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 0605513N *I UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*

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	0.000	115.436	181.534	176.261	-	176.261	293.493	213.290	190.510	195.165	Continuing	Continuing
3067: *Unmanned Surface Vehicle Enabling Capabilities*	0.000	115.436	181.534	176.261	-	176.261	293.493	213.290	190.510	195.165	Continuing	Continuing

Note

Unmanned Surface Vehicle (USV) Enabling Capabilities (Project 3067) was a new start in FY 2020. FY 2020 funding in Program Element (PE) 0603502N. Project 3067 realigned from PE 0603502N to PE 0603178N in FY 2021, and from 0603178N to 0605513N in FY 2022 and future years.

A. Mission Description and Budget Item Justification

Project 3067 provides resources to develop enabling capabilities and critical technologies for the unmanned platforms in the Navy's Future Surface Combatant Force (FSCF) and Unmanned Surface Vehicle (USV) Family of Systems (FoS). This includes the development and transition of technologies, standardizing Autonomy architectures, Command & Control (C2) systems, USV Integrated Combat Systems (USV ICS) and learning through demonstration during both ashore and underway fleet exercises to support key capabilities (autonomy, communications, USV Operations Centers, sensors/component integration, data management, machinery qualification and payload prototyping) for operating Unmanned Surface Vehicles to meet mission needs. These efforts continue to maintain federated systems while encouraging the transition of Small Business Innovation Research (SBIR), Future Naval Capabilities (FNC), other DOD Science and Technology (S&T) efforts, and current Program of Record (PoR) systems to support a modular system for enhanced performance and affordability.

The USV Enabling Capabilities program is responsible for the development and improvement of USV autonomous systems, payloads, and sensors in support of machinery and Command, Control, Communications, Computers, Cyber, Intelligence, Surveillance and Reconnaissance (C5ISR) and USV Integrated Combat Systems (USV ICS) operations on USVs. Enabling Capabilities leads the development, modification, engineering, and integration activities, facilitating the unmanned operations of surface vessels. This includes capabilities to support autonomy, C2 beyond line of sight, monitoring, and securing sensitive equipment from remote locations. These capabilities support Medium Unmanned Surface Vehicles (MUSV), Large Unmanned Surface Vessels (LUSV), and Unmanned Operations Centers.

Project 3067 also provides a Navy-wide program to develop required standards for Autonomy, C2, Payload Interface, and USV Operations Centers in support of future unmanned surface vehicle development.

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 0605513N *I UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	119.560	181.620	192.885	-	192.885
Current President's Budget	115.436	181.534	176.261	-	176.261
Total Adjustments	-4.124	-0.086	-16.624	-	-16.624
• Congressional General Reductions	-	-0.086			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.124	0.000			
• Program Adjustments	0.000	0.000	-17.508	-	-17.508
• Rate/Misc Adjustments	0.000	0.000	0.884	-	0.884

Change Summary Explanation

Program Changes:
Technical: Not applicable
Schedule: Not applicable
Cost:
FY 2022: -$4.124M SBIR/STTR/FTT Assessment (SBIR)
FY 2023: -$0.086M general Congressional reduction
FY 2024: -$17.508M program adjustments; +$0.884M Miscellaneous adjustments

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 0605513N / *UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*	Project (Number/Name) 3067 / *Unmanned Surface Vehicle Enabling Capabilities*	

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
3067: *Unmanned Surface Vehicle Enabling Capabilities*	0.000	115.436	181.534	176.261	-	176.261	293.493	213.290	190.510	195.165	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Unmanned Surface Vehicle (USV) Enabling Capabilities (Project 3067) FY 2020 funding in Program Element (PE) 0603502N. Project 3067 realigned from PE 0603502N to PE 0603178N in FY 2021, and from PE 0603178N to PE 0605513N in FY 2022 and future years.

A. Mission Description and Budget Item Justification

In order to accelerate future capability and support steady growth of the Navy's Unmanned Surface Vehicle (USV) Family of Systems (FoS), the USV Enabling Capabilities project includes the development, test, and integration of USV technologies, the advancement of Defense Advanced Research Projects Agency (DARPA), Office of the Secretary of Defense (OSD) Strategic Capabilities Office (SCO), Office of Naval Research (ONR) and Industry USV efforts for associated technologies, and the development and fabrication of payloads for Large Unmanned Surface Vessels (LUSVs) and Medium Unmanned Surface Vehicles (MUSVs). USV technology efforts in this project unit support the development and demonstration of autonomy, communications, USV Operations Centers, sensor and component integration for navigation compliance and reliability, data management, machinery qualification, noncombat payload development, and enabling technologies for other USVs in the USV FoS, as applicable. In support of this development work, the Navy has developed a holistic USV work breakdown structure (WBS) framework to help coordinate developmental and systems engineering efforts applicable across the USV portfolio. The WBS categories are divided into broad key enablers, including HM&E (1.0), C4I (2.0), USV ICS (3.0), Common Control System (CCS) (4.0), autonomy/perception/data (5.0), and prototyping efforts (6.0).

The HM&E (WBS 1.0) portion of this project supports laboratory modeling and testing of contractor furnished Machinery Control Solutions as well as vendor qualification of engines.

The C4I (WBS 2.0) portion of this project funds efforts to develop, test, and demonstrate autonomous communication hardware and software. A key enabler to allow man-in-the-loop or man-on-the-loop control of the USVs and USV FoS will be the development of an unmanned communications suite. Initial efforts have focused on the modification of existing Program of Record of Program Executive Office (PEO) C4I systems. Further efforts are needed to engineer autonomous behaviors into the Navy's next generation of PEO C4I systems to meet USV operational needs. Additionally, this effort will include the modification and testing of cryptographic equipment as needed to obtain the necessary approvals and certifications for use in unmanned, high-threat environments.

The USV ICS (WBS 3.0) portion of this project will fund efforts to develop common combat components across all USVs and integrate the data collected and transferred from a USV into the Aegis Combat Systems in support of distributed maritime operations.

The CCS (WBS 4.0) portion of this project will fully support the continued development of USV control software.

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 0605513N / *UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*	**Project (Number/Name)** 3067 / *Unmanned Surface Vehicle Enabling Capabilities*

The autonomy/perception/data (WBS 5.0) portion of this project funds efforts to standardize autonomy architecture and interfaces, develop and test low Technology Readiness Level (TRL) autonomy functions, software modeling and simulation, and employ a Secure Development and Operations (DevSecOps) software pipeline to facilitate integration and ensure security. These autonomy efforts are executed under the Rapid Autonomy Integration Laboratory (RAIL) framework and include advanced development, prototyping, and demonstrations. The sensor and component integration for navigation compliance and reliability portion of this project funds efforts to analyze the performance of commercial hardware/software and integrate those sensors/components into USVs for improved performance. These funds also identify gaps in performance for future SBIRs, Department of Defense Science and Technology efforts, and industry feedback as well as establish standards of performance for future contracting actions. The data management portion of this project will develop the data infrastructure needed to collect, store, and analyze data from the USVs in order to certify system performance, maintain and improve software, and identify sensors/components in need of further improvement.

The prototyping efforts (WBS 6.0) portion of this project funds outfitting of the USV Operations Center. These Operations Centers will allow the Fleet to control multiple USVs and multiple types of USVs simultaneously, conduct exercises, and continue CONOPS development. This portion of the project also funds the development and acquisition of noncombat modular payloads employed by USVs. Payloads will be customized to meet Navy needs and demonstrate useful capability for the Fleet. Some examples include Intelligence, Surveillance, and Reconnaissance (ISR) payloads as well as persistent airborne systems that extend the C2 reach of host platforms.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Product Development	79.799	157.974	148.325	0.000	148.325
Articles:	-	-	-	-	-
FY 2023 Plans: C4I (WBS 2.0) - Unmanned communication development and testing will continue as well as unmanned cryptographic development. USV ICS (WBS 3.0) - USV ICS development work will commence in this project in the form of integrating and transferring data obtained from a USV into USV ICS for use by a US Navy combatant. CCS (WBS 4.0) - Continued development efforts incorporating lessons learned from experimentation and demonstrations. Autonomy/perception/data (WBS 5.0) - Finalize refactoring of autonomy software and begin extensive testing to identify/fix capability gaps in meeting the minimum Technology Readiness Level requirements of the 2019 and 2021 National Defense Authorization Acts (NDAAs). Sensor and perception development and testing will continue to support the requirements of the NDAAs. The RAIL will continue to be expanded to accommodate new users. Prototyping (WBS 6.0) - This program element will acquire one C-TEP payload prototype and one C-TEM payload. In addition, this program element will begin the transition of additional an Office of Naval Research Future Naval Capability payload called Amon Hen.					
FY 2024 Base Plans: C4I (WBS 2.0) - Unmanned communication development and testing will continue as well as unmanned cryptographic development. The first phase of modifications to Government Program of Record systems to support unmanned operations will be completing. USV ICS (WBS 3.0) - USV ICS development work will continue in this project in the form of integrating and transferring data obtained from a USV into USV ICS for					

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 0605513N / *UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*	**Project (Number/Name)** 3067 / *Unmanned Surface Vehicle Enabling Capabilities*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
use by a US Navy combatant. CCS (WBS 4.0) - Continued development efforts incorporating lessons learned from experimentation and demonstrations. Autonomy/perception/data (WBS 5.0) - Finalize autonomy software testing to meet the minimum Technology Readiness Level requirements of the 2019 and 2021 National Defense Authorization Acts (NDAAs). Build and integrate a Government-owned software baseline, informed by the FY23 capability gap analysis. Sensor and perception testing will continue to support the requirements of the NDAAs. The RAIL will support the development of the Government-owned software baseline. Prototyping (WBS 6.0) - This program element will perform testing on the C-TEP prototype payload, including integration with autotomy, and install and test one C-TEM payload. The Amon Hen effort (Office of Naval Research Future Naval Capability payload) will procure Next Generation Surface Search Radar (NGSSR) and integration into a USV prototype. Amon Hen will be used during at test events in FY24. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease in funding from FY23 to FY24 (-~$9.6M) is primarily due to a deferral of procurement of a C-TEM payload, as well as a slowing of Amon Hen development, to allow for analysis of results from initial testing and experimentation for these payloads.					
Title: Support	31.470	19.310	23.606	0.000	23.606
Articles:	-	-	-	-	-
FY 2023 Plans: Autonomy/perception/data (WBS 5.0) - Efforts will continue on the development of UMAA standards, autonomy Interface Control Documents (ICDs), and common control systems. Maintenance of Command and Control software (i.e., CCS) will continue. Prototyping (WBS 6.0) - Land-based USV Operations Centers will be completely established and operational and support for USV squadron operations will continue. ***FY 2024 Base Plans:*** Autonomy/perception/data (WBS 5.0) - Efforts will continue on the development of UMAA standards, autonomy Interface Control Documents (ICDs), and common control systems. Maintenance of Command and Control software (i.e., CCS) will continue. Prototyping (WBS 6.0) - Integration of additional capabilities into the land-based USV Operations Centers and support for USV squadron operations will continue. ***FY 2024 OCO Plans:***					

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 0605513N / *UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*	**Project (Number/Name)** 3067 / *Unmanned Surface Vehicle Enabling Capabilities*

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:*** The increase in funding need from FY23 to FY24 (+~$4M) is primarily due to an increase of support for Naval Base Ventura County. As additional prototype USVs are homeported, additional Fleet personnel are assigned to SURFDEVRON1, and USV operations increase.					
Title: Management Services	4.167	4.250	4.330	0.000	4.330
Articles:	-	-	-	-	-
FY 2023 Plans: Continue to provide oversight and management of product development and support efforts. Continue program management activities and management for the production of the prototype modular payloads awarded in FY2023. Continue coordination with and across supporting activities (e.g., PEO IWS, PEO C4I, DARPA, OSD SCO, ONR, warfare centers, labs, and industry partners) to address requirements, manage funding, and execute plans. Continue to develop and refine required acquisition documents and artifacts that support required capabilities managed under this project.					
FY 2024 Base Plans: Continue to provide oversight and management of product development and support efforts. Continue program management activities and management for the production of the prototype modular payloads awarded in FY2024. Continue coordination with and across supporting activities (e.g., PEO IWS, PEO C4I, DARPA, OSD SCO, ONR, warfare centers, labs, and industry partners) to address requirements, manage funding, and execute plans. Continue to develop and refine required acquisition documents and artifacts that support required capabilities managed under this project.					
FY 2024 OCO Plans: N/A					
FY 2023 to FY 2024 Increase/Decrease Statement: The increase from FY23 to FY24 is within normal inflation (~2%).					
Accomplishments/Planned Programs Subtotals	115.436	181.534	176.261	0.000	176.261

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 0605513N / *UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*	**Project (Number/Name)** 3067 / *Unmanned Surface Vehicle Enabling Capabilities*

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/0603178N/3066: *Large Unmanned Surface Vessel (LUSV)*	98.871	136.580	117.400	-	117.400	127.855	127.006	129.431	131.729	Continuing	Continuing
• RDTEN/0605512N/3428: *Medium Unmanned Surface Vehicle (MUSV)*	57.872	85.966	85.800	-	85.800	99.387	98.268	99.761	101.768	Continuing	Continuing

Remarks

D. Acquisition Strategy

USV Enabling Capabilities efforts will accelerate future capability and support steady growth of the Navy's Unmanned Surface Vehicle (USV) Family of Systems (FoS). This will occur by leveraging efforts from the Department of Defense Research and Development Enterprise and industry for associated technologies and payloads and integrating them into USVs at the appropriate level of technical maturity. Coordination with UxS platforms will eliminate redundant efforts, encourage innovation and improve coordination of unmanned systems across multiple domains. Leveraging Office of the Secretary of Defense (OSD) Strategic Capabilities Office (SCO)-developed standalone capabilities, the plan is to develop these capabilities for the initial prototype USVs and then transition those capabilities into Program of Record USVs through incremental development and integration across the funding portfolio. The Navy will accomplish efforts under USV Enabling Capabilities through existing contract vehicles prepared for OSD SCO and Office of Naval Research (ONR) efforts, the USV FoS Indefinite Delivery Indefinite Quantity (IDIQ) Multiple Award Contract (MAC) which was awarded in FY 2020, the prime contract awarded for MUSV design and fabrication, existing contracts for payload fabrication, and future contracts for further software development and maintenance.

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 0605513N / *UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*	**Project (Number/Name)** 3067 / *Unmanned Surface Vehicle Enabling Capabilities*

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
Technical Services	WR	Various : Various	0.000	1.690	Oct 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Elevated Sensors	C/CPIF	GDMS : Fairfax, VA	0.000	5.500	Jun 2022	7.000	Dec 2022	2.208	Aug 2024	-		2.208	Continuing	Continuing	Continuing
Unmanned Communications	Various	Variuos : Various	0.000	21.376	Mar 2022	38.874	Oct 2022	37.801	Oct 2023	-		37.801	Continuing	Continuing	Continuing
Unmanned Cryptographic Systems	Various	Various : Various	0.000	5.000	Mar 2022	5.100	Oct 2022	5.200	Oct 2023	-		5.200	Continuing	Continuing	Continuing
USV Machinery Qualification	C/CPIF	Various : Various	0.000	21.733	Jul 2022	0.000		0.000		-		0.000	0.000	21.733	-
Low TRL Autonomy	Various	Various : Various	0.000	18.500	Nov 2021	28.860	Oct 2022	29.570	Oct 2023	-		29.570	0.000	76.930	-
Rapid Autonomy Integration Laboratory (RAIL)	Various	Various : Various	0.000	5.000	Dec 2021	7.520	Oct 2022	6.300	Oct 2023	-		6.300	0.000	18.820	-
Sensors and Perceptions	WR	Various : Various	0.000	1.000	Dec 2021	3.040	Oct 2022	4.200	Oct 2023	-		4.200	0.000	8.240	-
USV ICS Development	WR	Various : Various	0.000	0.000		52.000	Oct 2022	50.800	Oct 2023	-		50.800	0.000	102.800	-
Amon Hen (N96C&F)	WR	Various : Various	0.000	0.000		15.580	Oct 2022	12.246	Oct 2023	-		12.246	0.000	27.826	-
		Subtotal	0.000	79.799		157.974		148.325		-		148.325	Continuing	Continuing	N/A

Remarks

Project Moved from Program Element 0603178N

Support ($ 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
Autonomy Standrads (UMAA)	Various	Various : Various	0.000	1.000	Oct 2021	1.020	Oct 2022	2.500	Oct 2023	-		2.500	Continuing	Continuing	Continuing
Command and Control (C2) Integration	Various	Various : Various	0.000	2.400	Oct 2021	3.450	Oct 2022	4.566	Oct 2023	-		4.566	Continuing	Continuing	Continuing
USV Squadron Operations	WR	Various : Various	0.000	7.000	Oct 2021	7.140	Oct 2022	10.240	Oct 2023	-		10.240	Continuing	Continuing	Continuing
Delta Requirements RFP Development Evaluation	WR	Various : Various	0.000	1.870	Oct 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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 0605513N / *UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*	**Project (Number/Name)** 3067 / *Unmanned Surface Vehicle Enabling Capabilities*

Support ($ 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
RFP Development	WR	Various : Various	0.000	0.500	Dec 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
USV Operations Center (UOC)	WR	Various : Various	0.000	18.700	Nov 2021	7.700	Oct 2022	6.300	Oct 2023	-		6.300	Continuing	Continuing	Continuing
		Subtotal	0.000	31.470		19.310		23.606		-		23.606	Continuing	Continuing	N/A

Remarks

Project Moved from Program Element 0603178N

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
Management Services	Various	Various : Various	0.000	4.167	Oct 2021	4.250	Oct 2022	4.330	Oct 2023	-		4.330	Continuing	Continuing	Continuing
		Subtotal	0.000	4.167		4.250		4.330		-		4.330	Continuing	Continuing	N/A

Remarks

Project Moved from Program Element 0603178N

	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	115.436		181.534		176.261		-		176.261	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 0605513N / *UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*	**Project (Number/Name)** 3067 / *Unmanned Surface Vehicle Enabling Capabilities*

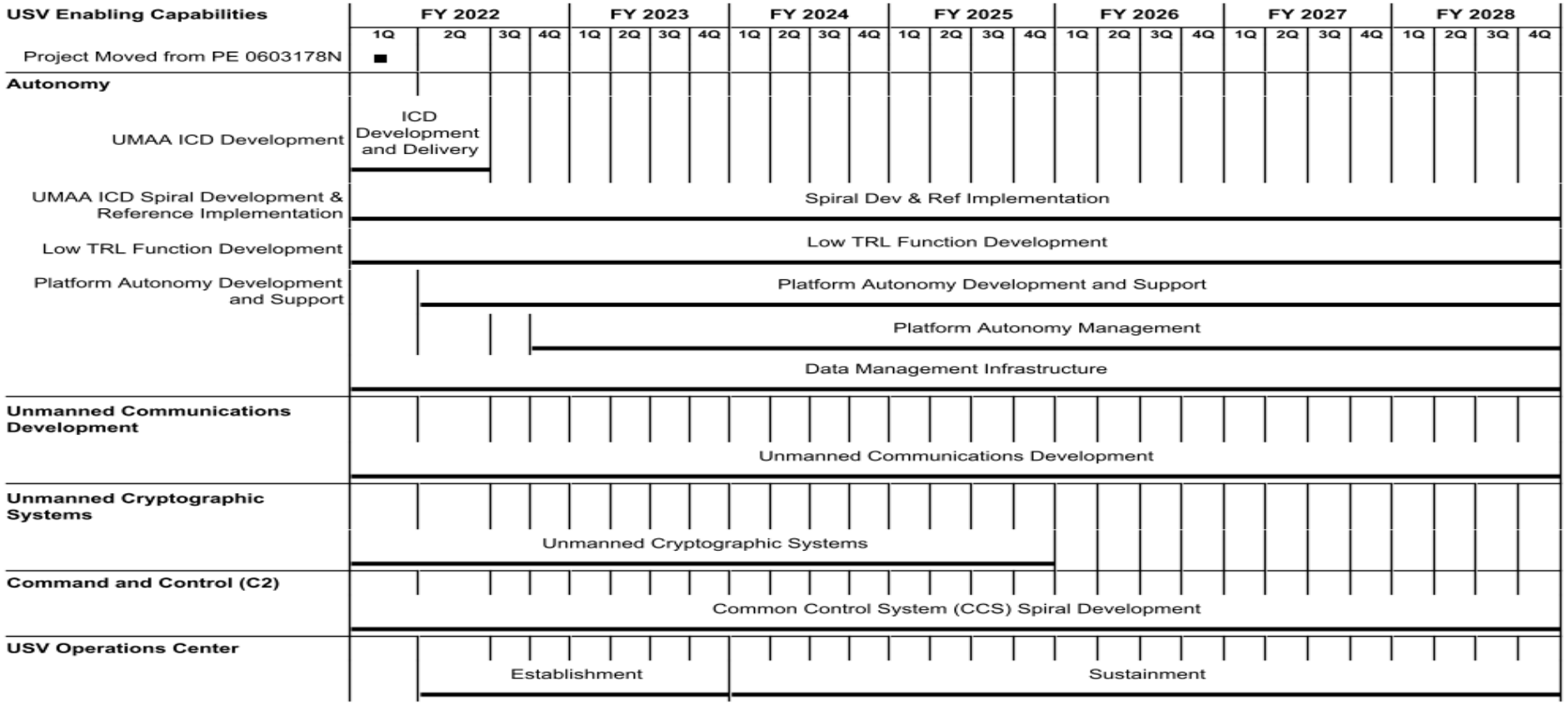

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0605513N / *UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*	**Project (Number/Name)** 3067 / *Unmanned Surface Vehicle Enabling Capabilities*

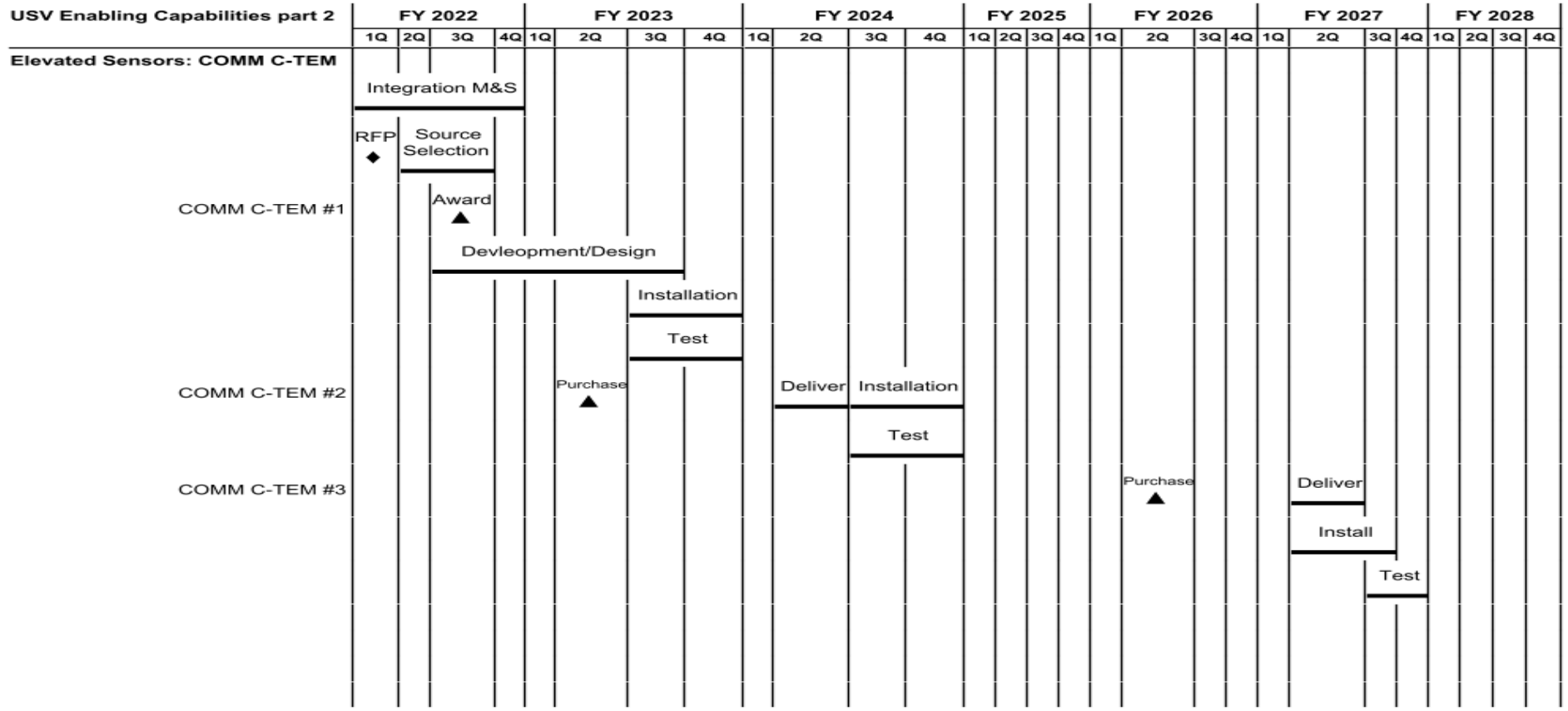

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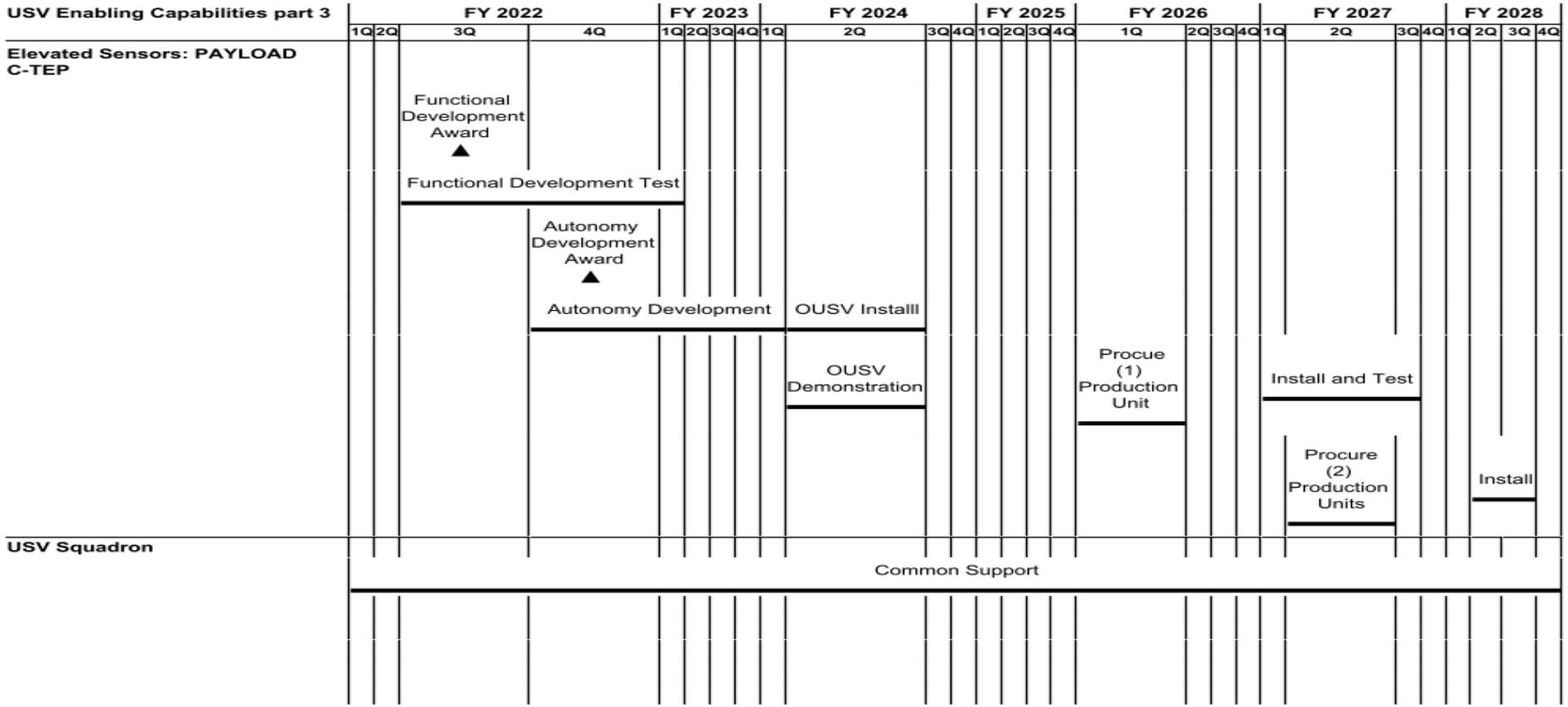
Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0605513N / *UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*	**Project (Number/Name)** 3067 / *Unmanned Surface Vehicle Enabling Capabilities*



2024PB - 0605513N - 3067

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 0605513N / *UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*	**Project (Number/Name)** 3067 / *Unmanned Surface Vehicle Enabling Capabilities*

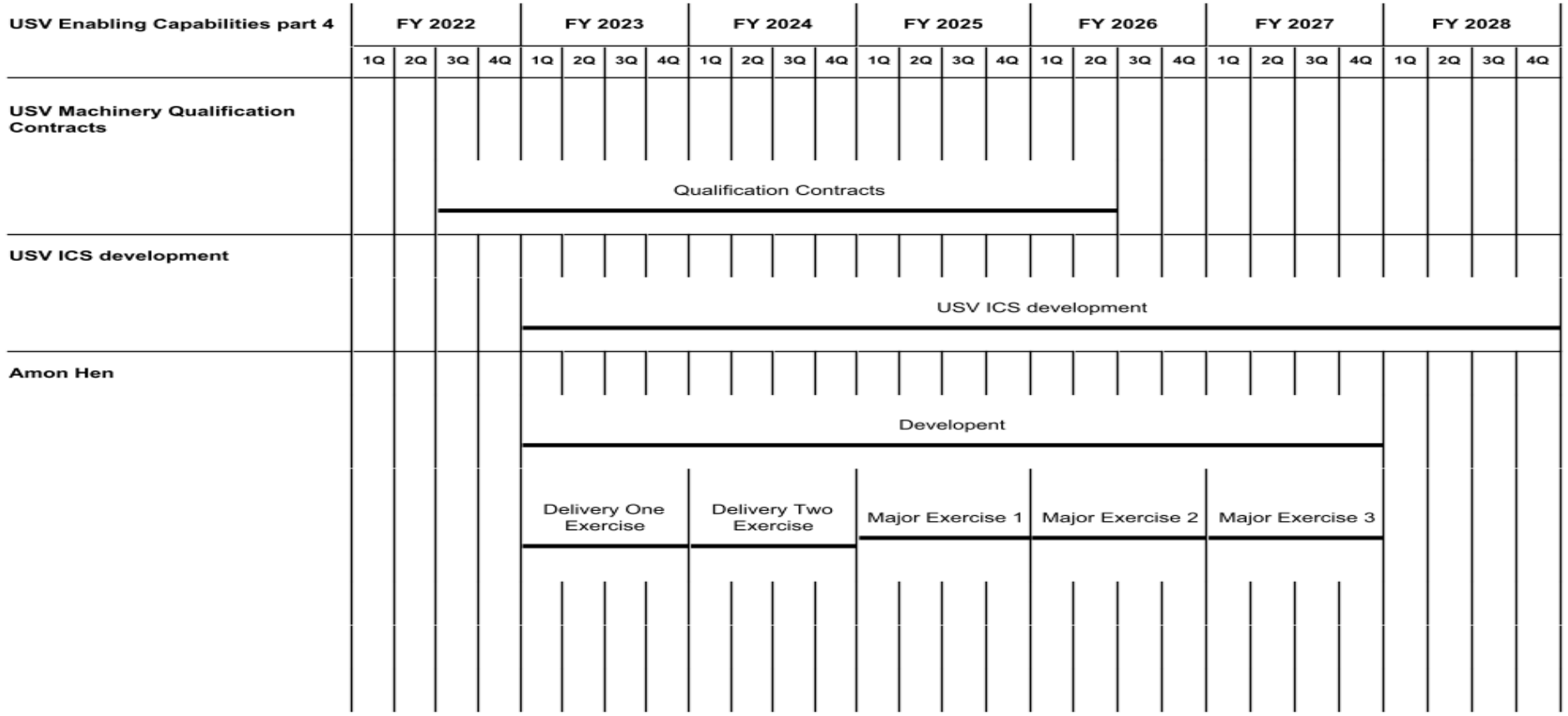


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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0605513N / *UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*	**Project (Number/Name)** 3067 / *Unmanned Surface Vehicle Enabling Capabilities*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
USV Enabling Capabilities				
Project Moved from PE 0603178N: New PE	1	2022	1	2022
Autonomy: UMAA ICD Development: ICD Development & Delivery	1	2022	2	2022
Autonomy: UMAA ICD Spiral Development & Reference Implementation: UMAA ICD Spiral Development & Reference Implementation	1	2022	4	2028
Autonomy: Low TRL Function Development: Low TRL Function Development	1	2022	4	2028
Autonomy: Platform Autonomy Development and Support: Platform Autonomy Development and Support	2	2022	4	2028
Autonomy: Platform Autonomy Development and Support: Platform Autonomy Management	4	2022	4	2028
Autonomy: Platform Autonomy Development and Support: Data Management Infrastructure	1	2022	4	2028
Unmanned Communications Development: Unmanned Communications Development	1	2022	4	2028
Unmanned Cryptographic Systems: Unmanned Cryptographic Systems	1	2022	4	2025
Command and Control (C2): CCS Spiral Development	1	2022	4	2028
USV Operations Center: Establishment	2	2022	4	2023
USV Operations Center: Sustainment	1	2024	4	2028
USV Enabling Capabilities part 2				
Elevated Sensors: COMM C-TEM: Integration Modeling and Simulation	1	2022	4	2022
Elevated Sensors: COMM C-TEM: RFP Release	1	2022	1	2022
Elevated Sensors: COMM C-TEM: Source Selection	2	2022	3	2022
Elevated Sensors: COMM C-TEM: COMM C-TEM #1: Award	3	2022	3	2022
Elevated Sensors: COMM C-TEM: COMM C-TEM #1: Development/Design	3	2022	3	2023

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 0605513N / *UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*	**Project (Number/Name)** 3067 / *Unmanned Surface Vehicle Enabling Capabilities*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Elevated Sensors: COMM C-TEM: COMM C-TEM #1: Installation	3	2023	4	2023
Elevated Sensors: COMM C-TEM: COMM C-TEM #1: Test	3	2023	4	2023
Elevated Sensors: COMM C-TEM: COMM C-TEM #2: (1) Unit Purchase	2	2023	2	2023
Elevated Sensors: COMM C-TEM: COMM C-TEM #2: Unit Delivered	2	2024	2	2024
Elevated Sensors: COMM C-TEM: COMM C-TEM #2: Installation	3	2024	4	2024
Elevated Sensors: COMM C-TEM: COMM C-TEM #2: Test	3	2024	4	2024
Elevated Sensors: COMM C-TEM: COMM C-TEM #3: (1) Unit Purchase	2	2026	2	2026
Elevated Sensors: COMM C-TEM: COMM C-TEM #3: Unit Delivered	2	2027	2	2027
Elevated Sensors: COMM C-TEM: COMM C-TEM #3: Installation	2	2027	3	2027
Elevated Sensors: COMM C-TEM: COMM C-TEM #3: Test	3	2027	4	2027
USV Enabling Capabilities part 3				
Elevated Sensors: PAYLOAD C-TEP: Award for Functional Development (RIF Prototype)	3	2022	3	2022
Elevated Sensors: PAYLOAD C-TEP: Functional Development & Testing (RIF Prototype)	3	2022	1	2023
Elevated Sensors: PAYLOAD C-TEP: Award for Autonomy Development (RIF Prototype)	4	2022	4	2022
Elevated Sensors: PAYLOAD C-TEP: Autonomy Development (RIF Prototype)	4	2022	1	2024
Elevated Sensors: PAYLOAD C-TEP: Install C-TEP (RIF Prototype) on OUSV	2	2024	2	2024
Elevated Sensors: PAYLOAD C-TEP: Demonstrate C-TEP (RIF Prototype) on OUSV	2	2024	2	2024
Elevated Sensors: PAYLOAD C-TEP: Procure (1) production Units (CTEP Baseline)	1	2026	1	2026
Elevated Sensors: PAYLOAD C-TEP: Install and Test production Unit	1	2027	3	2027
Elevated Sensors: PAYLOAD C-TEP: PAYLOAD C-TEP: Procure (2) production Units	2	2027	2	2027
Elevated Sensors: PAYLOAD C-TEP: Install and Test production Units	2	2028	3	2028
USV Squadron: Common Support	1	2022	4	2028
USV Enabling Capabilities part 4				

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 0605513N / *UNMANNED SURFACE VEHICLE ENABLING CAPABILITIES*	**Project (Number/Name)** 3067 / *Unmanned Surface Vehicle Enabling Capabilities*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
USV Machinery Qualification Contracts: Qualification Contracts	3	2022	2	2026
USV ICS development: USV ICS development	1	2023	4	2028
Amon Hen: Development (FY22 Future Navy Capability)	1	2023	4	2027
Amon Hen: Delivery of first Rough Casper developmental unit & support one exercise	1	2023	4	2023
Amon Hen: Delivery of first Rough Casper developmental unit & support two exercise	1	2024	4	2024
Amon Hen: Support of Major Exercise 1 (Does not encompass acquisition)	1	2025	4	2025
Amon Hen: Support of Major Exercise 2 (Does not encompass acquisition)	1	2026	4	2026
Amon Hen: Support of Major Exercise 3 (Does not encompass acquisition)	1	2027	4	2027