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 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0101226N *I Submarine Acoustic War Dev*							
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	94.883	58.645	81.237	92.869	-	92.869	78.572	55.692	54.743	55.250	Continuing	Continuing
1265: *Sub Defensive Warfare*	78.223	16.587	17.917	15.322	-	15.322	17.520	16.063	15.556	15.359	Continuing	Continuing
1267: *Compact Rapid Attack Weapon (CRAW)*	13.363	39.064	55.782	74.869	-	74.869	58.350	36.872	36.374	37.021	Continuing	Continuing
1268: *Non-Traditional Acoustic Communications (NTAC)*	3.297	2.994	2.538	2.678	-	2.678	2.702	2.757	2.813	2.870	Continuing	Continuing
9999: *Congressional Adds*	0.000	0.000	5.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.000

A. Mission Description and Budget Item Justification

The Submarine Acoustic Warfare (SAWS) Development Program develops acoustic countermeasures, submarine defense capabilities, external launch systems and all acoustic augmentation systems for the U.S. Navy submarines. The SAWS Development Program is comprised of the Submarine Defensive Warfare Program, Compact Rapid Attack Weapon (CRAW) and Non-Traditional Acoustic Communications (NTAC).

Project 1265 Sub Defensive Warfare
The ADC MK 5 acoustic countermeasure (ACAT III) developmental contract awarded in Sep 2018 and is currently in the Engineering and Manufacturing Development (E&MD) phase. The first development (Increment 1) effort of the overall Submarine Torpedo Defensive Systems (SubTDS) program is focused on delivering full internal countermeasure launcher (ICL) functionality to all submarine in the fleet via the Acoustic Device Countermeasure (ADC) MK5 effort. The ADC MK5 development includes delivering fully functional test units and Engineering Development Model (EDM) variants. The ADC MK5 will bring new technologies including adaptability packaged in a three-inch diameter body. The ADC MK5 efforts support on- going development including component and subsystem design, in support of the Preliminary Design Review (PDR), Critical Design Review (CDR) and procurement contract award of multiple ADC MK5 EDM countermeasure developmental variants.

FY23 funding will complete the Critical Design Review (CDR) and deliver four (4) Countermeasure Control Tools (CCT) and four (4) Sonar Test Units (STU- E). Hardware in the Loop Testing (HWIL) in the Environment Centric Weapons Analysis Facility (EC WAF) on STU-E will begin in FY23. EDM-2 production prototyping will continue in preparation for beginning deliveries in FY24.

FY24 funding will include EDM-2 Test Readiness Review (TRR) and will deliver one hundred and twenty two (122) EDM-2 units. Twenty (20) units to be utilized for Environmental Qualification Testing (EQT), three (3) units to be utilized for HERO testing, and ninety nine (99) units to be utilized for DT. Procurement of long lead items for eighty-four (84) Low Rate Initial Production (LRIP) units will also begin in FY24 in preparation for initial deliveries beginning in FY25.

The next development in the SubTDS program (Increment 2) focuses on the development of the External Countermeasure Launcher (ECL) hosted 6-inch acoustic countermeasure,
Tactical Decision Aid, and integration with ship systems for to provide improved adaptive capabilities leading up to a contract award in FY25.

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 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0101226N *I Submarine Acoustic War Dev*

The Undersea Defense Working Group (UDWG) is a working group comprised of fleet, resource sponsor, (testing community) and acquisition community representatives to assess fleet threats and the effectiveness of our countermeasure systems against these threats, both known and projected. This includes associated studies, demonstrations, models, and simulations. The Technical Direction Agent (TDA) and In-Service Engineering Agent (ISEA) will provide hardware and software development support for Acoustic Devices Countermeasure (ADC) as well as Countermeasures Set, Acoustic (CSA) systems, future variants, and Acoustic Augmentation Support Systems (AASS) in the Acoustic Augmentation Support Program (AASP), and advanced communication systems improvements in support of the AASP, including component level technical insertion.

PMS415 Submarine Tethered Expendable Buoy (STEB) effort is limited to the development of changes to the internal countermeasure launcher, specifically the breech door, to integrate STEB. This integration will provide a communications path to and from the buoy, bringing buoy sensor data internal to the submarine.

Project 1267 Compact Rapid Attack Weapon (CRAW)
1. Compact Rapid Attack Weapon (CRAW) Development Design
CRAW is a very lightweight torpedo that will have Anti-Submarine Warfare (ASW) and Anti-Torpedo Torpedo (ATT) capabilities. ONR began a follow-on FNC in FY20 to demonstrate the ability to modify a previous design for submarine integration and use as an ASW weapon via TEMPALT in FY24. PMS415 began a Rapid Prototyping (RP) Middle Tier Acquisition (MTA) in FY22 to transition the ONR FNC effort to a lasting Early Operational Capability via a SHIPALT in FY26. The ONR FNC and CRAW MTA program received forty (40) plus existing legacy hardware devices that will be updated for submarine integration, and will be known as the CRAW TI-1 hardware baseline. The critical updates consist of integrating a new Safe and Arming (S&A) and Warhead (WH) design, and the development of Anti-Submarine Warfare (ASW) mission software. PSU/ARL will support the ONR FNC demonstration, the development of the CRAW TI-1 hardware and software updates, and the maturation of the design into a permanent capability through the RP MTA approach.

Leveraging the existing legacy hardware devices and the long standing technological knowledge of PSU/ARL for designing, testing, and qualifying the CRAW device will enable the program to deliver the leave behind residual capability in FY26 as the TI-1/ASW Early Operational Capability (EOC). The program will then transition the RP MTA into a Major Capability Acquisition Program that will update the TI-1 baseline into a supportable and producible industry design that will be known as the TI-2 hardware baseline. PMS415 awarded a UTIC OTA contract in FY22 to Raytheon (Prime Contractor) who will work with ARL/PSU in FY23 to transfer knowledge and begin initial TI-2 baseline development. In FY24, Raytheon will be developing the TI-2 hardware and procuring long lead material that will address obsolescence issues, develop the production line, improve manufacturing processes, stand-up the vendor base, and deliver TI-2 EDMs in support of future full-rate production. PMS415 intends to formally initiate the TI-2 program of record in FY23 as a post MS-B ACAT III program. The program is planning to reach MS-C in FY28.

2. Compact Rapid Attack Weapon (CRAW) Submarine Integration
Submarine integration of CRAW into the external countermeasure launcher (ECL) assembly requires upgrades to the combat systems in support of pre-planning and launch control of the CRAW, a new launch tube assembly that fits into the ECL, and ship alteration and modernization planning documents. This effort requires upgrades to the submarine combat system as a part of the Submarine Federated and Warfare Tactical Systems (SWFTS) modernization cycle. The major components requiring hardware and software upgrades to support CRAW include the ECL assembly, BYG-1 combat system, and Common Weapon Launcher (CWL). The upgrades

will come in two initial phases with a Temporary Alteration (TEMPALT) for the ONR FNC demonstration launch from a Virginia Class Submarine (VCS), and then a permanent Ship Alteration (SHIPALT) to TI-24 for VCS Blk III and later hulls as a part of the Rapid Prototyping MTA. In addition, the necessary TEMPALT and SHIPALT documentation (e.g., design changes, safety reports, test reports, etc.) required for installation aboard a submarine will be developed. An integrated test program and operational testing with the Navy's Command Operational Test and Evaluation Force will be conducted after installation of the TI-24 SHIPALT.

In FY2024 the program will complete a TEMPALT data package and coordinate with ONR FNC to demonstrate the launch of a CRAW from an ECL on a submarine in FY24. This test will inform the final SHIPALT configuration needed for permanent integration and installation of CRAW on a submarine beginning in FY2026. The program will also continue development of upgrades necessary to support CRAW launch and control from the BYG-1 combat system. The program will also begin work with ONR on Revolver Multi Payload (MP) to enable CRAW launch and control via torpedo tubes. This has the potential to significantly reduce DT/OT duration by enabling the launch of test CRAWs from the torpedo room and thereby minimizing the time consuming replacement and reloading of ECL assemblies (which must be accomplished pier side with crane support).

Project 1268 Non-Traditional Acoustic Communications (NTAC)

This capability provides advanced undersea acoustic communications across multiple platforms within the Navy. This program builds upon the baseline NTAC software capability and integrates the software components into existing hardware to expand the effectiveness and reliability of the capability. Additional details are available at the classified level.

The SAWS Development Program transitions the research and development of new technologies and capabilities generated under the Future Naval Capabilities (FNC), Small Business and Innovative Research (SBIR), and other Research, Development, Test & Evaluation (RDT&E) initiatives. Hardware and software evaluations in representative acoustic environments, against projected threats utilizing digital and hardware-in-the-loop simulations determines the effectiveness and impact on improving submarine survivability. The technology is then integrated into the appropriate product line. Additionally, this effort also includes advanced studies, product development and improvements for Submarine Acoustic Warfare Systems (SAWS) including but not limited to AASP, CSA, SubTDS, CRAW and NTAC.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	59.752	81.237	93.214	-	93.214
Current President's Budget	58.645	81.237	92.869	-	92.869
Total Adjustments	-1.107	0.000	-0.345	-	-0.345
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-5.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.107	0.000			
• Program Adjustments	0.000	0.000	-1.548	-	-1.548

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 7: *Operational Systems Development*		R-1 Program Element (Number/Name) PE 0101226N *I Submarine Acoustic War Dev*			
• Rate/Misc Adjustments	0.000	0.000	1.203	-	1.203

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

	FY 2022	FY 2023
Project: 9999: *Congressional Adds*		
Congressional Add: *Integration of four-tube launch system*	0.000	5.000
Congressional Add Subtotals for Project: 9999	0.000	5.000
Congressional Add Totals for all Projects	0.000	5.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / *Submarine Acoustic War Dev*	Project (Number/Name) 1265 / *Sub Defensive Warfare*	

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
1265: *Sub Defensive Warfare*	78.223	16.587	17.917	15.322	-	15.322	17.520	16.063	15.556	15.359	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Submarine Acoustic Warfare (SAWS) Development Program develops acoustic countermeasures, submarine defense capabilities, external launch systems and all acoustic augmentation systems for the U.S. Navy submarines. The SAWS Development Program is comprised of the Submarine Defensive Warfare Program.

Project 1265 Sub Defensive Warfare Submarine Torpedo Defense System (SubTDS)
The ADC MK 5 acoustic countermeasure (ACAT III) developmental contract awarded in Sep 2018 and is currently in the Engineering and Manufacturing Development (E&MD) phase. The first development (Increment 1) effort of the overall Submarine Torpedo Defensive Systems (SubTDS) program is focused on delivering full internal countermeasure launcher (ICL) functionality to all submarine in the fleet via the Acoustic Device Countermeasure (ADC) MK5 effort. The ADC MK5 development includes delivering fully functional test units and Engineering Development Model (EDM) variants. The ADC MK5 will bring new technologies including adaptability packaged in a three-inch diameter body. The ADC MK5 efforts support on- going development including component and subsystem design, in support of the Preliminary Design Review (PDR), Critical Design Review (CDR) and procurement contract award of multiple ADC MK5 EDM countermeasure developmental variants.

FY23 will complete the Critical Design Review (CDR) and deliver four (4) Countermeasure Control Tools (CCT) and four (4) Sonar Test Units (STU-E). Hardware in the Loop Testing (HWIL) in the Environment Centric Weapons Analysis Facility (EC WAF) on STU-E will begin in FY23. EDM-2 production prototyping will continue in preparation for beginning deliveries in FY24.

FY24 will include EDM-2 Test Readiness Review (TRR) and will deliver one hundred and twenty two (122) EDM-2 units. Twenty (20) units to be utilized for Environmental Qualification Testing (EQT), three (3) units to be utilized for HERO testing, and ninety nine (99) units to be utilized for DT. Procurement of long lead items for eighty-four (84) Low Rate Initial Production (LRIP) units will also begin in FY24 in preparation for initial deliveries beginning in FY25.

The next development in the SubTDS program (Increment 2) focuses on the development of the External Countermeasure Launcher (ECL) hosted 6-inch acoustic countermeasure, Tactical Decision Aid, and integration with ship systems for to provide improved adaptive capabilities leading up to a contract award in FY25.

The Undersea Defense Working Group (UDWG) is a working group comprised of fleet, resource sponsor, (testing community) and acquisition community representatives to assess fleet threats and the effectiveness of our countermeasure and systems against these threats, both known and projected. This includes associated studies, demonstrations, models, and simulations. The Technical Direction Agent (TDA) and In-Service Engineering Agent (ISEA) will provide hardware and software development support for Acoustic Devices Countermeasure (ADC) as well as Countermeasures Set, Acoustic (CSA) systems, future variants, and Acoustic Augmentation Support Systems (AASS) in the Acoustic Augmentation Support Program (AASP), and advanced communication systems improvements in support of the AASP, including component level technical insertion.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101226N / *Submarine Acoustic War Dev*	**Project (Number/Name)** 1265 / *Sub Defensive Warfare*

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 Torpedo Defense System (SubTDS)	16.587	17.917	12.751	0.000	12.751
Articles:	-	122	84	-	84
Description: The ADC MK5 Acoustic Countermeasure (ACAT III) developmental contract awarded in Sep 2018 and is currently in the Engineering & Manufacturing Development phase. The first effort of the overall SubTDS program focuses on delivering full internal countermeasure launcher functionality to all submarines in the fleet via the Acoustic Device Countermeasure (ADC) MK5 effort.					
FY 2023 Plans: - Conduct ADC MK5 Critical Design Review (CDR). - Continue ADC MK5 EDM design and prototype builds. - Continue M&S assessment of known and projected torpedo threats. - Continue development of required program documentation. - Continue development of concept of operations and operational tactics. - Continue assessment of Threat for UDWG and WAF with updated vulnerability assessments. - Deliver four (4) CCT, four (4) STU-E - Continue procurement of long lead items for twenty (20) EDM-2 to be utilized for Environmental Qualification Testing (EQT) - Continue procurement of long lead items for three (3) EDM-2 to be utilized for Hazards of Electromagnetic Radiation to Ordnance (HERO) Testing - Continue procurement of long lead items for ninety nine (99) EDM-2 to be utilize for in-water developmental testing - Start Hardware in the Loop (HWIL) Testing on STU-E					
FY 2024 Base Plans: - TRR for EDM-2 - Deliver twenty (20) EDM-2 for EQT - Deliver three (3) EDM-2 for HERO testing - Begin deliveries of ninety nine (99) EDM-2 for DT - Initiate procurement of long lead items for eighty four (84) Low Rate Initial Production units to be utilized for Operational Testing (OT) in FY26					
FY 2024 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101226N / *Submarine Acoustic War Dev*	**Project (Number/Name)** 1265 / *Sub Defensive Warfare*

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 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2023 to FY 2024 the program decreased by $5.166 million due to reduction of article procurement by 38 quantity.					
Title: Submarine Tethered Expendable Bouy ***Articles:*** ***Description:*** Future Naval Capabilities BA-03 transfer (PE 0603673N / Prj 3346). This effort supports the development of changes to the internal countermeasure launcher, specifically the breech door, to integrate the Submarine Tethered Expendable Buoy (STEB). This integration will provide a communications path to and from the buoy, bringing buoy sensor data internal to the submarine. ***FY 2023 Plans:*** N/A ***FY 2024 Base Plans:*** - Initiate design and development of an internal countermeasure breech door that enables pre and post-launch connectivity with a STEB. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 reflects the initiation of the STEB Transition to a Program of Record effort.	0.000 -	0.000 -	2.571 -	0.000 -	2.571 -
Accomplishments/Planned Programs Subtotals	16.587	17.917	15.322	0.000	15.322

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/2210: *Submarine Acoustic Warfare System*	24.578	31.708	46.726	-	46.726	46.283	38.944	37.451	34.548	Continuing	Continuing

Remarks

OPN 2210 includes SubTDS and Compact Rapid Attack Weapon System (CRAW) starting in FY 2023. Funding profile shows SubTDS equity only.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101226N / *Submarine Acoustic War Dev*	**Project (Number/Name)** 1265 / *Sub Defensive Warfare*

D. Acquisition Strategy

Submarine Acoustic Warfare System (SAWS) develops Undersea Defensive Warfare technologies to improve the survivability of all U.S. Submarine classes.

SUBTDS

Through a full and open competition, the ADC MK5 development contract awarded in Sep 2018. The Cost Plus Incentive Fee (CPIF) contract funds the design and development of Engineering Development Model (EDM) variants, Technical Data Packages (TDP), and Low-Rate Initial Production (LRIP) units for accomplishing Operational Testing (OT). The ADC MK5 contractor subsystem testing and joint contractor/Navy Development Testing (DT) will occur in FY23 through FY25 and Navy OT in FY26. Milestone C is nominally in

FY26. Initial Operational Capability (IOC) is nominally FY27 for the Internal Countermeasure Launcher (ICL) configuration. After successfully completing OT and Full Rate Production Decision Review (FRP DR), award of a full and open competitive production contract occurs in FY27. APB and TEMP will be approved in FY23. The next development effort for addressing the overall SubTDS program will begin in FY25 and focus on the development of the External Countermeasure Launcher (ECL) launched 6-inch acoustic countermeasure variant.

Development of the acquisition strategy is beginning, with a contract award planned for FY25.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / *Submarine Acoustic War Dev*	Project (Number/Name) 1265 / *Sub Defensive Warfare*	

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
SubTDS WAF ANALYSIS UDWG	WR	NUWC : NEWPORT, RI	13.069	0.000		2.995	Dec 2022	0.508	Dec 2023	-		0.508	Continuing	Continuing	Continuing
SubTDS SYSYTEM ENGINEERING	WR	NUWC : NEWPORT, RI	16.650	2.404	Nov 2021	1.517	Dec 2022	2.638	Dec 2023	-		2.638	Continuing	Continuing	Continuing
SubTDS ADC MK5 New Development	C/CPIF	LEIDOS : RESTON, VA	22.821	11.790	Nov 2021	11.641	Nov 2022	5.539	Nov 2023	-		5.539	Continuing	Continuing	Continuing
SubTDS ADC MK5 SYSTEM ENGINEERING and Logistics	WR	NUWC : KEYPORT, WA	5.510	0.200	Nov 2021	0.204	Dec 2022	0.481	Dec 2023	-		0.481	Continuing	Continuing	Continuing
SubTDS Modeling And Simulation	WR	NUWC : NEWPORT, RI	7.304	1.796	Nov 2021	0.830	Dec 2022	1.958	Dec 2023	-		1.958	Continuing	Continuing	Continuing
SubTDS Tactical Decision Aid TacDA	WR	NUWC : NEWPORT, RI	6.481	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Acoustic Augmentation Support Program (AASP)	WR	NUWC : NEWPORT, RI	0.435	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Sabot Development	WR	NUWC : NEWPORT, RI	1.270	0.000		0.000		0.000		-		0.000	0.000	1.270	-
SubTDS ADC MK5 Principal for Safety and Logistics	WR	NSWC : INDIAN HEAD, MD	0.015	0.045	Dec 2021	0.020	Dec 2022	0.066	Dec 2023	-		0.066	0.000	0.146	-
STEB Development	WR	NUWC : NEWPORT, RI	0.000	0.000		0.000		2.571	Mar 2024	-		2.571	0.000	2.571	-
SAWS Roadmap	C/FP	SPA : ARLINGTON, VA	0.000	0.150	Jun 2022	0.000		0.000		-		0.000	0.000	0.150	-
SubTDS SYSYTEM ENGINEERING	WR	NSWC : CORONA, CA	0.000	0.000		0.000		0.069	Dec 2023	-		0.069	0.000	0.069	-
		Subtotal	73.555	16.385		17.207		13.830		-		13.830	Continuing	Continuing	N/A

Remarks

FY24 will deliver, twenty (20) EDM-2 EQT, three (3) EDM-2T and ninety nine (99) to support ADC MK 5 developmental testing (DT).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / *Submarine Acoustic War Dev*	Project (Number/Name) 1265 / *Sub Defensive Warfare*	

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
Prior Year Developmental Test & Evaluation Not Funded FYDP (PYDT&E)	WR	NUWC : NEWPORT, RI	0.137	0.000		0.380	Dec 2022	0.844	Dec 2023	-		0.844	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	OPTEVFOR : NORFOLK, VA	0.000	0.000		0.000		0.052	Dec 2023	-		0.052	0.000	0.052	-
		Subtotal	0.137	0.000		0.380		0.896		-		0.896	Continuing	Continuing	N/A

Remarks

FY24 will perform Test Readiness Review (TRR) for EDM-2 and will begin DT on units delivered.

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
SAWS TRAVEL	WR	NAVSEA : Washington, DC	0.882	0.010	Oct 2021	0.040	Dec 2022	0.050	Dec 2023	-		0.050	Continuing	Continuing	Continuing
SubTDS PROGRAM MANAGEMENT SUPPORT	C/CPAF	TECH MARINE : Washington, DC	0.900	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
SubTDS PROGRAM MANAGEMENT SUPPORT	C/CPAF	BOOZ ALLEN : Washington, DC	2.369	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
SubTDS PROGRAM MANAGEMENT SUPPORT	C/CPAF	Synchron : Washington, DC	0.380	0.192	Jun 2022	0.290	Dec 2022	0.546	Dec 2023	-		0.546	Continuing	Continuing	Continuing
		Subtotal	4.531	0.202		0.330		0.596		-		0.596	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	78.223	16.587		17.917		15.322		-		15.322	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101226N / *Submarine Acoustic War Dev*	**Project (Number/Name)** 1265 / *Sub Defensive Warfare*

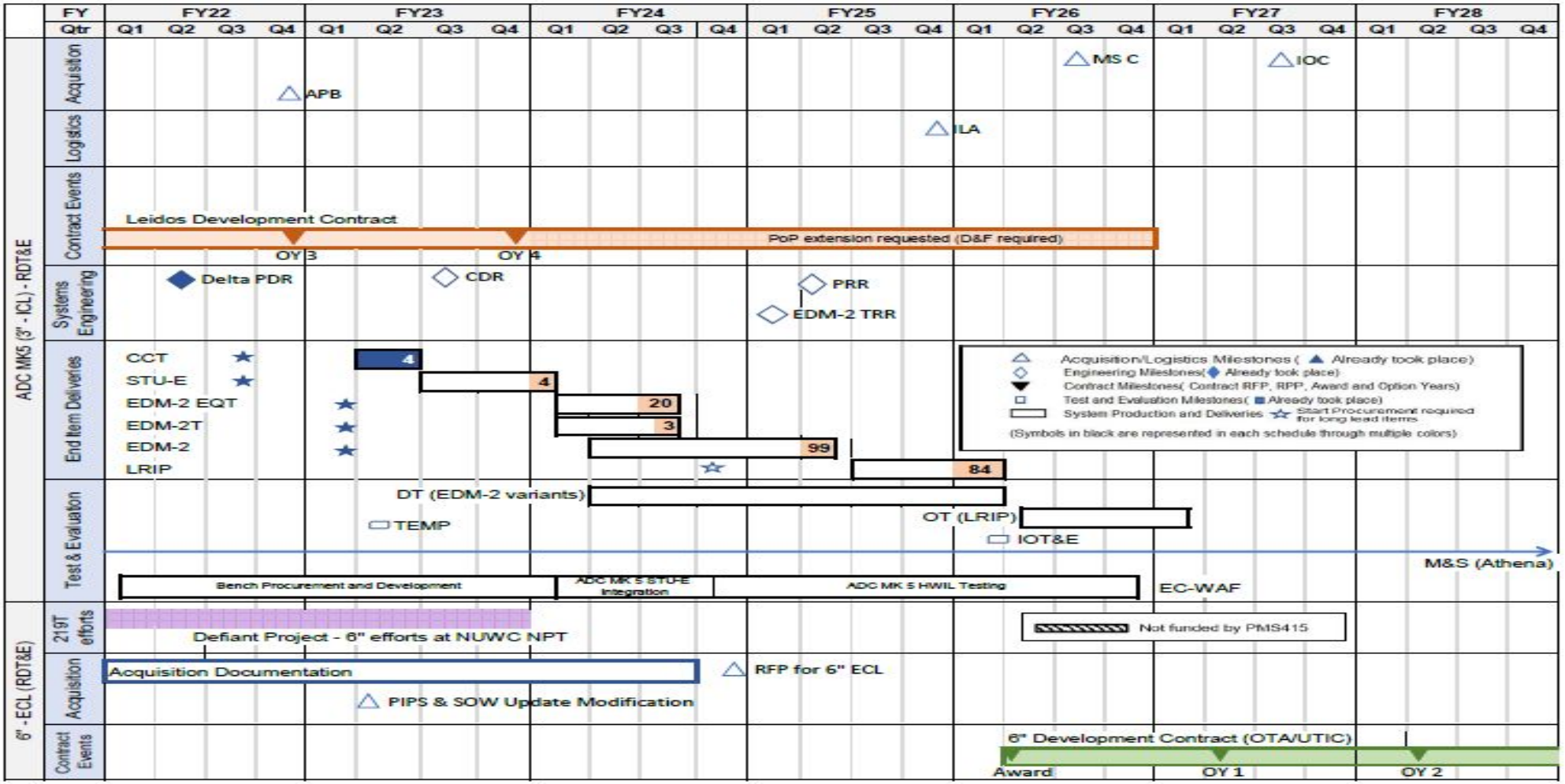

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101226N / *Submarine Acoustic War Dev*	**Project (Number/Name)** 1265 / *Sub Defensive Warfare*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1265				
Schedule Detail	1	2022	1	2027
Weapons Analysis Facility (WAF): Countermeasure (CM) Effectiveness/Weapon Analysis Facility (WAF) Vulnerability	1	2022	4	2026
Submarine Torpedo Defense Systems (SubTDS): SubTDS M&S	1	2022	4	2025
Submarine Torpedo Defense Systems (SubTDS): TEMP Development	1	2022	4	2022
Submarine Torpedo Defense Systems (SubTDS): ADC MK5 5 PDR	1	2022	1	2022
Submarine Torpedo Defense Systems (SubTDS): ADC MK5 5 Delta PDR/IPR	2	2022	2	2022
Submarine Torpedo Defense Systems (SubTDS): ADC MK5 Critical Design Review (CDR)	3	2023	3	2023
Submarine Torpedo Defense Systems (SubTDS): EDM-2 Variant Production and Deliveries	1	2023	2	2025
Submarine Torpedo Defense Systems (SubTDS): DT (EDM-2 Variants)	1	2025	1	2026
Submarine Torpedo Defense Systems (SubTDS): LRIP Production and Deliveries	3	2025	1	2026
Submarine Torpedo Defense Systems (SubTDS): MS-C Decision Reviews	3	2026	3	2026
Submarine Torpedo Defense Systems (SubTDS): OT (LRIP)	3	2026	2	2027
Submarine Torpedo Defense Systems (SubTDS): ECL Development Start	1	2026	1	2026

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
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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
1267: *Compact Rapid Attack Weapon (CRAW)*	13.363	39.064	55.782	74.869	-	74.869	58.350	36.872	36.374	37.021	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Compact Rapid Attack Weapon (CRAW) Development Design

Compact Rapid Attack Weapon (CRAW) Development Design CRAW is a very lightweight torpedo that will have Anti-Submarine Warfare (ASW) and Anti-Torpedo Torpedo (ATT) capabilities. ONR began a follow-on FNC in FY20 to demonstrate the ability to modify a previous design for submarine integration and use as an ASW weapon via TEMPALT in FY24. PMS415 began a Rapid Prototyping (RP) Middle Tier Acquisition (MTA) in FY22 to transition the ONR FNC effort to a lasting Early Operational Capability via a SHIPALT in FY26. The ONR FNC and CRAW MTA program received forty (40) plus existing legacy hardware devices that will be updated for submarine integration and will be known as the CRAW TI-1 hardware baseline. The critical updates consist of integrating a new Safe and Arming (S&A) and Warhead (WH) design, and the development of Anti-Submarine Warfare (ASW) mission software. ARL/PSU will support the ONR FNC demonstration, the development of the CRAW TI-1 hardware and software updates, and the maturation of the design into a permanent capability through the RP MTA approach. Leveraging the existing legacy hardware devices and the long standing technological knowledge of PSU/ARL for designing, testing, and qualifying the CRAW device will enable the program to deliver the leave behind residual capability in FY26 as the TI-1/ASW Early Operational Capability (EOC). The program will then transition the RP MTA into a Major Capability Acquisition Program that will update the TI-1 baseline into a supportable and producible industry design that will be known as the TI-2 hardware baseline. PMS415 awarded a UTIC OTA contract in FY22 to Raytheon (Prime Contractor)that will work with ARL/PSU in FY23 to transfer knowledge and begin initial TI-2 baseline development. In FY24, The prime contractor will be developing the TI-2 hardware and procuring long lead material that will address obsolescence issues, develop the production line, improve manufacturing processes, stand-up the vendor base, and deliver TI-2 EDMs in support of completing qualification testing and integrated testing (IT). PMS415 intends to initiate the TI-2 program of record in mid to late FY23 as a post MS-B ACAT III program. The program is planning to reach MS-C in FY28.

Compact Rapid Attack Weapon (CRAW) Submarine Integration

Submarine integration of CRAW into the external countermeasure launcher (ECL) assembly requires upgrades to the combat systems in support of pre-planning and launch control of the CRAW, a new launch tube assembly that fits into the ECL, and ship alteration and modernization planning documents. This effort requires upgrades to the submarine combat system
as a part of the Submarine Federated and Warfare Tactical Systems (SWFTS) modernization cycle. The major components requiring hardware and software upgrades to support CRAW include the ECL assembly, BYG-1 combat system, and Common Weapon Launcher (CWL). The upgrades will come in two initial phases with a Temporary Alteration (TEMPALT) for the ONR FNC demonstration launch from a Virginia Class Submarine (VCS), and then a permanent Ship Alteration (SHIPALT) to TI-24 for VCS Blk III/IV hulls as a part of the Rapid Prototyping MTA. In addition, the necessary TEMPALT and SHIPALT documentation (e.g., design changes, safety reports, test reports, etc.) required for installation aboard a submarine will be developed. An integrated test program and operational testing with the Navy's Command Operational Test and Evaluation Force will be conducted after installation of the TI-24 SHIPALT.

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In FY2024 the program will have a fully approved TEMPALT data package and coordinate with ONR FNC to demonstrate the launch of a CRAW from an ECL on a submarine in FY24. This test will inform the final SHIPALT configuration needed for permanent integration and installation of CRAW on a submarine beginning in FY2026. The program will also continue development of upgrades necessary to support CRAW launch and control from the BYG-1 combat system. The program will also begin work with ONR on Revolver MP to enable CRAW launch and control via torpedo tubes. This has the potential to reduce IT/OT duration by enabling the launch of test CRAWs from the torpedo room and thereby minimizing the time consuming replacement and reloading of ECL assemblies (which must be accomplished pier side with crane support).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Compact Rapid Attack Weapon (CRAW) Development Design	34.300	44.878	66.989	0.000	66.989
Articles:	-	24	24	-	24
Description: Compact Rapid Attack Weapon (CRAW) development will transition the current ONR design effort into a Middle Tier Acquisition rapid prototyping POR. The CRAW vehicle design and technology will be matured to meet Submarine ASW and Torpedo Defense requirements, system safety and reliability qualification standards, device interface with ship system of system launchers and combat control and development of a technical data package that can be utilized for transition to TI-2 full-rate production.					
FY 2023 Plans: - Continue TI-1/ASW MTA Rapid Prototyping execution - Obtain Acquisition Decision Memorandum (ADM-2) approval for post Milestone B ACAT III program. - Begin OTA/UTIC TI-2 hardware development - Continue assembly of TI-1 CRAW devices - Conduct Preliminary Design Review for TI-2 - Continue design and development of manufacturing test equipment - Continue ASW SW testing - Begin development of ATT software - Begin Launch Tube Assembly builds for testing - Conduct in-water performance testing of ASW software - Continue development of Warhead design - Procure WH/S&A test articles for qualification - Continue execution of CRAW system safety program - Begin transition Multi Vehicle Torpedo Tube Deployment System (MVTTDS) to Revolver MP - Begin Submarine qualification of Revolver MP for live fire testing					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Continue development of program planning documents including Cyber Strategy, System Safety, Life Cycle Sustainment Plan, and Program Life Cycle Cost Estimate - Continue execution of CRAW system safety program - Begin Revolver MP transition					
FY 2024 Base Plans: - Continue TI-1/ASW MTA Rapid Prototyping execution - Continue OTA/UTIC TI-2 hardware development - Continue assembly of TI-1 CRAW devices - Conduct Critical Design Review of TI-2 - Continue design and development of manufacturing test equipment - Continue ASW SW testing - Continue development of ATT software - Continue Launch Tube Assembly builds for testing - Conduct in-water performance testing of ASW software - Continue development of Warhead design - Procure WH/S&A test articles for qualification - Begin WH/S&A Qualification testing - Continue execution of CRAW system safety program - Continue transition Multi Vehicle Torpedo Tube Deployment System (MVTTDS) to Revolver MP - Continue Submarine qualification of Revolver MP for live fire testing - Continue development of program planning documents including Cyber Strategy, System Safety, Life Cycle Sustainment Plan, and Program Life Cycle Cost Estimate - Conduct ONR FNC launch demonstration from a VA CL submarine - Continue execution of CRAW system safety program - Continue Revolver MP transition					
FY 2024 OCO Plans: N/A					
FY 2023 to FY 2024 Increase/Decrease Statement: FY 2023 to FY 2024 increased by $22.111 million for: - CRAW TI-1 modifications and assembly of the remaining twenty- four (24) TI-1 devices. - Increased development for the ATT software capability and initial testing.					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Industry contractor development of the TI-2 hardware configurations. - Increased and continued development, in FY24, of the combat systems interfaces for submarine integration with CWL, and BYG-1 for supporting submarine TI-24 SHIPALT for early operational capability in FY26. - Systems engineering, Warhead development, and Systems Safety is increased in FY24 for supporting increased testing, qualification and analysis for SHIPALT packages, and submarine preparations for fielding.					
Title: Compact Rapid Attack Weapon (CRAW) Submarine Integration	4.764	10.904	7.880	0.000	7.880
Articles:	-	-	-	-	-
Description: Compact Rapid Attack Weapon (CRAW) platform design work and systems integration for submarines. This includes the engineering and design effort to modify submarine hardware systems, update the combat system, and create the necessary alteration documentation needed to integrate the CRAW capability onto a submarine.					
FY 2023 Plans: - Continue in-water testing of launch tube assembly - Finalize development of External Countermeasure Launcher (ECL) design changes - Increased work for tactics/submarine interface development of combat software (BYG-1) for TI-24 Virginia Class baseline - Advance integration of existing countermeasure set, acoustic (CSA) with Combat Weapons Launcher (CWL) - Expand Common Weapon Launcher simulator for increased migration of submarine launcher functionality - Deliver CWL prototype for Submarine demonstration launch in FY24 - Complete required drawing and training packages for fully approved TEMPALT package for Virginia Class sub					
FY 2024 Base Plans: - Complete in-water testing of launch tube assembly - Approved External Countermeasure Launcher (ECL) design changes - Increased work for tactics/submarine interface development of combat software (BYG-1) for TI-24 Virginia Class baseline - Continued integration of existing countermeasure set, acoustic (CSA) with Combat Weapons Launcher (CWL) - Continued Common Weapon Launcher simulator for increased migration of submarine launcher functionality - Install and conduct submarine launched demonstration					
FY 2024 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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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 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2023 to FY 2024 decreased by $3.024 million due to Combat Systems and External Countermeasure development and integration efforts for TI-24 fielding completing in FY25.					
Accomplishments/Planned Programs Subtotals	39.064	55.782	74.869	0.000	74.869

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/2210: *Submarine Acoustic Warfare System*	0.000	1.791	8.419	-	8.419	9.896	5.985	6.100	6.222	Continuing	Continuing

Remarks

OPN 2210 includes Submarine Torpedo Defense System (SubTDS) and CRAW. Funding profile shows CRAW equity only. In FY24, OPN funding will procure eight (8) Launch tube assemblies for integration with Virginia submarine External Countermeasure Launchers, one (1) Common Weapon Launcher (CWL) kit for a FY25 VA CL installation, initial Shipping containers for the warhead/CRAW devices/All-up round Launch tube assemblies, and material for Revolver MP.

D. Acquisition Strategy

The Office of Naval Research (ONR) developed the initial CRAW design to be a multi-platform and multi-mission weapon. The ONR FNC investment and demonstration is aligned to the POR Rapid prototyping approach to provide a common solution that will provide the design spiral for transitioning to the Production and Deployment Phase. CRAW is a very lightweight torpedo that will have Anti-Submarine Warfare (ASW) and Anti-Torpedo Torpedo (ATT) capabilities. ONR began a follow-on FNC in FY20 to demonstrate the ability to modify a previous design for submarine integration and use as an ASW weapon via TEMPALT in FY24. PMS415 began a Rapid Prototyping (RP) Middle Tier Acquisition (MTA) in FY22 to transition the ONR FNC effort to a lasting Early Operational Capability via a SHIPALT in FY26. The ONR FNC and CRAW MTA program received forty (40) plus existing legacy hardware devices that will be updated for submarine integration and will be known as the CRAW TI-1 hardware baseline. The critical updates consist of integrating a new Safe and Arming (S&A) and Warhead (WH) design and development of Anti-Submarine Warfare (ASW) mission software. PSU/ARL will support the ONR FNC demonstration, for the development of the CRAW TI-1 hardware and software, and for maturing the design into a permanent capability through the RP MTA approach. Leveraging the existing legacy hardware devices and the long standing technological knowledge of PSU/ARL for designing, testing, and qualifying the CRAW device will enable the program to deliver the leave behind residual capability in FY26 as the TI-1/ASW Early Operational Capability (EOC). The program will transition the RP MTA into a Major Capability Acquisition Program that will update the TI-1 baseline into a supportable and producible industry design that will be known as the TI-2 hardware baseline. PMS415 awarded a UTIC OTA contract in FY22 to a prime contractor that will work with ARL/PSU in FY23 to transfer knowledge and begin initial TI-2 baseline development. In FY24, The prime contractor will be developing the TI-2 hardware and procuring long lead material that will address obsolescence issues, develop the production line, improve manufacturing processes, stand-up the vendor base, and deliver TI-2 EDMs in support of future full-rate production. PMS415 intends to formally initiate the TI-2 program of record in FY23 as a post MS-B ACAT III program. The program is planning

to reach MS-C in FY28. In FY28, the qualified and tested TI-2 CRAW devices integrated with the full ASW/ATT capability will transition from MS-C into Low-Rate Initial Production (LRIP). Listed below are the major efforts and milestones that mature the CRAW capability from the ONR FNC/PMS 415 shared efforts (FY20-FY23) through transitioning the CRAW program of record to Production and Deployment:

ONR FNC/PMS415 shared effort (FY21-FY24)
ONR FNC efforts will complete and transition fully to PMS 415 CRAW POR with the submarine launched demonstration from a VA class boat. Planned activities include:
- Awarded a contract to PSU/ARL in Q3FY21 to complete the ONR FNC configuration in support of the ONR FNC Demonstration.
- Complete combat system integration efforts to support the TI-20 TEMPALT needed for the ONR FNC demonstration.
- Complete Launch Tube Assembly (LTA) prototype design baseline for demonstration
- Complete ASW SW baseline development for demonstration
- Complete Safe and Arm baseline development for demonstration
- Complete External Countermeasure Launcher changes required to support demonstration
- Platform identified to support 2024 install of TEMPALT for submarine launched demonstration

CRAW TI-1 MTA (FY22-FY26)
After CRAW TI-1 MTA establishment in FY22, the program began efforts to transition the ONR FNC CRAW HW configuration for delivering ASW operational capability to the fleet by EOC in FY26. Planned activities include:
- Began Rapid Prototyping (RP) in FY22
- Support the ONR FNC demonstration in FY24 and transfer technology to CRAW TI-1 MTA
- Complete CRAW TI-1 HW and ASW software development, integration, and testing
- Finalize and qualify the LTA design
- Develop a SHIPALT package to support EOC installations (mods to BYG-1 Combat System and CWL on VCS)
- Complete S&A device integration and testing
- Develop Warhead (WH) capability and complete integration and qualification by NSWC IHEOD

ARL/PSU will execute the rapid prototyping effort (RP) by modifying the legacy configuration devices to CRAW TI-1 HW configurations for submarine launch and ASW software baselines while completing the ONR FNC demonstration in FY24. The ONR FNC demo will utilize the prototype representative LTA configuration for use with the final CRAW TI-1 baseline configuration. This configuration will result in a final LTA TDP and support EOC in FY26 and transitioning TI-1 operational capability to VCS.

NSWC IHEOD will continue integration and testing with TI-1 HW and procure sufficient WH/S&A devices to begin qualification testing in FY24. After qualification testing is completed in FY25, NSWC IHEOD will be responsible for manufacturing the CRAW warhead for all CRAW configurations.

CRAW TI-2 (Post-MS B starting in FY23)

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Beginning in FY23, the CRAW program will begin TI-2 hardware and ATT software development as a Major Capability Acquisition program for transitioning the full ASW/ATT operational capability. During this phase, the CRAW TI-2 HW production baseline will be developed by Raytheon (Prime Contractor) through an OTA/UTIC contract awarded in late FY22. As part of the Engineering and Manufacturing Development phase, the developer will design, build, test and deliver EDM's and stand-up the vendor base and production line to transition to Production and Deployment following a MS C decision in FY28. Operational Testing of the full TI-2/ASW/ATT capability will begin in FY29, and achieve Initial Operational Capability (IOC) in FY31. Planned activities include:
- Initiate CRAW TI-2 HW and ATT software development efforts in FY23
- Industry partner development of TI-2 hardware and build/deliver EDM's. Scope of work will include establishing a TI-2 hardware production baseline that resolves TI-1 obsolescence and enhances manufacturing methods
- Integrate a certified WH/S&A device
- Transition to initial production of the TI-2 production baseline configurations for device/system testing and qualification as a Launcher Assembly (LA)

The TI-2/ATT development will be accomplished by the prime Contractor through a five-year competitive UTIC OTA development contract awarded in FY22 to start transitioning the TI-1 baseline to the TI-2 production representative configuration. The Contractor will focus on addressing TI-1 hardware obsolescence, establishing the vendor base, improving manufacturing methods, and enabling the stand-up and establishment of a production line. Between FY25 to FY26, the Contractor will build and deliver eighteen (18) TI-2 CRAW devices and twenty-two (22) refurbishment kits for use in qualification testing, Developmental Testing (DT), Live Fire Test and Evaluation (LFT&E).

In addition, PSU/ARL will continue to be the design agent for all tactical software and build upon the ASW software baseline to develop the ATT software. The TI-2 production representative configuration will be baselined after integrating CRAW TI-2 device hardware with the ATT software baseline along with the previously developed and qualified ASW and Warhead/S&A.

CRAW Program Submarine Integration
PMS 415 and the CRAW program will be responsible for developing the Non-Tactical TEMPALT and SHIPALT work packages for coordinating installations with in-service ship programs during scheduled availabilities.

Initial submarine integration of combat control and ECL launch capability began under the ONR FNC and will continue in FY23 as part of rapid prototyping. Submarine integration of CRAW into the external countermeasure launcher (ECL) assembly requires upgrades to the combat systems in support of pre-planning and launch control of the CRAW, a new launch tube assembly that fits into the ECL, and ship alteration and modernization planning documents. This effort requires upgrades to the submarine combat systems as a part of the Submarine Federated and Warfare Tactical Systems (SWFTS) modernization cycle. The major components requiring hardware and software upgrades to support CRAW include the ECL assembly, BYG-1 combat system, and Common Weapon Launcher (CWL). The upgrades will come in two initial phases with a Temporary Alteration (TEMPALT) for ONR FNC demonstration launch from a Virginia Class Submarine (VCS) in FY24, and then a permanent Ship Alteration (SHIPALT) in TI-24 for VCS Blk III/IV via in-service modernization and Blk V New Construction class hulls. In addition, the necessary TEMPALT and SHIPALT documentation (e.g., design changes, safety reports, test reports, etc.) required for installation aboard a submarine will be developed. An integrated test program and operational testing with the Navy's Command Operational Test and Evaluation Force will be conducted post installation.

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In FY2023 the program will complete a TEMPALT data package and coordinate with ONR FNC to demonstrate the launch of a CRAW from an ECL on a submarine in FY24. This test will inform the final SHIPALT needed for early integration and install of CRAW on a submarine beginning in FY2026. The program will also continue development of upgrades necessary to support CRAW launch and control from the BYG-1 combat system.

Additionally, the Revolver MP transition will result in a TEMPALT package that will enable the launch testing of CRAW via the torpedo tubes during FY27 CRAW DT.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
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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
CRAW - ONR FNC System Engineering	WR	NUWC : Newport, RI	0.500	0.997	Dec 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CRAW - ONR FNC Launch Tube Assembly	WR	Applied Research Laboratory Penn State University : State College, PA	1.700	2.786	Jan 2022	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CRAW - Launch Tube Assembly	WR	Applied Research Laboratory Penn State University : State College, PA	0.000	0.000		2.830	Jan 2023	1.450	Dec 2023	-		1.450	0.000	4.280	-
Revolver	TBD	TBD : TBD	0.000	0.000		1.000	Jan 2023	2.500	Dec 2023	-		2.500	0.000	3.500	-
CRAW - Hardware Design (TI-1)	C/CPAF	Applied Research Laboratory Penn State University : State College, PA	1.500	1.525	Jan 2022	1.000	Jan 2023	1.500	Dec 2023	-		1.500	Continuing	Continuing	Continuing
CRAW - Engineering Development Models (TI-2)	C/CPFF	TBD : TBD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
CRAW - Software Development	C/CPAF	Applied Research Laboratory Penn State University : State College, PA	0.000	2.350	Jan 2022	4.000	Jan 2023	6.470	Dec 2023	-		6.470	Continuing	Continuing	Continuing
CRAW - Safe and Arm Design / Development	WR	NSWC : Indian Head, MD	2.900	4.343	Dec 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CRAW - Warhead Design Analysis	WR	NSWC : Indian Head, MD	0.000	5.100	Dec 2021	10.006	Dec 2022	8.620	Dec 2023	-		8.620	Continuing	Continuing	Continuing
CRAW - Systems Engineering (Requirements)	WR	NUWC : Newport, RI	1.050	1.485	Dec 2021	2.810	Dec 2022	3.220	Dec 2023	-		3.220	Continuing	Continuing	Continuing
CRAW - Systems Engineering (Safety)	WR	NSWC : Indian Head, MD	0.250	0.750	Dec 2021	1.350	Dec 2022	1.722	Dec 2023	-		1.722	Continuing	Continuing	Continuing
CRAW - Systems Engineering (Cyber)	WR	NUWC : Keyport, WA	0.196	0.486	Dec 2021	0.380	Dec 2022	0.450	Dec 2023	-		0.450	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy		Date: March 2023
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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
CRAW - Systems Engineering (Integration)	WR	Applied Research Laboratory Penn State University : State College, PA	0.475	1.429	Dec 2021	1.500	Dec 2022	2.000	Dec 2023	-		2.000	Continuing	Continuing	Continuing
CRAW - Systems Engineering (Ship Design Manager	WR	NSWC : Carderock, MD	0.035	0.150	Dec 2021	0.870	Dec 2022	0.776	Dec 2023	-		0.776	Continuing	Continuing	Continuing
CRAW - Systems Engineering (Requirements)	C/CPFF	Amentum : Washington, DC	0.150	0.200	Dec 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CRAW - Engineering Developmental Models (TI-1) Assembly	C/CPAF	Applied Research Laboratory Penn State University : State College, PA	0.000	1.286	Jan 2022	2.000	Jan 2023	1.500	Dec 2023	-		1.500	Continuing	Continuing	Continuing
CRAW - Modeling and Simulation	WR	NUWC : Newport, RI	0.000	1.786	Jan 2022	3.500	Dec 2022	2.760	Dec 2023	-		2.760	Continuing	Continuing	Continuing
CRAW - Engineering Development Models (TI-1) Assembly	C/CPFF	TBD : TBD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
CRAW - Modeling and Simulation	C/CPFF	Applied Research Laboratory Penn State University : State College, PA	0.000	0.544	Jan 2022	0.400	Jan 2023	1.250	Dec 2023	-		1.250	Continuing	Continuing	Continuing
CRAW - Integrated Logistics Planning	WR	NUWC : Keyport, WA	0.000	0.770	Dec 2021	0.760	Dec 2022	1.250	Dec 2023	-		1.250	Continuing	Continuing	Continuing
CRAW - Integration - Ship Alteration Design	WR	NUWC : Newport, RI	0.500	1.475	Dec 2021	2.450	Dec 2022	1.728	Dec 2023	-		1.728	Continuing	Continuing	Continuing
CRAW - Manufacturing and Assembly Planning	C/CPFF	TBD : TBD	0.000	0.000		0.000	Mar 2023	0.000		-		0.000	0.000	0.000	-
CRAW - Integration - Combat System ECL Control	WR	NUWC : Keyport, WA	0.000	0.700	Dec 2021	0.350	Dec 2022	0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy		Date: March 2023
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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
CRAW - Integration - Combat Systems Integration	C/CPAF	Progeny : Washington, DC	0.400	2.387	Jan 2022	2.613	Jan 2023	0.830	Dec 2023	-		0.830	Continuing	Continuing	Continuing
CRAW Integration - Combat System Systems Engineering	WR	NUWC : Newport, RI	1.200	1.000	Dec 2021	2.250	Dec 2022	1.250	Dec 2023	-		1.250	Continuing	Continuing	Continuing
CRAW - Integration - CSA/ CWL development	C/CPAF	General Dynamics Electric Boat : Not Specified	1.500	0.610	Jan 2022	1.180	Jan 2023	1.500	Dec 2023	-		1.500	Continuing	Continuing	Continuing
CRAW - Hardware Design (TI-2)	C/CPFF	Raytheon : Newport, RI	0.000	2.000	Mar 2022	8.522	Mar 2023	24.000	Dec 2023	-		24.000	Continuing	Continuing	Continuing
		Subtotal	12.356	34.159		49.771		64.776		-		64.776	Continuing	Continuing	N/A

Remarks

FY2024 Product Development increase of $14.783M to CRAW TI-1 modifications and assembly of the twelve (12) TI-1 devices. Industry contractor development of the TI-2 hardware configurations. Increased development of the ATT software capability and initial testing. Additionally in FY24, increased and continued development of the of the combat systems interfaces for submarine integration with CWL, and BYG-1 for supporting submarine TI-24 SHIPALT for early operational capability in FY26. Systems engineering, Warhead development, and Systems Safety increased in FY24 for supporting increased testing, qualification and analysis for SHIPALT packages, and submarine preparations for fielding. Revolver - Multi Payload (MP) Transitions from ONR to PMS 415 in FY24 for beginning submarine integration and initial fielding.

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
Developmental Test & Evaluation (DT&E)	WR	NUWC : Keyport, RI	0.075	0.500	Dec 2021	1.161	Dec 2022	2.150	Dec 2023	-		2.150	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	COMPOTEVFOR : Norfolk, VA	0.000	0.250	Dec 2021	0.250	Dec 2022	0.500	Dec 2023	-		0.500	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	NUWC : Keyport, WA	0.550	1.700	Dec 2021	1.600	Dec 2022	3.443	Dec 2023	-		3.443	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	C/CPFF	Applied Research Laboratory Penn	0.000	1.000	Jan 2022	1.500	Jan 2023	2.150	Dec 2023	-		2.150	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101226N / *Submarine Acoustic War Dev*	**Project (Number/Name)** 1267 / *Compact Rapid Attack Weapon (CRAW)*

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
		State University : State College, PA													
		Subtotal	0.625	3.450		4.511		8.243		-		8.243	Continuing	Continuing	N/A

Remarks

In FY2024 there is an increase of $3.732M to support additional hardware and software developmental testing of TI-1 and TI-2.

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
CRAW - Program Management Support	C/CPAF	Booz Allen Hamilton : Washington, DC	0.375	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CRAW Travel	WR	NAVSEA : Washington, DC	0.007	0.050	Dec 2021	0.100	Dec 2022	0.200	Dec 2023	-		0.200	Continuing	Continuing	Continuing
CRAW - Program Management Support	C/CPAF	Synchron : Washington, DC	0.000	1.405	Jan 2022	1.400	Jan 2023	1.650	Dec 2023	-		1.650	Continuing	Continuing	Continuing
		Subtotal	0.382	1.455		1.500		1.850		-		1.850	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	13.363	39.064		55.782		74.869		-		74.869	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101226N / *Submarine Acoustic War Dev*	**Project (Number/Name)** 1267 / *Compact Rapid Attack Weapon (CRAW)*

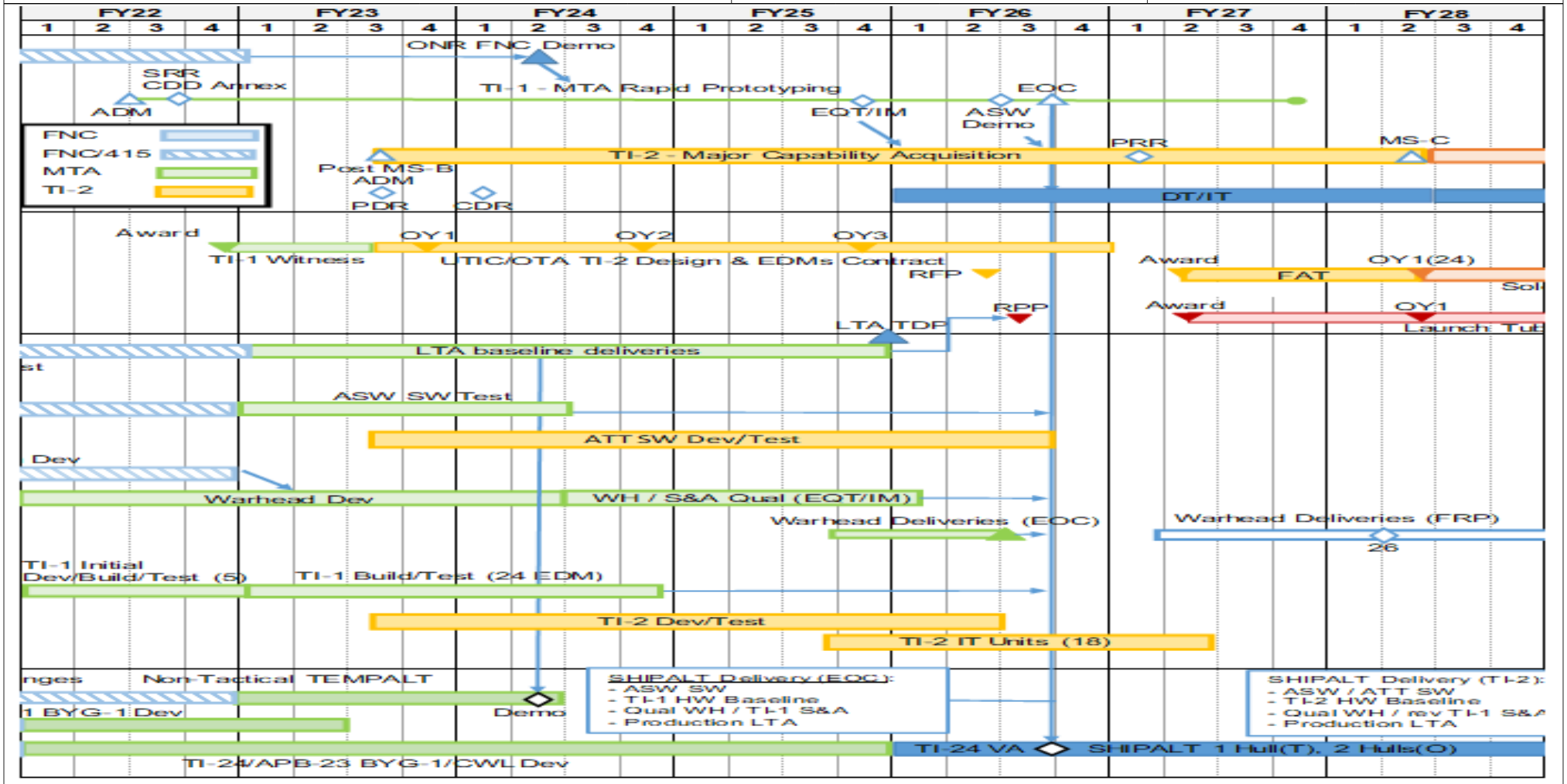


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101226N / *Submarine Acoustic War Dev*	**Project (Number/Name)** 1267 / *Compact Rapid Attack Weapon (CRAW)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1267				
REQUIREMENTS: SubTDS Capabilities Development Document (CDD) CRAW ANNEX Approval	2	2022	4	2023
AQUISITION MILESTONES: Rapid Prototyping (RP) Acquisition Decision Memorandum (ADM)	3	2022	3	2022
AQUISITION MILESTONES: Early Operational Capability (EOC)	3	2026	4	2026
AQUISITION MILESTONES: Milestone C (MS/C)	2	2028	4	2028
MAJOR CONTRACT EVENTS: UTIC / OTA TI-1 Knowledge Transfer Build-Up	3	2022	3	2023
MAJOR CONTRACT EVENTS: UTIC / OTA TI-2 Design & EDMs Contract	2	2023	4	2026
MAJOR CONTRACT EVENTS: TI-2 Production Contract Request for Proposal (RFP)	2	2026	2	2026
MAJOR CONTRACT EVENTS: TI-2 Production Contract: Award	2	2027	2	2027
MAJOR CONTRACT EVENTS: Launch Tube Assembly FoS Contract: Request for Proposal (RFP)	2	2026	2	2026
MAJOR CONTRACT EVENTS: Launch Tube Assembly FoS Contract: Award	2	2027	2	2027
SYSTEMS ENGINEERING: System Requirements Review (SRR)	4	2022	4	2022
SYSTEMS ENGINEERING: Preliminary Design Review (PDR)	3	2023	4	2023
SYSTEMS ENGINEERING: Critical Design Review (CDR)	1	2024	3	2024
SYSTEMS ENGINEERING: Environmental Qualification Test/ Insensitive Munitions Test Readiness Review (EQT/IM TRR)	2	2024	1	2026
SYSTEMS ENGINEERING: Operational Test (OT) Unit Build	4	2027	4	2027
SYSTEMS ENGINEERING: Production Readiness Review (PRR)	2	2027	2	2027
CRAW DEVELOPMENT & PRODUCTION: Anti-Surface Warfare (ASW) Dev/Test	1	2022	2	2024
CRAW DEVELOPMENT & PRODUCTION: Anti-Torpedo (ATT) Dev/Test	3	2023	4	2026

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101226N / *Submarine Acoustic War Dev*	**Project (Number/Name)** 1267 / *Compact Rapid Attack Weapon (CRAW)*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CRAW DEVELOPMENT & PRODUCTION: Technical Insertion-1 Dev/Test/Build (24 Engineering Development Model (EDM)	1	2023	4	2024
CRAW DEVELOPMENT & PRODUCTION: Technical Insertion-2 Dev/Test	3	2023	3	2026
CRAW DEVELOPMENT & PRODUCTION: Technical Insertion-2 Engineering Development Model (EDM) Build	3	2025	3	2027
CRAW DEVELOPMENT & PRODUCTION: S&A Dev	1	2022	4	2023
CRAW DEVELOPMENT & PRODUCTION: Warhead Development	1	2022	3	2024
CRAW DEVELOPMENT & PRODUCTION: Warhead Lot 1 (26)	4	2027	4	2027
CRAW DEVELOPMENT & PRODUCTION: Production Line Development	2	2027	4	2027
TEST & EVALUATION (VCS TI-20 TEMPALT): Dev CC / External Countermeasure Launcher (ECL) Changes	1	2022	4	2024
TEST & EVALUATION (VCS TI-20 TEMPALT): Dev PCS/BYG-1 Changes	1	2022	4	2024
TEST & EVALUATION (VCS TI-20 TEMPALT): Advanced Processor Build (APB)-21 / Technical Insertion-20 BYG-1 Dev Demo	2	2023	2	2024
TEST & EVALUATION (VCS TI-24 SHIPALT): Advanced Processor Build-23 / Technical Insertion-24 BYG-1 / CWL Dev	1	2022	4	2025
TEST & EVALUATION (VCS TI-24 SHIPALT): VIRGINIA Ship Alteration (SHIPALT)	2	2026	4	2027
S&T EFFORTS - Future Naval Capability (FNC): Submarine Demo	1	2024	3	2024

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / *Submarine Acoustic War Dev*	Project (Number/Name) 1268 / *Non-Traditional Acoustic Communications (NTAC)*	

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
1268: *Non-Traditional Acoustic Communications (NTAC)*	3.297	2.994	2.538	2.678	-	2.678	2.702	2.757	2.813	2.870	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Non-Traditional Acoustic Communications (NTAC) is a software based solution that leverages existing hardware components on target platforms, including submarines. The NTAC program is responsible for establishing formal program requirements, supporting installation of NTAC software on various platforms, and upgrading the software to support new hardware to improve NTAC performance. The new software capability is referred to as "NTAC software delivery package."

Additional details are available at the classified level.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Non-Traditional Acoustic Communications (NTAC)	2.994	2.538	2.678	0.000	2.678
Articles:	-	-	-	-	-
Description: Non-Traditional Acoustic Communications (NTAC) This capability provides advanced undersea acoustic communications. Additional details can be provided at the classified level. This program will build upon the baseline NTAC capability and integrate it into new hardware to expand the capability effectiveness and reliability. ***FY 2023 Plans:*** Complete ARCI Integration Complete advanced transmission capability integration Complete improved transmit and receive software build ***FY 2024 Base Plans:*** - Upgrade user interface - Incorporate system automation - Improve tactical decision aides - Improve reliability, security, and interoperability of system ***FY 2024 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101226N / *Submarine Acoustic War Dev*	**Project (Number/Name)** 1268 / *Non-Traditional Acoustic Communications (NTAC)*

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 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2023 to FY 2024 increased by $0.140 million due to inflation and working capital fund adjustments.					
Accomplishments/Planned Programs Subtotals	2.994	2.538	2.678	0.000	2.678

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

NTAC is a Government developed software application that integrates into other system components. NUWC Newport will continue to do the software development and hardware integration required to enhance the NTAC capability. In Fiscal Year (FY) 2021, the program began documenting top level requirements, system level requirements, and concepts of operation for fleet integration. In addition, the program began evaluating a new approach to integrating NTAC on submarines and conducted the necessary studies and requirements development to complete preliminary design of the NTAC software development package.

In FY22, the program continued detailed design of the NTAC software development package and conducted developmental testing of the advanced transmission capability, that meets the criteria of the top level and system level requirements developed in FY21. Additionally, NTAC began integration into ARCI. In FY23, the program will complete necessary testing on the advanced transmission capability and will prepare its software development package for integration into various nodes.

Starting in FY24, continue spiral designs of the program's transmit and receive software will be conducted. These improvements will increase reliability, interoperability as well as reduce security vulnerabilities. Additionally, NTAC aims to integrate into existing tactical decision aid interfaces. The NTAC software operator interface will continue to be improved reducing the chances of human error and lessening the manpower demand.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / *Submarine Acoustic War Dev*	Project (Number/Name) 1268 / *Non-Traditional Acoustic Communications (NTAC)*	

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
NTAC - Systems Engineering	WR	NUWC : Newport, RI	0.984	0.233	Jan 2022	0.258	Jan 2023	2.338	Nov 2023	-		2.338	Continuing	Continuing	Continuing
NTAC - Software Development	WR	NUWC : Newport, RI	0.984	2.618	Jan 2022	2.145	Jan 2023	0.000		-		0.000	0.000	5.747	-
NTAC - Fleet Data Analysis	C/CPAF	NTT : Not Specified	0.752	0.000		0.000		0.000		-		0.000	0.000	0.752	-
NTAC - Tactical Decision Aid	WR	NUWC : Newport, RI	0.320	0.000		0.000		0.225	Nov 2023	-		0.225	0.000	0.545	-
		Subtotal	3.040	2.851		2.403		2.563		-		2.563	Continuing	Continuing	N/A

Remarks

FY24 continues design efforts and developmental testing.

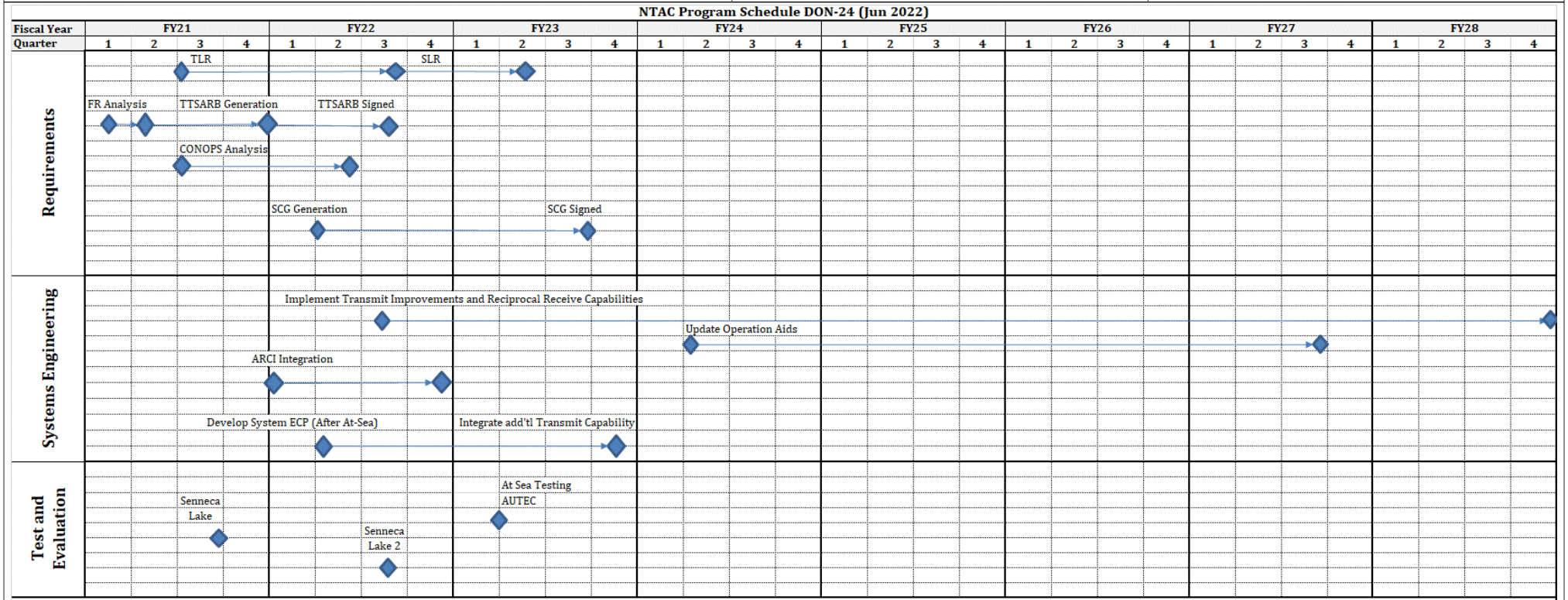
Management Services ($ in Millions)

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
NTAC - Program Management Support	C/CPAF	Booz Allen Hamilton : Washington, DC	0.250	0.000		0.000		0.000		-		0.000	0.000	0.250	-
NTAC - Travel	WR	NAVSEA : Washington, DC	0.007	0.051	Jan 2022	0.051	Jan 2023	0.025	Jan 2024	-		0.025	0.000	0.134	-
NTAC - Program Management Support	C/CPAF	Synchron : Washington, DC	0.000	0.092	Jan 2022	0.084	Jan 2023	0.090	Jan 2024	-		0.090	0.000	0.266	-
		Subtotal	0.257	0.143		0.135		0.115		-		0.115	0.000	0.650	N/A

	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
Project Cost Totals	3.297	2.994		2.538		2.678		-		2.678	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101226N / *Submarine Acoustic War Dev*	**Project (Number/Name)** 1268 / *Non-Traditional Acoustic Communications (NTAC)*



Abbreviation Definitions

ADM	Acquisition Memorandum Decision	EQT	Environmental Qualification Test	PDR	Preliminary Design Review	TI	Technical Insertion
APB	Advanced Processor Build	FNC	Future Naval Capability	PRR	Production Readiness Review	VCS	Virginia Class Submarine
ASW	Anti-Submarine Warfare	FoS	Family of Systems	RFP	Request for Proposal		
ATT	Anti-Torpedo Torpedo	FRP	Full Rate Production	RPP	Request for Prototype Proposal		
CDD	Capabilities Development Document	IOC	Initial Operational Capability	S&A	Safe & Arm		
CDR	Critical Design Review	IM	Insensitive Munitions	SCO	Strategic Capabilities Office		
CRAW	Compact Rapid Attack Weapon	IT	Integrated Test	SHIPALT	Ship Alteration		
CSA	Countermeasusre System Acoustic	LLTM	Long Lead Time Material	SRR	System Requirements Review		
DT	Development Test	LRIP	Low Rate Initial Production	SW	Software		
ECL	External Countermeasure Launcher	OT	Operational Test	TEMPALT	Temporary Alteration		
EDM	Engineering Development Model	OTA	Other Transaction Authority	TRR	Test Readiness Review		
EOC	Early Operational Capability	OY	Option Year	UTIC	Undersea Technology Innovation Consortum		

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101226N / *Submarine Acoustic War Dev*	**Project (Number/Name)** 1268 / *Non-Traditional Acoustic Communications (NTAC)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1268				
Top Level Requirements Development	1	2022	2	2023
CONOPS/CONEMPS Analysis	1	2022	2	2022
TTSARB Signed	3	2022	3	2022
System Level Requirements Development	3	2023	4	2024
Requirements: SCG Generation	2	2022	2	2023
Requirements: SCG Signature	3	2023	3	2023
System Engineering: Advanced Capability Integration	1	2022	4	2023
System Engineering: Improve Transmit/Receive Capabilities	3	2022	4	2028
System Engineering: Operation Aids	2	2024	3	2027
System Engineering: ARCI Integration	1	2022	4	2022
Test and Evaluation: Seneca Lake Testing	1	2022	4	2022
Test and Evaluation: At-Sea Testing	1	2023	2	2023

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / *Submarine Acoustic War Dev*	Project (Number/Name) 9999 / *Congressional Adds*	

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: *Congressional Adds*	0.000	0.000	5.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.000
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Revolver Multi-Payload (MP) is a program that transitions the ONR Multi-Vehicle Torpedo Tube Defense System (MVTTDS) in order to facilitate launching of multiple payloads from the VIRGINIA Class Torpedo Tubes. CRAW will be the first payload integrated for use with the Revolver MP production baseline. While CRAW will be the initial payload integrated with Revolver MP, additional payloads will continue to be integrated.

Project C911: Congressional Add ($5.000M) - Integration of four-tube launch system.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
Congressional Add: Integration of four-tube launch system	0.000	5.000
FY 2022 Accomplishments: N/A		
FY 2023 Plans: Integration of Multi-vehicle Torpedo Tube Delivery System (MVTTDS) into submarine combat system. Integration includes MVTTDS and Common Weapon Launcher (CWL) and Payload Control System integration (PCS) mods.		
Congressional Adds Subtotals	0.000	5.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Single year congressional funding to support four-tube launch system.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / *Submarine Acoustic War Dev*	Project (Number/Name) 9999 / *Congressional Adds*	

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
Development	C/CPAF	Progeny : Washington, DC	0.000	0.000		3.550	Apr 2023	0.000		-		0.000	0.000	3.550	-
Systems Engineering	C/CPAF	Applied Research Laboratory Penn State University : State College, PA	0.000	0.000		0.700	Apr 2023	0.000		-		0.000	0.000	0.700	-
Safety Analysis	WR	NUWC Newport, : Newport, RI	0.000	0.000		0.250	Apr 2023	0.000		-		0.000	0.000	0.250	-
		Subtotal	0.000	0.000		4.500		0.000		-		0.000	0.000	4.500	N/A

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
Prior Year Developmental Test & Evaluation Not Funded FYDP (PYDT&E)	TBD	Progeny : Washington, DC	0.000	0.000		0.500	Apr 2023	0.000		-		0.000	0.000	0.500	-
		Subtotal	0.000	0.000		0.500		0.000		-		0.000	0.000	0.500	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	0.000	0.000		5.000		0.000		-		0.000	0.000	5.000	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101226N / *Submarine Acoustic War Dev*	**Project (Number/Name)** 9999 / *Congressional Adds*

	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 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
Proj 9999																												
Congressional Adds: Project C911 Integration of four-tube launch System																												

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101226N / *Submarine Acoustic War Dev*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 9999				
Congressional Adds: Project C911 Integration of four-tube launch System	2	2023	4	2024