Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Navy	Date: March 2023
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603562N *I Submarine Tactical Warfare Sys*

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	126.020	13.832	10.808	15.119	-	15.119	15.171	14.356	12.748	12.839	Continuing	Continuing
0770: *Adv Sub Supp Equip Prog*	38.756	4.571	3.726	7.791	-	7.791	7.728	6.773	5.040	5.047	Continuing	Continuing
1739: *Submarine Arctic W/F Development*	87.264	9.261	7.082	7.328	-	7.328	7.443	7.583	7.708	7.792	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element (PE) addresses advanced submarine technology areas in support of the Navy's strategic objective of Assured Access and Combat Credibility. All projects funded in this PE are non-Acquisition Category (ACAT) programs.

PROJECT 0770 - The Advanced Submarine Support Equipment Program (ASSEP) objective is to improve submarine operational effectiveness through the implementation of advanced Research and Development (R&D). In order to provide improved operational effectiveness, efforts are focused on advanced Imaging and Electronic Warfare (EW) support development. A continuing need exists to improve these capabilities in view of the advancements in potential imaging counter-detection, the need to support specialized missions, and the increasingly dense and sophisticated electronic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Ongoing developments include improved antennas, tethered buoy, 360-degree imaging systems, and electro-optic infra-red (EO/IR) vulnerability signature reduction technologies. Beginning in FY 2024, this project supports the development of changes internal to submarine platforms to integrate the Submarine Tethered Expendable Buoy (STEB). This integration will provide a communications path to and from the buoy bringing buoy sensor data into the submarine combat system to improve situational awareness and tactical control while maintaining a covert posture.

PROJECT 1739 - The Submarine Arctic Warfare Development Project is aligned to Commander, Undersea Warfighting Development Center (UWDC), Detachment Arctic Submarine Laboratory (ASL). This Project provides the U.S. Navy Submarine Force (SUBFOR) a cadre of trained Arctic Operation Specialists (AOS) and an inventory of unique Arctic sensors that are installed to optimize submarine safety during under-ice operations. AOS personnel assigned from ASL embark on submarines that deploy to the Arctic, cold water and iceberg regions, and marginal ice zones (MIZ) in northern latitudes of the Atlantic and Pacific Oceans, and are advisers to the Commanding Officer. ASL is a shore facility at Naval Base Point Loma with the infrastructure capable of supporting personnel and equipment to conduct the submarine Arctic Warfare Development mission. Improvements and life-cycle expenditures to the facility and warehousing are made as necessary to support the mission.

The Submarine Arctic Warfare Development Project, via ASL, responds to the increased threat of naval activity in the Arctic regions while continuously supporting the Navy's strategic objective of Assured Access and Combat Credibility. ASL provides a unique capability that enables the SUBFOR to satisfy the requirements laid out in the Arctic Maritime Homeland Defense Initial Capabilities Document (ICD). ASL and SUBFOR demonstrate existing Arctic Warfare capabilities and operational and tactical proficiency while developing advanced submarine technology in unique cold water environments, in under-ice conditions, and in ice-covered shallow water regions during a biennial Ice Exercise (ICEX). ICEX places an emphasis on submarine operability and mission capability in the world's harshest maritime environment. Efforts include assessment of combat system effectiveness, weapons testing, use of High Frequency (HF) sonars in Arctic regions, testing of ice-capable submarine structures, and development of class-specific Arctic operational guidelines. Tactical Development (TACDEV) ICEXs are conducted biennially and require

up front comprehensive planning and work-up training, as well as post exercise analysis and reporting. ICEXs provide the framework for various submarine test and evaluation in Arctic regions and at periodic Ice Camps. This program represents DoD's only drifting ice station capability. Emphasis during ICEX is placed on the areas of sonar operability, tactical surveillance, weapon utility, and other submarine support missions. These efforts include the assessment of combat system effectiveness, development of Arctic specific improvements for existing sonar and weapons, development of class-specific Arctic operational guidelines, and testing of ice-capable submarine support structures.

A torpedo firing ICEX occurs every four (4) years (FY 2022, FY 2026, etc.) in order to meet minimum Fleet requirements of exercise torpedo (EXTORP) firings in the Arctic. A Torpedo Exercise (TORPEX) requires a significantly higher level of logistics, personnel, and infrastructure to account for the recovery and transportation efforts of the EXTORPs. The ICEX Program also includes Arctic Exercise (ARCEX), a biennial exercise that rotates with the biennial ICEX drifting ice camps, that includes Arctic operations to support ice camp equipment evaluation, systems development, extreme cold weather training, and perform drifting sea ice analysis required to improve drifting sea ice camp Arctic operations.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	14.059	10.917	12.706	-	12.706
Current President's Budget	13.832	10.808	15.119	-	15.119
Total Adjustments	-0.227	-0.109	2.413	-	2.413
• Congressional General Reductions	-	-0.109			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.227	0.000			
• Program Adjustments	0.000	0.000	2.339	-	2.339
• Rate/Misc Adjustments	0.000	0.000	0.074	-	0.074

Change Summary Explanation

FUNDING CHANGES SINCE THE PREVIOUS PRESIDENT'S BUDGET AT THE OVERALL PE LEVEL:
- FY 2022 net decrease of $-0.227M reflects the Small Business Innovative Research (SBIR) transfer.
- FY 2023 net decrease of $-0.109M reflects a reduction applied to Federally Funded Research and Development Centers (FFRDCs)
- FY 2024 net increase of $+2.413M reflects the inclusion of funding for transitioning the Submarine Tethered Expendable Buoy (STEB) to a Program of Record (+$2.339M) the incorporation of miscellaneous program/rate adjustments (+$0.074M).

PROJECT 0770:
- FY 2023 TO FY 2024 BUDGET REQUEST INCREASE: FY 2023 ($3.726M) to FY 2024 ($7.791M) increase ($+4.065M) is due to the transition of STEB to a Program of Record (+$2.339M), 2) and other miscellaneous program/rate adjustments. In addition to the funding required to transition STEB to a program of

record, the increase in FY 2024 is also required to plan and conduct at-sea testing of new EW sensors and analyze results before transitioning to the Program Executive Office, Undersea Warfare Systems (PEO UWS).

- SCHEDULE CHANGES SINCE PREVIOUS PRESIDENT'S BUDGET: Tethered Imaging/Electronic Warfare Buoy at-sea test event has shifted from 4Q23 to 1Q24 due to supply chain issues procuring long-lead buoy materials.

PROJECT 1739:
- FY 2023 TO FY 2024 BUDGET REQUEST INCREASE: FY 2023 ($7.082M) to FY 2024 ($7.328M) increase ($+0.246M) is in line with the inflation expected with the RDT&EN appropriation.

- SCHEDULE CHANGES SINCE FY23 BUDGET: Arctic Exercise (ARCEX) events were added starting in FY 2023. The duration of the ice camp events in FY 2022/2024/2026/2028 was corrected from 1Q-4Q to 1Q-3Q in ICEX years to more accurately reflect the duration of the ice camps.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603562N / *Submarine Tactical Warfare Sys*	Project (Number/Name) 0770 / *Adv Sub Supp Equip Prog*	

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
0770: *Adv Sub Supp Equip Prog*	38.756	4.571	3.726	7.791	-	7.791	7.728	6.773	5.040	5.047	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

A continuing need exists to improve Imaging and Electronic Warfare (EW) support capabilities in view of the advancements in potential imaging counter-detection and the increasingly dense electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Improvements are necessary for submarine Imaging and EW to be operationally effective in the following mission areas: Joint Littoral Warfare, Joint Surveillance, Space and Electronic Warfare, Intelligence Collection, Maritime Protection, and Joint Strike. This project, previously divided into two project categories, Advanced Imaging Project Development and Advanced Electronic Warfare Support Project Development, is now operating under a single category titled Imaging and Electronic Warfare (EW) Support Capabilities, going forward the project will concurrently consider both domains as improved mast systems are designed. The evaluation of state-of-the-art technology to implement periscope/mast improvements via EW electromagnetic and electro-optic sensors results in improved capability. Engineering Development Models (EDMs) are developed, evaluated, and validated in the lab and through at-sea testing.

This project is a non-Acquisition Category (ACAT) program. The test articles identified consist of critical components that will be fully developed during Engineering Manufacturing and Development phase into EDMs. Software-based capabilities in Imaging and/or EW domains that will process inputs from improved masts may be integrated and tested within this project.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Imaging and Electronic Warfare (EW) Support Capabilities	4.571	3.726	5.452	0.000	5.452
Articles:	-	-	-	-	-
FY 2023 Plans: - Continue development of the advanced Imaging and EW sensor configuration for submarine periscopes. - Conduct in-lab and lake testing of new sensors under consideration to verify performance meets operational needs. - Continue sensor stack prototype and conduct testing to validate approach before transitioning to Program Executive Office, Undersea Warfare Systems (PEO UWS) production program for integration into submarine masts. - Complete RADAR Vulnerability Assessment Tool (RVAT), Detection Finding (DF), and Low Probability of Intercept (LPI) development/integration and transition to PEO UWS production program.					
FY 2024 Base Plans: - Continue development of the advanced imaging and EW sensor configuration for submarine periscopes.					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603562N / *Submarine Tactical Warfare Sys*	**Project (Number/Name)** 0770 / *Adv Sub Supp Equip Prog*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Expand imaging algorithms to other imaging sensors in new masts such as Short Wave Infra-Red (SWIR). - Develop, test, and integrate new antenna configurations to support improved radar direction finding (Multiband Omni + Direction Finding Array (MODA) Antenna). - Develop, test, and integrate smaller form-factor antennas to expand periscope sensing and direction finding frequency range. - Conduct at-sea testing of new sensors under consideration to verify performance meets operational needs. - Continue sensor stack prototyping to support testing in at-sea environments to validate approach before transitioning to PEO UWS for integration into submarine masts. - Conduct at-sea testing of Imaging and EW tethered buoy to verify performance meets operational needs. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** - FY 2023 ($3.726M) to FY 2024 ($5.452M) increase is required to plan and conduct at-sea testing of new sensors and analyze results before transitioning to PEO UWS.					
Title: Submarine Tethered Expendable Buoy (STEB) Transition	0.000	0.000	2.339	0.000	2.339
Articles:	-	-	-	-	-
Description: This effort supports the development of changes internal to submarine platforms to integrate the Submarine Tethered Expendable Buoy (STEB). This integration will provide a communications path to and from the buoy bringing buoy sensor data into the submarine combat system to improve situational awareness and tactical control while maintaining a covert posture. ***FY 2023 Plans:*** N/A ***FY 2024 Base Plans:*** - Initiate design and development of physical connections from the Imaging and Electronic Warfare (EW) tethered buoy launcher to the Submarine Warfare Federated Tactical System (SWFTS). - Initiate design and development of Imaging and EW tethered buoy signal processing and control technologies. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603562N / *Submarine Tactical Warfare Sys*	**Project (Number/Name)** 0770 / *Adv Sub Supp Equip Prog*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
FY 2024 reflects the initiation of the STEB Transition to a Program of Record effort.					
Accomplishments/Planned Programs Subtotals	4.571	3.726	7.791	0.000	7.791

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
• RDTEN/0603561N/0223: *Combat System Improvement (ADV)*	53.922	57.691	60.360	-	60.360	61.336	62.917	62.880	62.198	Continuing	Continuing

Remarks

D. Acquisition Strategy

- This project is a non-Acquisition Category (ACAT) program.
- This project optimizes technology insertion using a build-test-build approach to support EW and Imaging operational needs. Project efforts develop submarine unique improvements to mast, periscope, and EW electromagnetic spectrum and electro-optic sensors based on emerging technologies that are available from DoD Exploratory Development Programs, industry Independent Research and Development, and other sources. Engineering Development Models (EDMs) will be developed to provide a realistic method of evaluating the improvements, including deployment on submarines for testing.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603562N / *Submarine Tactical Warfare Sys*	**Project (Number/Name)** 0770 / *Adv Sub Supp Equip Prog*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Imaging and EW Support Capability Development	C/CPFF	JHU/APL : MD	2.478	0.000		0.000		0.000		-		0.000	0.000	2.478	-
Imaging and EW Support Capability Development	C/CPFF	Lockheed Martin : VA	0.000	1.773	Nov 2021	0.744	Dec 2022	1.925	Dec 2023	-		1.925	Continuing	Continuing	Continuing
Imaging and EW Support Capability Development	MIPR	MIT/LL : MA	1.554	1.443	Feb 2022	1.135	Dec 2022	1.650	Dec 2023	-		1.650	Continuing	Continuing	Continuing
Imaging and EW Support Capability Development	WR	NUWC : RI	30.758	0.334	Oct 2021	0.443	Nov 2022	2.624	Nov 2023	-		2.624	Continuing	Continuing	Continuing
Imaging and EW Support Capability Development	C/FFP	PSU/ARL : PA	0.975	0.305	Jan 2022	0.764	Dec 2022	0.550	Dec 2023	-		0.550	Continuing	Continuing	Continuing
Imaging and EW Support Capability Development	C/FFP	Toyon Research Corp : CA	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	-
Imaging and EW Support Capability Development	C/FFP	VAR : VAR*	1.398	0.080	Dec 2021	0.075	Dec 2022	0.467	Dec 2023	-		0.467	Continuing	Continuing	Continuing
		Subtotal	37.663	3.935		3.161		7.216		-		7.216	Continuing	Continuing	N/A

Remarks

* Consists of multiple performing activities with funding for each not greater than $1M per year.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Office Travel	WR	NAVSEA : DC	0.453	0.020	Oct 2021	0.025	Oct 2022	0.025	Oct 2023	-		0.025	Continuing	Continuing	Continuing
Program Management	C/FFP	KMS Solutions* : VA	0.640	0.616	Mar 2022	0.540	Dec 2022	0.550	Dec 2023	-		0.550	Continuing	Continuing	Continuing
		Subtotal	1.093	0.636		0.565		0.575		-		0.575	Continuing	Continuing	N/A

Remarks

* In addition to program office support, KMS Solutions provides technical planning, systems engineering, and test support. KMS Solutions also provides Subject Matter Experts (SMEs) for technical Peer Review Working Groups and Integrated Product Teams (IPTs) in support Electronic Warfare capability development.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603562N / *Submarine Tactical Warfare Sys*	Project (Number/Name) 0770 / *Adv Sub Supp Equip Prog*	

	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	38.756	4.571		3.726		7.791		-		7.791	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603562N / *Submarine Tactical Warfare Sys*	**Project (Number/Name)** 0770 / *Adv Sub Supp Equip Prog*

Advanced Submarine Support Equipment Program

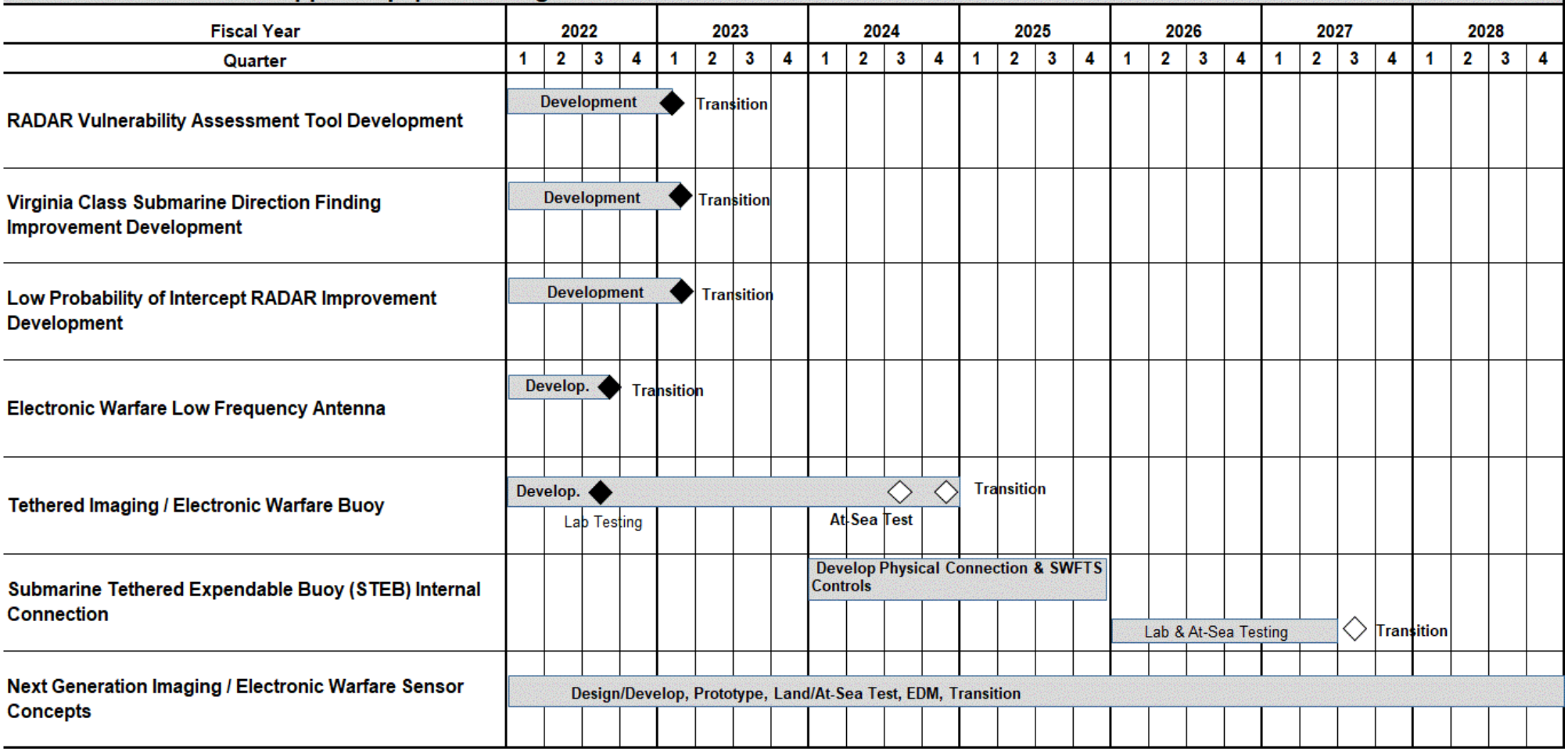

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603562N / *Submarine Tactical Warfare Sys*	**Project (Number/Name)** 0770 / *Adv Sub Supp Equip Prog*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Imaging and Electronic Warfare Support Capabilties				
RADAR Vulnerability Assessment Tool - Development	1	2022	1	2023
RADAR Vulnerability Assessment Tool - Transition to PEO UWS Production Program	1	2023	1	2023
Virginia Class Submarine Direction Finding Improvement - Development	1	2022	1	2023
Virginia Class Submarine Direction Finding Improvement - Transition to PEO UWS Production Program	1	2023	1	2023
Low Probability of Intercept RADAR Improvement - Development	1	2022	1	2023
Low Probability of Intercept RADAR Improvement Test - Transition to PEO UWS Production Program	1	2023	1	2023
Electronic Warfare Low Frequency Antenna - Development	1	2022	3	2022
Electronic Warfare Low Frequency Antenna - Transition to PEO UWS Production Program	3	2022	3	2022
Tethered Imaging/Electronic Warfare Buoy - Development	1	2022	2	2024
Tethered Imaging/Electronic Warfare Buoy - Lab Test	3	2022	3	2022
Tethered Imaging/Electronic Warfare Buoy - At-Sea Test	1	2024	1	2024
Tethered Imaging/Electronic Warfare Buoy - Transition to PEO UWS Production Program	2	2024	2	2024
Submarine Tethered Expendable Buoy (STEB) Internal Connection Development	1	2024	4	2025
Submarine Tethered Expendable Buoy (STEB) Internal Connection Testing	1	2026	2	2027
Submarine Tethered Expendable Buoy (STEB) Internal Connection Transition	3	2027	3	2027
Next Generation Imaging/Electronic Warfare Sensor Development	1	2022	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603562N / *Submarine Tactical Warfare Sys*	Project (Number/Name) 1739 / *Submarine Arctic W/F Development*	

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
1739: *Submarine Arctic W/F Development*	87.264	9.261	7.082	7.328	-	7.328	7.443	7.583	7.708	7.792	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Submarine Arctic Warfare Development Project is aligned to Commander, Undersea Warfighting Development Center (UWDC), Detachment Arctic Submarine Laboratory (ASL). This Project provides the U.S. Navy Submarine Force (SUBFOR) a cadre of trained Arctic Operation Specialists (AOS) and an inventory of unique Arctic sensors that are installed to optimize submarine safety during under-ice operations. AOS personnel assigned from ASL embark on submarines that deploy to the Arctic, cold water and iceberg regions, and marginal ice zones in northern latitudes of the Atlantic and Pacific Oceans, and are advisers to the Commanding Officer. ASL is a shore facility at Naval Base Point Loma with the infrastructure capable of supporting personnel and equipment to conduct the submarine Arctic Warfare Development mission. Improvements and life-cycle expenditures to the facility and warehousing are made as necessary to support the mission.

The Submarine Arctic Warfare Development Project, via ASL, responds to the increased threat of naval activity in the Arctic regions while continuously supporting the Navy's strategic objective of Assured Access and Combat Credibility. ASL provides a unique capability that enables the submarine force to satisfy the requirements laid out in the Arctic Maritime Homeland Defense Initial Capabilities Document (ICD). ASL and SUBFOR demonstrate existing Arctic Warfare capabilities and operational and tactical proficiency while developing advanced submarine technology in unique cold water environments, in under-ice conditions, and in ice-covered shallow water regions during a biennial Ice Exercise (ICEX). ICEX places an emphasis on submarine operability and mission capability in the world's harshest maritime environment. Efforts include assessment of combat system effectiveness, weapons testing, use of High Frequency (HF) sonars in Arctic regions, testing of ice-capable submarine structures, and development of class-specific Arctic operational guidelines. Tactical Development (TACDEV) ICEXs are conducted biennially and require up front comprehensive planning and work-up training, as well as post exercise analysis and reporting. ICEXs provide the framework for various submarine test and evaluation in Arctic regions and at periodic Ice Camps. This program represents DoD's only drifting ice station capability. Emphasis during ICEX is placed on the areas of sonar operability, tactical surveillance, weapon utility, and other submarine support missions. These efforts include the assessment of combat system effectiveness, development of Arctic specific improvements for existing sonar and weapons, development of class-specific Arctic operational guidelines, and testing of ice-capable submarine support structures. Torpedo ICEXs, occurring every four (4) years (FY 2022, FY 2026, etc.) include a Fleet requirement to conduct exercise torpedo (EXTORP) firings in the Arctic. A Torpedo Exercise (TORPEX) requires a significantly higher level of logistics, personnel, and infrastructure to account for the recovery and transportation efforts of the EXTORPs. The ICEX Program also includes Arctic Exercise (ARCEX), a biennial exercise that rotates with the biennial ICEX drifting ice camps, that includes Arctic operations to support ice camp equipment evaluation, systems development, extreme cold weather training, and perform drifting sea ice analysis required to improve drifting sea ice camp Arctic operations.

All programs funded in this project are non-Acquisition Category (ACAT) programs.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603562N / *Submarine Tactical Warfare Sys*	**Project (Number/Name)** 1739 / *Submarine Arctic W/F Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Conduct ICEX and Arctic Transit Mission, ICEX Workup and Training, Ice Camps	9.261	7.082	7.328	0.000	7.328
Articles:	-	-	-	-	-
FY 2023 Plans: - Conduct Arctic work-up training. - Support Arctic deployments, including inter-Fleet transfers, as required by the SUBFOR Commanders. - Investigate, research, develop, and deploy new systems for Arctic submarine support. - Conduct Arctic Exercise (ARCEX) 2023, a biennial exercise rotating with ICEX, to conduct Arctic operations to support ice camp equipment evaluation, systems development, extreme cold weather training, and perform drifting sea ice analysis required to improve drifting sea ice camp Arctic operations. - Support testing and tactical development required to improve submarine Arctic operability and warfighting. - Initiate planning, logistics support, procurement, and preparation for ICEX mission 2024 and Ice Camp 2024					
FY 2024 Base Plans: - Conduct Arctic work-up training, ICEX mission 2024 with Ice Camp 2024. - Conduct ICEX 2024 as a TACDEV event. Operate a submarine tracking range for approximately 14 days, conduct complex and coordinated operations from a drifting ice station. Logistically and operationally support submarine and camp operations from a drifting ice station that will be supported via contracted commercial rotary and fixed-wing aviation services, via US Transportation Command (USTRANSCOM), from temporary infrastructure and services on the North Slope of Alaska. - Support Arctic deployments, including inter-Fleet transfers, as required by the SUBFOR Commanders. - Investigate, research, test, and deploy new systems for Arctic submarine support. - Support testing and tactical development required to improve submarine Arctic operability and warfighting. - Conduct Arctic operations to support ice camp equipment evaluation, systems development and perform drifting sea ice analysis required for drifting sea ice camp Arctic operations.					
FY 2024 OCO Plans: N/A					
FY 2023 to FY 2024 Increase/Decrease Statement: - FY 2023 ($7.082M) to FY 2024 ($7.328M) increase ($+0.246M) is in line with the inflation expected with the RDT&EN appropriation.					
Accomplishments/Planned Programs Subtotals	9.261	7.082	7.328	0.000	7.328

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603562N / *Submarine Tactical Warfare Sys*	**Project (Number/Name)** 1739 / *Submarine Arctic W/F Development*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

- This project is a non-Acquisition Category (ACAT) program.
- Use Naval Undersea Warfare Center (NUWC) to provide technical assistance awarded through NAVSEA Reimbursable Work Order for submarine tracking and TORPEX capability.
- Use sole source and competitively awarded contracts through the U.S. Army Corps of Engineers (USACE) Alaska regional office for ICEX Ice Camp logistics, engineering, and operations support.
- Use sole source and competitively awarded contracts through the Fleet Logistics Center (FLC) regional contracting office and Defense Logistics Agency (DLA) for equipment procurement and technical services.
- Use sole source and competitively awarded contracts through the U.S. Transportation Command (USTRANSCOM) for ICEX aviation support.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603562N / *Submarine Tactical Warfare Sys*	Project (Number/Name) 1739 / *Submarine Arctic W/F Development*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Test & Evaluation (OT&E)	WR	COMSUBLANT : VA	18.211	3.970	Oct 2021	3.682	Oct 2022	4.257	Oct 2023	-		4.257	Continuing	Continuing	Continuing
Prior Year Operational Test & Evaluation Not Funded FYDP (PYOT&E)	WR	COMSUBPAC : CA	36.101	0.000		0.000		0.000		-		0.000	0.000	36.101	-
Operational Test & Evaluation (OT&E)	WR	NUWC/Keyport : WA	1.941	0.000		0.225	Nov 2022	0.350	Nov 2023	-		0.350	Continuing	Continuing	Continuing
Operational Test & Evaluation (OT&E)	WR	NUWC/Newport : RI	2.174	1.465	Oct 2021	0.080	Nov 2022	0.100	Nov 2023	-		0.100	Continuing	Continuing	Continuing
Operational Test & Evaluation (OT&E)	MIPR	USACE : AK	5.771	1.234	Dec 2021	2.750	Nov 2022	0.000		-		0.000	0.000	9.755	-
Operational Test & Evaluation (OT&E)	MIPR	USTRANSCOM : IL	3.170	2.107	Jan 2022	0.000		2.231	Dec 2023	-		2.231	Continuing	Continuing	Continuing
Prior Year Operational Test & Evaluation Not Funded FYDP (PYOT&E)	C/CPFF	UT/ARL : TX	1.444	0.000		0.000		0.000		-		0.000	0.000	1.444	Continuing
Prior Year Operational Test & Evaluation Not Funded FYDP (PYOT&E)	C/CPFF	UW/APL : WA	15.827	0.000		0.000		0.000		-		0.000	0.000	15.827	Continuing
Prior Year Operational Test & Evaluation Not Funded FYDP (PYOT&E)	C/CPFF	VAR* : VAR	0.339	0.000		0.000		0.000		-		0.000	0.000	0.339	-
		Subtotal	84.978	8.776		6.737		6.938		-		6.938	Continuing	Continuing	N/A

Remarks

* Consists of multiple performing activities with funding for each not greater than $1M per year

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603562N / *Submarine Tactical Warfare Sys*	**Project (Number/Name)** 1739 / *Submarine Arctic W/F Development*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support - Acquisition, Business & Finance	C/CPAF	EG&G : VA	0.311	0.000		0.000		0.000		-		0.000	0.000	0.311	-
Program Management Support - Acquisition, Business & Finance	C/CPAF	BAE SYSTEMS : MD	1.088	0.000		0.000		0.000		-		0.000	0.000	1.088	-
Program Management Support - Acquisition, Business & Finance	C/CPIF	TMB : DC	0.551	0.125	Feb 2022	0.125	Dec 2022	0.130	Dec 2023	-		0.130	Continuing	Continuing	Continuing
Program Management Support - Arctic Scientist	C/CPIF	KMS Solutions : VA	0.000	0.125	Jan 2022	0.125	Dec 2022	0.000		-		0.000	0.000	0.250	-
Program Office Travel	Allot	NAVSEA PEO IWS 5 : DC	0.040	0.000		0.000		0.000		-		0.000	0.000	0.040	-
ICEX Event Travel*	Allot	NAVSEA PEO IWS 5 : DC	0.296	0.235	Oct 2021	0.095	Oct 2022	0.260	Oct 2023	-		0.260	Continuing	Continuing	Continuing
		Subtotal	2.286	0.485		0.345		0.390		-		0.390	Continuing	Continuing	N/A

Remarks

* ICEX Event Travel category reflects travel for the Arctic Submarine Lab personnel in support of ICEX, but is managed by NAVSEA PEO IWS 5 via the Defense Travel System (DTS) Cross-Organization process.

	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	87.264	9.261		7.082		7.328		-		7.328	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603562N / *Submarine Tactical Warfare Sys*	**Project (Number/Name)** 1739 / *Submarine Arctic W/F Development*	

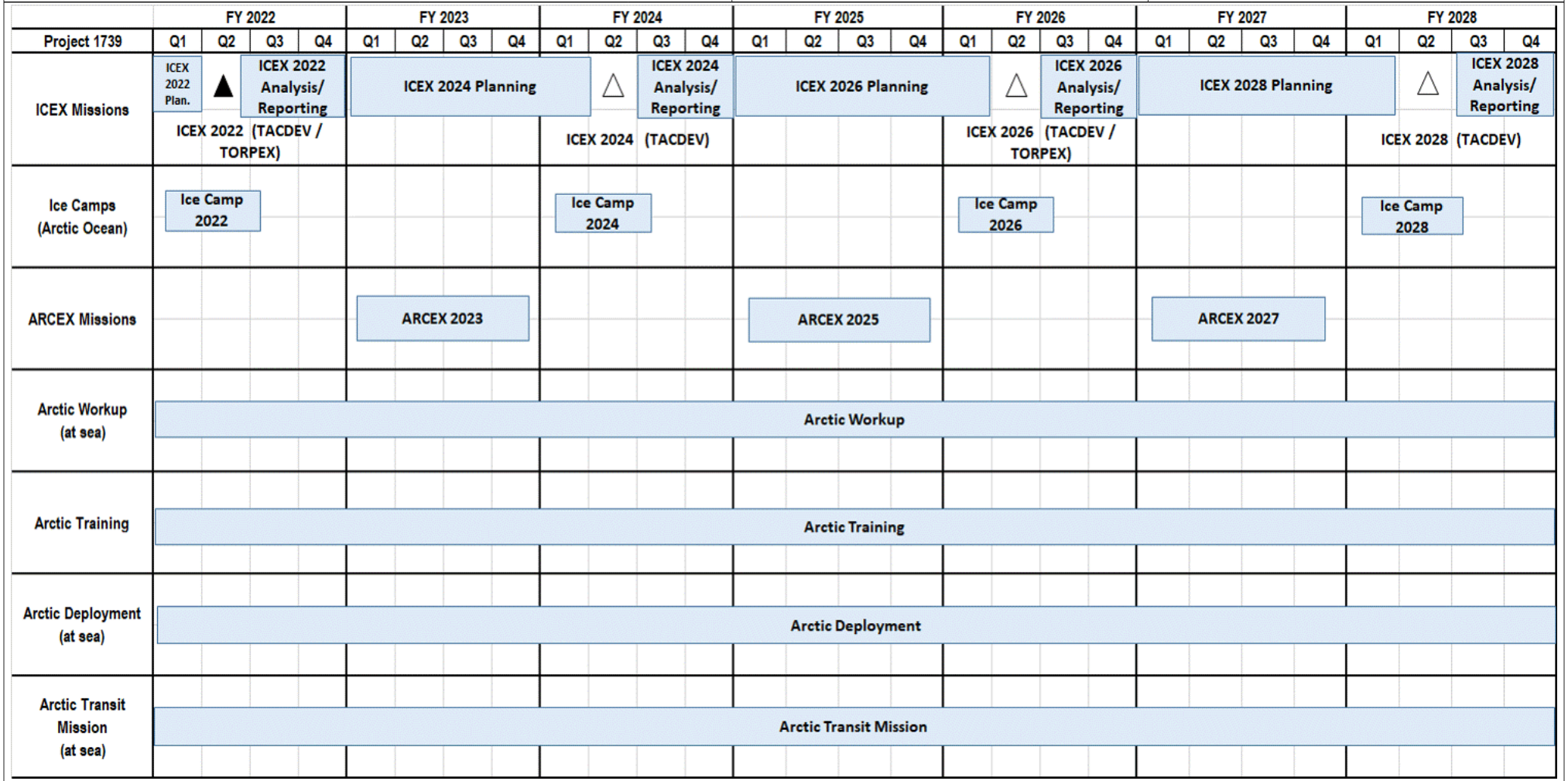

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603562N / *Submarine Tactical Warfare Sys*	**Project (Number/Name)** 1739 / *Submarine Arctic W/F Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1739				
ICEX Missions: ICEX Mission 2022 (TACDEV / TORPEX) Planning/Logistics	1	2022	1	2022
ICEX Missions: ICEX Mission 2022 (TACDEV / TORPEX)	2	2022	2	2022
ICEX Missions: ICEX Mission 2022 (TACDEV / TORPEX) Post-ICEX Analysis/ Reporting	3	2022	4	2022
ICEX Missions: ICEX Mission 2024 (TACDEV) Planning/Logistics	1	2023	1	2024
ICEX Missions: ICEX Mission 2024 (TACDEV)	2	2024	2	2024
ICEX Missions: ICEX Mission 2024 (TACDEV) Post-ICEX Analysis/Reporting	3	2024	4	2024
ICEX Missions: ICEX Mission 2026 (TACDEV / TORPEX) Planning/Logistics	1	2025	1	2026
ICEX Missions: ICEX Mission 2026 (TACDEV / TORPEX)	2	2026	2	2026
ICEX Missions: ICEX Mission 2026 (TACDEV / TORPEX) Post-ICEX Analysis/ Reporting	3	2026	4	2026
ICEX Missions: ICEX Mission 2028 (TACDEV) Planning/Logistics	1	2027	1	2028
ICEX Missions: ICEX Mission 2028 (TACDEV)	2	2028	2	2028
ICEX Missions: ICEX Mission 2028 (TACDEV) Post-ICEX Analysis/Reporting	3	2028	4	2028
Ice Camps: Ice Camp (Arctic Ocean) 2022	1	2022	3	2022
Ice Camps: Ice Camp (Arctic Ocean) 2024	1	2024	3	2024
Ice Camps: Ice Camp (Arctic Ocean) 2026	1	2026	3	2026
Ice Camps: Ice Camp (Arctic Ocean) 2028	1	2028	3	2028
ARCEX Missions: ARCEX 2023	1	2023	4	2023
ARCEX Missions: ARCEX 2025	1	2025	4	2025
ARCEX Missions: ARCEX 2027	1	2027	4	2027
Arctic Workup (At-Sea): Arctic Workup (At Sea)	1	2022	4	2028

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603562N / *Submarine Tactical Warfare Sys*	**Project (Number/Name)** 1739 / *Submarine Arctic W/F Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Arctic Training: Arctic Training	1	2022	4	2028
Arctic Submarine Deployment as required by the Submarine Type Commander: Arctic Submarine Deployment as required by the Submarine Type Commander	1	2022	4	2028
Arctic Transit Mission (At Sea): Arctic Transit Mission (At Sea)	1	2022	4	2028