M in FY23 supports Submarine Simultaneous Transmit and Receive (SubSTAR) capability development and conducts the next step of the EW digital transformation for TI-24 performed in coordination with the rest of the SWFTS programs.					
Accomplishments/Planned Programs Subtotals	28.822	31.613	33.129	0.000	33.129

C. Other Program Funding Summary ($ in Millions)

Line Item	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
• OPN/0840: *Sub Periscope, Imaging and Supt Equip Prog*	190.954	234.932	266.300	-	266.300	260.386	278.706	260.756	265.972	Continuing	Continuing

Remarks

D. Acquisition Strategy

AN/BLQ-10 EW System - Procurements are executed/managed in accordance with Acquisition Plan (Rev 10) for AN/BLQ-10 EW System dtd 02/01/17, Single Acquisition Management Plan dtd 06/12/14, Individual Streamlined Acquisition Plan (Rev 0) for AN/BLQ-10 dtd 04/09/18, and the AN/BLQ-10 Acquisition Strategy dtd 01/28/13.

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 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0775 / *Submarine Supt Equip Prog*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware and Software Development	Various	Various : Various	5.851	0.693	Oct 2020	0.707	Oct 2021	3.877	Oct 2022	-		3.877	Continuing	Continuing	Continuing
Hardware and Software Development	WR	NUWC : Newport, RI	20.286	0.797	Oct 2020	0.812	Oct 2021	1.288	Oct 2022	-		1.288	Continuing	Continuing	Continuing
H/W and S/W Development MMM Payload	C/FFP	SEACORP : Newport, RI	6.570	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
H/W and S/W Development EW TI/APB	C/CPIF	Lockheed Martin : Syracuse, NY	33.113	22.803	Oct 2020	26.626	Oct 2021	27.162	Oct 2022	-		27.162	Continuing	Continuing	Continuing
PATRIOT Phase C Development	C/CPIF	Lockheed Martin : Syracuse, NY	0.000	2.600	Oct 2020	1.500	Oct 2021	0.000		-		0.000	0.000	4.100	-
		Subtotal	65.820	26.893		29.645		32.327		-		32.327	Continuing	Continuing	N/A

Remarks

FY23 funding increase in Hardware and Software Development to develop SubSTAR capability.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Support	WR	COTF : Norfolk, VA	1.714	0.337	Oct 2020	0.344	Oct 2021	0.136	Oct 2022	-		0.136	Continuing	Continuing	Continuing
Systems Engineering & Test Support	WR	NUWC : Newport, RI	14.480	1.592	Oct 2020	1.624	Oct 2021	0.666	Oct 2022	-		0.666	Continuing	Continuing	Continuing
		Subtotal	16.194	1.929		1.968		0.802		-		0.802	Continuing	Continuing	N/A

	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	82.014	28.822		31.613		33.129		-		33.129	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0775 / *Submarine Supt Equip Prog*

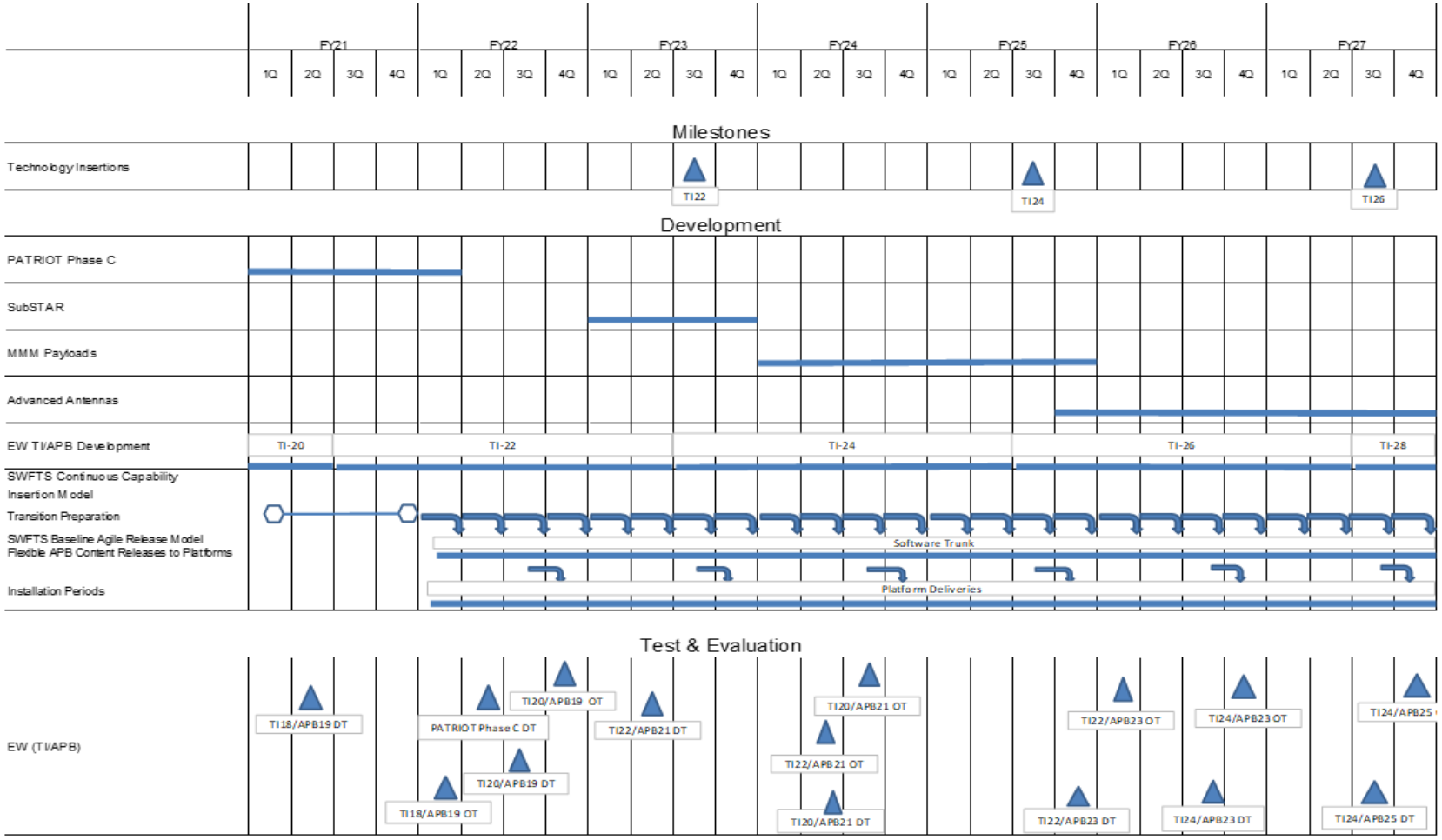

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0775 / *Submarine Supt Equip Prog*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0775				
Development: Technology Insertions: TI-22	3	2023	3	2023
Development: Technology Insertions: TI-24	3	2025	3	2025
Development: Technology Insertions: TI-26	3	2027	3	2027
Development: PATRIOT Phase C: PATRIOT Phase C	1	2021	1	2022
Development: SubSTAR: SubSTAR	1	2023	4	2023
Development: MMM Payloads: MMM Payloads	1	2024	4	2025
Development: Advanced Antennas: Advanced Antennas	4	2025	4	2027
Development: EW TI/APB Development: EW TI/APB Development: TI-20	1	2021	2	2021
Development: EW TI/APB Development: EW TI/APB Development: TI-22	3	2021	2	2023
Development: EW TI/APB Development: EW TI/APB Development: TI-24	3	2023	2	2025
Development: EW TI/APB Development: EW TI/APB Development: TI-26	3	2025	2	2027
Development: EW TI/APB Development: EW TI/APB Development: TI-28	3	2027	4	2027
Test and Evaluation: EW (TI/APB): TI-18/APB-19: Developmental Testing	2	2021	2	2021
Test and Evaluation: EW (TI/APB): TI-18/APB-19: Operational Testing	1	2022	1	2022
Test and Evaluation: EW (TI/APB): PATRIOT Phase C DT	2	2022	2	2022
Test and Evaluation: EW (TI/APB): TI-20/APB-19: Developmental Testing	3	2022	3	2022
Test and Evaluation: EW (TI/APB): TI-20/APB-19: Operational Testing	4	2022	4	2022
Test and Evaluation: EW (TI/APB): TI-22/APB-21: Developmental Testing	2	2023	2	2023
Test and Evaluation: EW (TI/APB): TI-22/APB-21: Operational Testing	2	2024	2	2024
Test and Evaluation: EW (TI/APB): TI-20/APB-21: Developmental Testing	2	2024	2	2024
Test and Evaluation: EW (TI/APB): TI-20/APB-21: Operational Testing	3	2024	3	2024

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0775 / *Submarine Supt Equip Prog*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test and Evaluation: EW (TI/APB): TI-22/APB-23: Developmental Testing	4	2025	4	2025
Test and Evaluation: EW (TI/APB): TI-22/APB-23: Operational Testing	1	2026	1	2026
Test and Evaluation: EW (TI/APB): TI-24/APB-23: Developmental Testing	3	2026	3	2026
Test and Evaluation: EW (TI/APB): TI-24/APB-23: Operational Testing	4	2026	4	2026
Test and Evaluation: EW (TI/APB): TI-24/APB-25: Developmental Testing	3	2027	3	2027
Test and Evaluation: EW (TI/APB): TI-24/APB-25: Operational Testing	4	2027	4	2027