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Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Navy **Date:** March 2024

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603502N / <i>Surface & Shallow Water MCM</i>
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COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
Total Program Element	334.904	84.846	34.690	29.421	-	29.421	33.811	27.415	27.142	27.696	Continuing	Continuing
1234: <i>Unmanned Surface Vehicle (USV)</i>	199.532	24.081	14.463	16.432	-	16.432	18.875	18.395	18.674	19.055	Continuing	Continuing
2989: <i>Barracuda</i>	135.372	60.765	20.227	12.989	-	12.989	14.936	9.020	8.468	8.641	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element provides resources for development of unmanned mine countermeasures systems to provide minehunting, minesweeping, and mine neutralization to counter known and projected mine threats. The mine countermeasures systems provide mobile, quick reaction forces capable of land-based or sea-based minehunting and minesweeping operations worldwide. Resources are for developing and deploying advanced minehunting and minesweeping systems and the intelligence and oceanographic capabilities that will enable mine warfare superiority. Tactics and techniques used vary across a diversity of environments and a diversity of threats, including both asymmetric and emerging. Resources provide for systems and support of mine warfare systems, maritime systems, and expeditionary systems to allow for continuous operations of the Navy's warships and support vessels, other military vessels, and commercial vessels. Core capabilities include forward presence, deterrence, sea control, power projection, maritime security, humanitarian assistance and disaster response to maintain freedom of the seas. Increased capability includes conducting minefield reconnaissance (mine density and location) at high area search rates, improving detection capability; decreasing sensor false alarm rates; reducing or eliminating post-mission analysis detect, classify, identify, decide time; improving neutralization time; improving network communications; automatic target recognition; and achieving in-stride detect-to-engage capability. Concept of operations includes development of cooperative, unmanned, modular systems; the establishment of a capable networked command and control system; and standing up an accurate and interactive environmental system with the ability to form and disseminate a Common Environmental Picture. Efforts benefit the Mine Countermeasure (MCM) force by transforming the Navy from the platform-centered legacy set of systems to a capability-centered force that is distributed, networked, and able to provide unique maritime influence and access across the entire maritime domain.

The Surface and Shallow Water MCM systems consist of two programs: The USV program develops: (1) unmanned surface minehunting capability USVs designed to integrate MCM systems employed by the Littoral Combat Ship (LCS) Class and other vessels of opportunity (VOO) platforms and (2) the integration and improvement of new and existing MCM capabilities and payloads (Minesweeping Payload Deployment System [PDS] , Minehunting PDS, and Mine Neutralization PDS) to provide detection, classification, localization, identification, neutralization, and influence clearance capabilities.

The Barracuda system is an expendable, modular, mine neutralizer launched from the Mine Countermeasures (MCM) Unmanned Surface Vessel (USV) as part of the Littoral Combat Ship (LCS) MCM Mission Package (MP) to autonomously reacquire and neutralize previously detected near-surface mines. Upon entering the water, the vehicle will conduct a search, capture an image, and use a communications buoy to send the image to the operator in the MCM MP to evaluate the image and order the weapon to fire, abort, or continue searching. Future capabilities may include launch from manned or unmanned aircraft or vessels of opportunity as well as the ability to neutralize mines in volume and on the bottom.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Navy	Date: March 2024
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B. Program Change Summary (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	87.746	34.690	25.998	-	25.998
Current President's Budget	84.846	34.690	29.421	-	29.421
Total Adjustments	-2.900	0.000	3.423	-	3.423
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.003	0.000			
• SBIR/STTR Transfer	-2.897	0.000			
• Rate/Misc Adjustments	0.000	0.000	3.423	-	3.423

Change Summary Explanation

FY 2023: Reduced by \$2.897M for SBIR assessments and \$0.003M for reprogramming's.

FY 2024: N/A

FY 2025: Increased by \$3.423M funds realignments.

Technical: Not applicable.

Schedule: Not applicable.

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Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603502N / <i>Surface & Shallow Water MCM</i>				Project (Number/Name) 1234 / <i>Unmanned Surface Vehicle (USV)</i>			
COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
1234: <i>Unmanned Surface Vehicle (USV)</i>	199.532	24.081	14.463	16.432	-	16.432	18.875	18.395	18.674	19.055	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

The UISS program will be subsumed into the MCM USV program after FRPD scheduled to occur in FY23.

A. Mission Description and Budget Item Justification

The MCM USV program consists of Unmanned Surface Vehicles (USVs) with Mine Countermeasures (MCM) payloads. The program began as the Unmanned Influence Sweep System (UISS) program which consisted of a USV paired with a magnetic and acoustic sweep capability. As the USV progressed, the Navy modified the program so the craft would integrated

and operate other payloads. The UISS program will be subsumed by the MCM USV Program upon successful Full Rate Production Decision Review in August, 2023.

The program consists of four products:

- 1) The MCM USV is a semi-autonomous dual drive, 38 foot long, 10 foot wide aluminum hulled craft powered by two diesel engines. The craft contains a situational awareness and contact avoidance suite consisting of optical, radar, and GPS and is directed and monitored by by the Multi Vehicle Communication System (MVCS) with a host station, such as LCS, Vessel of Opportunity (VOO), or shore site. The reconfigurable payload pay adds a modular mission capability enabling multiple payloads (mine sweep, mine hunt, mine neutralization).
- 2) The Mine Sweep Payload Delivery System (PDS) brings magnetic and acoustic mine influence sweep capability to the MCM USV. The PDS includes a winch, a magnetic sweep cable, and a Towed Acoustic Generator (TAG) along with capability to deploy and retrieve the towed equipment.
- 3) The Mine Hunt PDS brings a mine hunting capability by integrating the existing AN/AQS-20 on to the craft. The PDS includes a winch, cable and tow body handling equipment.
- 4) The Mine Neutralization PDS will neutralize mines previously identified throughout the water column using the Barracuda Mine Neutralizer. The PDS will consist of a launcher and communications gear to communicate with the neutralizer in the water.

The program completed ship-based TECHEVAL and IOT&E in FY22. The program declared Initial Operational Capability in Q2FY23. In FY 2023 the MCM USV program began contract planning for the integration of a next generation Influence Sweep Payload (Magnetic & Acoustic Generation Next Unmanned Superconducting Sweep - MAGNUSS). Mine Neutralization payload design activities and Engineering Development Model (EDM) will start in FY26.

The MCM USV program will have a continuing reliability, autonomy and cyber-security engineering changes process. The program has developed improvements to address IOT&E findings. Leveraging ongoing developments for autonomous systems, the program will continue to develop performance improvements. Upgrades will consist of processing and sensing hardware, autonomy and situational awareness/collision avoidance algorithms. Autonomy upgrades will begin with updates to the lower controller, which enables the craft to be able to be able to perform autonomous actions, regardless of the specific autonomy baseline that is adopted for the system. The lower controller will be agnostic to the autonomy baseline utilized and therefor allows flexibility in future design decisions. Cybersecurity ECPs will be

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developed, tested, and released in support of the software and hard baselines starting in FY23. MCM USV will continue to support Navy experimentation of Beyond Line of Sight (BLOS) and alternative payloads.						
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
Title: MCM USV Product Development						
Articles:						
		15.855	6.632	8.559	0.000	8.559
		15	-	-	-	-
FY 2024 Plans:						
- Continue integration planning of the MAGNUSS payload on the MCM USV						
- Commence integration of new lower controller to facilitate an open autonomy system architecture for the MCM USV.						
- Integrate upgraded perception and situational suite into MCM USV.						
FY 2025 Base Plans:						
- Integrate the Government autonomy baseline onto the MCM USV.						
- Install lower controller on a test platform and autonomy engine and complete installation checkouts. Complete autonomy behavior assessment and implement fixes as needed.						
- Complete lower controller operational behavior assessments for the current payloads.						
- Finalize detailed lower controller TDP.						
- Develop and integrate BLOS capabilities on the MCM USV. Assess potential to execute autonomous activities BLOS. Evaluate methods for operating autonomous activities in BLOS.						
FY 2025 OCO Plans:						
N/A						
FY 2024 to FY 2025 Increase/Decrease Statement:						
Increase due to development and integration of BLOS capabilities on the MCM USV, and integration of Government autonomy baseline onto the MCM USV.						
Title: MCM USV Support						
Articles:						
		7.455	4.521	5.829	0.000	5.829
		-	-	-	-	-
FY 2024 Plans:						
- Continue its yearly development cycle to maintain the MCM USV Cybersecurity posture and compliance with updated requirements and instructions.						
- Incorporate ECP to introduce early MCM USV autonomy capability based on initial Fleet deployment feedback.						
FY 2025 Base Plans:						

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
<ul style="list-style-type: none"> - Continue yearly development cycle for software and hardware to maintain the MCM USV Cybersecurity posture and compliance with updated requirements and instructions. - ECPs addressing obsolescent parts and software deficiencies and incorporating Fleet feedback will be developed, evaluated, and released. - Continued updates to Merged craft software. <p>FY 2025 OCO Plans: N/A</p> <p>FY 2024 to FY 2025 Increase/Decrease Statement: Increase due to development, evaluation and release of ECPs addressing obsolescent parts.</p>					
<p>Title: MCM USV Test and Evaluation</p> <p align="right">Articles:</p> <p>FY 2024 Plans:</p> <ul style="list-style-type: none"> - Conduct initial on-water testing of various autonomy engines installed on MCM USV, including range time and support craft requirements. - Test lower controller used in autonomy baseline. <p>FY 2025 Base Plans:</p> <ul style="list-style-type: none"> - Conduct continued on-water testing of various autonomy engines installed on MCM USV, including range time and support craft requirements. - Complete follow-on testing of lower controller with selected autonomy engine to validate modifications to lower controller or integration to autonomy engine <p>FY 2025 OCO Plans: N/A</p> <p>FY 2024 to FY 2025 Increase/Decrease Statement: Decrease due to completion of test of lower controller used in autonomy baseline.</p>	0.625	3.064	1.850	0.000	1.850
	-	-	-	-	-
<p>Title: MCM USV Management Services</p> <p align="right">Articles:</p> <p>FY 2024 Plans:</p> <ul style="list-style-type: none"> - Provide program planning, management and acquisition document updates for the MCM USV program. 	0.146	0.246	0.194	0.000	0.194
	-	-	-	-	-

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
- Manage payload development contract and options.					
FY 2025 Base Plans: - Provide program planning, management and acquisition document updates for the MCM USV program. - Manage payload development contract and options.					
FY 2025 OCO Plans: N/A					
FY 2024 to FY 2025 Increase/Decrease Statement: Minor decrease no significant changes					
Accomplishments/Planned Programs Subtotals	24.081	14.463	16.432	0.000	16.432

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
• OPN/1601: <i>LCS MCM Mission Modules</i>	92.495	93.961	118.247	-	118.247	101.172	62.758	60.396	57.096	895.257	2,103.413

Remarks
RDT&E/0603596N - Funding shown only reflects funding for required USV development efforts.
OPN/1601 - The above funding line accounts for several programs, of which the Unmanned Surface Vehicle programs are only a portion.
OPN/2622 - The above funding line accounts for several programs, of which the Unmanned Surface Vehicle programs are only a portion.

D. Acquisition Strategy
UISS - Requirements are documented in the Unmanned Influence Sweep System (UISS) Capability Production Document (CPD). An Engineering and Manufacturing Development (E&MD) contract was awarded in FY14 with options for Low Rate Initial Production (LRIP) in FY19.
In FY 2020, Mine Countermeasure Unmanned Surface Vehicle (MCM USV) awarded three LRIP craft with sweep payload, following a Milestone C Decision on development contract.
In FY 2020-2021, MCM USV developed a Capability Production Document (CPD) Annex leveraging existing requirements (UISS, AN/AQS-20, MCM MP, etc.).

UNCLASSIFIED

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<p>In FY 2021, MCM USV craft and Minesweep Payload completed IOT&E testing, validating technical data package for production. Program transitioned from concept development to mine neutralization initial requirements definition and design. Based on demonstrated performance improvements, a fourth UISS LRIP was authorized and procured.</p> <p>In FY 2022, MCM USV completed IOT&E for Minehunt Payload (with AN/AQS-20C). Continued requirements definition of the mine neutralization payload. Minehunt Payload LRIP/s will be procured to support MP requirements. A five-year MCM USV production contract was awarded to Bollinger Shipyards LLC (Lockport, LA).</p> <p>In FY 2023, MCM USV will continue mine neutralization payload requirements definition. In FY 2023, working with ONR, the MCM USV program will begin integration of the next generation Influence Sweep Payload (Magnetic & Acoustic Generation Next Unmanned Superconducting Sweep - MAGNUSS).</p> <p>In FY 2024, Minesweeping PDS and Minehunting PDS production will be procured under the Multiple Award Contracts (MAC) Indefinite Delivery Indefinite Quantity (IDIQ) USV Family of Systems (FoS) Contract.</p> <p>In FY 2026, the program will start Mine Neutralization Engineering Design Model design, fabrication and integration onto the craft. Commence MAGNUSS EDM payload integration with USV craft.</p> <p>In FY 2027, continue MAGNUSS integration actives, which includes an At-Sea Demonstration.</p>		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy												Date: March 2024			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)						
1319 / 4				PE 0603502N / Surface & Shallow Water MCM					1234 / Unmanned Surface Vehicle (USV)						
Product Development (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
UISS: Product Development	C/CPIF	Textron Systems, Inc : Hunt Valley, MD	33.145	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MHU: Product Development	SS/CPFF	JHU APL : Laurel, MD	12.215	0.000		0.000		0.000		-		0.000	0.000	12.215	-
MHU: Product Development	C/FPIF	Textron Systems, Inc : Hunt Valley, MD	7.545	0.000		0.000		0.000		-		0.000	0.000	7.545	-
MHU: Product Development	WR	NSWC PC : Panama City, FL	0.922	0.000		0.000		0.000		-		0.000	0.000	0.922	-
MHU: Product Development	WR	NUWC N : Newport, RI	0.740	0.000		0.000		0.000		-		0.000	0.000	0.740	-
MHU: Product Development	WR	NSWC CD : Bethesda, MD	0.235	0.000		0.000		0.000		-		0.000	0.000	0.235	-
MHU: Product Development	WR	Various : Various	0.570	0.000		0.000		0.000		-		0.000	0.000	0.570	-
MCM USV: Product Development 1	C/CPIF	Textron Systems, Inc : Hunt Valley, MD	2.050	0.000		0.000		0.000		-		0.000	0.000	2.050	-
MCM USV: Product Development 2	C/FPIF	Textron Systems, Inc : Hunt Valley, MD	15.559	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MCM USV: Product Development1	C/CPFF	Textron Systems, Inc : Hunt Valley, MD	18.442	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MCM USV: Product Development	SS/CPFF	Raytheon : Portsmouth, RI	15.277	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MCM USV: Product Development	SS/CPFF	JHU APL : Laurel, MD	4.485	1.316	Feb 2023	3.912	Feb 2024	0.000		-		0.000	Continuing	Continuing	Continuing
MCM USV: Product Development	WR	NSWC PC : Panama City, FL	10.628	3.552	Dec 2022	1.236	Dec 2023	1.479	Dec 2024	-		1.479	Continuing	Continuing	Continuing
MCM USV: Product Development	WR	NUWC N : Newport, RI	2.314	0.078	Dec 2022	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MCM USV: Product Development	WR	NSWC CD : Bethesda, MD	4.770	0.892	Dec 2022	1.484	Dec 2023	2.500	Dec 2024	-		2.500	Continuing	Continuing	Continuing
MCM USV: Product Development	C/IDIQ	Various : Various	7.948	9.075	Jan 2023	0.000		4.580	Dec 2024	-		4.580	0.000	21.603	-

UNCLASSIFIED

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Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 4				PE 0603502N / Surface & Shallow Water MCM				1234 / Unmanned Surface Vehicle (USV)							
Product Development (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MCM USV: Product Development	WR	NSWC PH : Philadelphia, PA	0.000	0.899	Oct 2022	0.000		0.000		-		0.000	0.000	0.899	-
Subtotal			136.845	15.812		6.632		8.559		-		8.559	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
UISS: Engineering Support	WR	NUWC N : Newport, RI	0.850	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
UISS: Engineering Support	WR	NSWC PC : Panama City, FL	2.289	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
UISS: Engineering Support	WR	NSWC CD : Bethesda, MD	1.911	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
UISS: Engineering Support	C/CPFF	Textron Systems, Inc : Hunt Valley, MD	1.270	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
UISS: Integrated Logistics	WR	NSWC PC : Panama City, FL	0.665	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
UISS: Integrated Logistics	WR	NSWC CD : Bethesda, MD	0.951	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
UISS: Integrated Logistics	C/CPFF	Textron Systems, Inc : Hunt Valley, MD	1.128	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MHU: Engineering Support	WR	SSC PAC : San Diego, CA	0.444	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MHU: Engineering Support	WR	NSWC PC : Panama City, FL	3.460	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MHU: Engineering Support	WR	NUWC N : Newport, RI	0.853	0.000		0.000		0.000		-		0.000	0.000	0.853	-
MHU: Engineering Support	WR	NSWC CD : Bethesda, MD	0.384	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MHU: Engineering Support	WR	Various : Various	0.520	0.000		0.000		0.000		-		0.000	0.000	0.520	-

UNCLASSIFIED

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Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 4				PE 0603502N / Surface & Shallow Water MCM				1234 / Unmanned Surface Vehicle (USV)							
Support (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MCM USV: Engineering Support	WR	NSWC PC : Panama City, FL	9.270	3.149	Dec 2022	0.578	Dec 2023	1.752	Dec 2024	-		1.752	Continuing	Continuing	Continuing
MCM USV: Engineering Support	WR	NUWC N : Newport, RI	4.547	0.230	Dec 2022	0.212	Dec 2023	0.150	Dec 2024	-		0.150	Continuing	Continuing	Continuing
MCM USV: Engineering Support	WR	NSWC CD : Bethesda, MD	1.167	2.597	Dec 2022	0.570	Dec 2023	0.882	Dec 2024	-		0.882	0.000	5.216	-
MCM USV: Engineering Support	C/CPFF	Textron Systems, Inc : Hunt Valley, MD	2.228	1.522	Dec 2022	3.161	Dec 2023	0.000		-		0.000	Continuing	Continuing	Continuing
MCM USV: Integrated Logistics	WR	NSWC PC : Panama City, FL	0.380	0.000		0.000		0.000		-		0.000	0.000	0.380	-
MCM USV: Integrated Logistics	WR	NSWC CD : Bethesda, MD	0.242	0.000		0.000		0.000		-		0.000	0.000	0.242	-
MCM USV: Integrated Logistics	SS/CPFF	Raytheon : Portsmouth, RI	1.028	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MCM USV: Integrated Logistics	SS/CPFF	Northrup Grumman : Annapolis, MD	0.778	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MCM USV: Integrated Logistics	C/CPFF	Textron Systems, Inc : Hunt Valley, MD	2.691	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MCM USV: Engineering Support	C/IDIQ	Various : Various	0.000	0.000		0.000		3.047	Dec 2024	-		3.047	0.000	3.047	-
Subtotal			37.056	7.498		4.521		5.831		-		5.831	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Developmental Test & Evaluation Not Funded FYDP (PYDT&E)	WR	NSWC PC : Panama City, FL	2.055	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Prior Year Developmental Test & Evaluation Not Funded FYDP (PYDT&E)	WR	NSWC CD : Bethesda, MD	1.731	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing

UNCLASSIFIED

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1319 / 4				PE 0603502N / Surface & Shallow Water MCM				1234 / Unmanned Surface Vehicle (USV)							
Test and Evaluation (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Developmental Test & Evaluation Not Funded FYDP (PYDT&E)	C/CPIF	Textron Systems, Inc : Hunt Valley, MD	1.884	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Operational Test & Evaluation (OT&E)	WR	NSWC PC : Panama City, FL	7.510	0.343	Dec 2022	3.064	Nov 2023	0.000		-		0.000	Continuing	Continuing	Continuing
Operational Test & Evaluation (OT&E)	WR	NSWC CD : Bethesda, MD	3.476	0.282	Dec 2022	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Operational Test & Evaluation (OT&E)	SS/CPFF	Raytheon : Portsmouth, RI	1.548	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Operational Test & Evaluation (OT&E)	C/CPFF	Textron Systems, Inc : Hunt Valley, MD	3.684	0.000		0.000		0.000		-		0.000	0.000	3.684	-
Developmental Test & Evaluation (DT&E)	WR	NSWC CD : Bethesda, MD	0.000	0.000		0.000		1.850	Dec 2024	-		1.850	0.000	1.850	-
Subtotal			21.888	0.625		3.064		1.850		-		1.850	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
UISS: Travel	WR	NAVSEA : Washington, DC	0.295	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
UISS: Management	C/CPAF	TBD : TBD	2.274	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MCM USV: Travel	WR	NAVSEA : Washington, DC	0.458	0.055	Jan 2023	0.053	Jan 2024	0.040	Oct 2024	-		0.040	Continuing	Continuing	Continuing
MCM USV: Management	C/CPAF	TBD : TBD	0.716	0.091	Nov 2022	0.193	Jan 2024	0.152	Oct 2024	-		0.152	Continuing	Continuing	Continuing
Subtotal			3.743	0.146		0.246		0.192		-		0.192	Continuing	Continuing	N/A
Project Cost Totals			199.532	24.081		14.463		16.432		-		16.432	Continuing	Continuing	N/A

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Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603502N / <i>Surface & Shallow Water MCM</i>	Project (Number/Name) 1234 / <i>Unmanned Surface Vehicle (USV)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>MCM USV</i>				
Product Development: Implementation of software fixes to address IOT&E findings and other findings post IOT&E	1	2024	1	2024
Product Development: Advanced Autonomy and MCM Systems: Develop autonomy lower controller and autonomy engine interface and integrate into MCM USV	2	2023	4	2024
Product Development: Advanced Autonomy and MCM Systems: Develop detailed Technical Data Package for autonomy lower controller	3	2024	2	2025
Product Development: Advanced Autonomy and MCM Systems: Integrate upgraded perception and situational awareness suite into MCM USV	1	2024	4	2024
Product Development: Advanced Autonomy and MCM Systems: Complete install of lower controller with autonomy engine	1	2025	1	2025
Product Development: Advanced Autonomy and MCM Systems: Evaluation of Beyond Line of Sight Autonomous Operations	3	2025	4	2025
Support: Engineering Change Proposals (ECPs): MCM USV Enhancements (ongoing)	1	2024	4	2029
Support: Engineering Change Proposals (ECPs): Consolidation of MCM USV Mine Hunt and Mine Sweep software baselines	3	2024	1	2025
Support: Cybersecurity: Cyber Security and software upgrades to maintain compliance with updated requirements (ongoing)	1	2024	4	2029
Test and Evaluation: Test and Evaluate autonomy lower controller and autonomy engine	4	2024	3	2025
Milestones: Acquisition Milestones: Full Rate Production	4	2023	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy										Date: March 2024		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603502N / <i>Surface & Shallow Water MCM</i>				Project (Number/Name) 2989 / <i>Barracuda</i>			
COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
2989: <i>Barracuda</i>	135.372	60.765	20.227	12.989	-	12.989	14.936	9.020	8.468	8.641	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

FY 2024 to FY 2025 decrease corresponds with Barracuda Program's completion of contractor test asset fabrication in FY 2024.

The Barracuda system is an expendable, modular, mine neutralizer launched from the Mine Countermeasures (MCM) Unmanned Surface Vessel (USV) as part of the Littoral Combat Ship (LCS) MCM Mission Package (MP) to autonomously reacquire and neutralize previously detected near-surface mines. Upon entering the water, the vehicle will conduct a search, capture an image, and use a communications buoy to send the image to the operator in the MCM MP to evaluate the image and order the weapon to fire, abort, or continue searching.

Future capabilities may include launch from manned or unmanned aircraft or vessels of opportunity as well as the ability to neutralize mines in volume and on the bottom.

The Barracuda detailed design and development contract includes system design, program management, systems engineering, software development, integrated product support and contractor testing.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Title: Barracuda: Product Development	56.538	16.081	10.965	0.000	10.965
Articles:	-	-	-	-	-
FY 2024 Plans:					
- Complete contractor test asset builds based on the detailed design delivered to the Government at the Critical Design Review.					
- Continue Engineering Development Model fabrication through June 2025 contractual delivery date.					
- Commence contractor system qualification testing to verify the detailed design, assembly, and integration of vehicles and support equipment against contract requirements.					
- Commence contractor performance testing for initial verification of system performance requirements.					
FY 2025 Base Plans:					
- Complete contractor system qualification testing to verify the detailed design, assembly, and integration of vehicles and support equipment against contract requirements.					
- Complete Engineering Development Model fabrication, checkout, and delivery to the Government.					

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy				Date: March 2024	
Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603502N / <i>Surface & Shallow Water MCM</i>		Project (Number/Name) 2989 / <i>Barracuda</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
- Complete contractor performance testing for initial verification of system performance requirements.					
FY 2025 OCO Plans: N/A					
FY 2024 to FY 2025 Increase/Decrease Statement: Decrease corresponds with the completion of contractor test asset fabrication in FY 2024.					
Title: Barracuda: Engineering Support					
Articles:					
	3.947	3.944	1.935	0.000	1.935
	-	-	-	-	-
FY 2024 Plans: -Continue to conduct and manage technical documents, safety reviews, and contractor test plans and reports. -Continue to coordinate host and deployment platform compatibility and integration efforts. -Provide Government oversight of contractor test asset and Engineering Development Model fabrication. -Provide Government oversight of contractor qualification and performance testing.					
FY 2025 Base Plans: -Continue to conduct and manage technical documents, safety reviews, and contractor test plans and reports. -Continue to coordinate host and deployment platform compatibility and integration efforts. -Continue to provide Government oversight of contractor qualification and performance testing. -Provide Government oversight of Engineering Development Model fabrication and deliveries.					
FY 2025 OCO Plans: N/A					
FY 2024 to FY 2025 Increase/Decrease Statement: Decrease corresponds with reduced effort in FY 2025 for technical document management, contractor test plan reviews, and contractor test asset fabrication oversight.					
Title: Barracuda: Management Services					
Articles:					
	0.280	0.202	0.089	0.000	0.089
	-	-	-	-	-
FY 2024 Plans: Continue to provide program management, financial management and engineering support.					
FY 2025 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603502N / <i>Surface & Shallow Water MCM</i>	Project (Number/Name) 2989 / <i>Barracuda</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
-Continue to provide program management, financial management and engineering support. FY 2025 OCO Plans: N/A FY 2024 to FY 2025 Increase/Decrease Statement: Decrease in management services corresponds with reduced Product Development and Engineering Support efforts in FY 2025.					
Accomplishments/Planned Programs Subtotals	60.765	20.227	12.989	0.000	12.989

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

N/A

Remarks

D. Acquisition Strategy

The Barracuda program awarded a competitive contract in FY 2018 to Raytheon Technologies Missiles and Defense (formerly Raytheon Integrated Defense Systems) in Portsmouth, RI. The Barracuda program is developing a semi-autonomous mine neutralization system that will be incorporated in LCS MCM MP. Initial concepts were based on small UUVs developed as part of the ONR Single Sortie, Detect to Engage Future Naval Capabilities project (FY 2015-FY 2018).

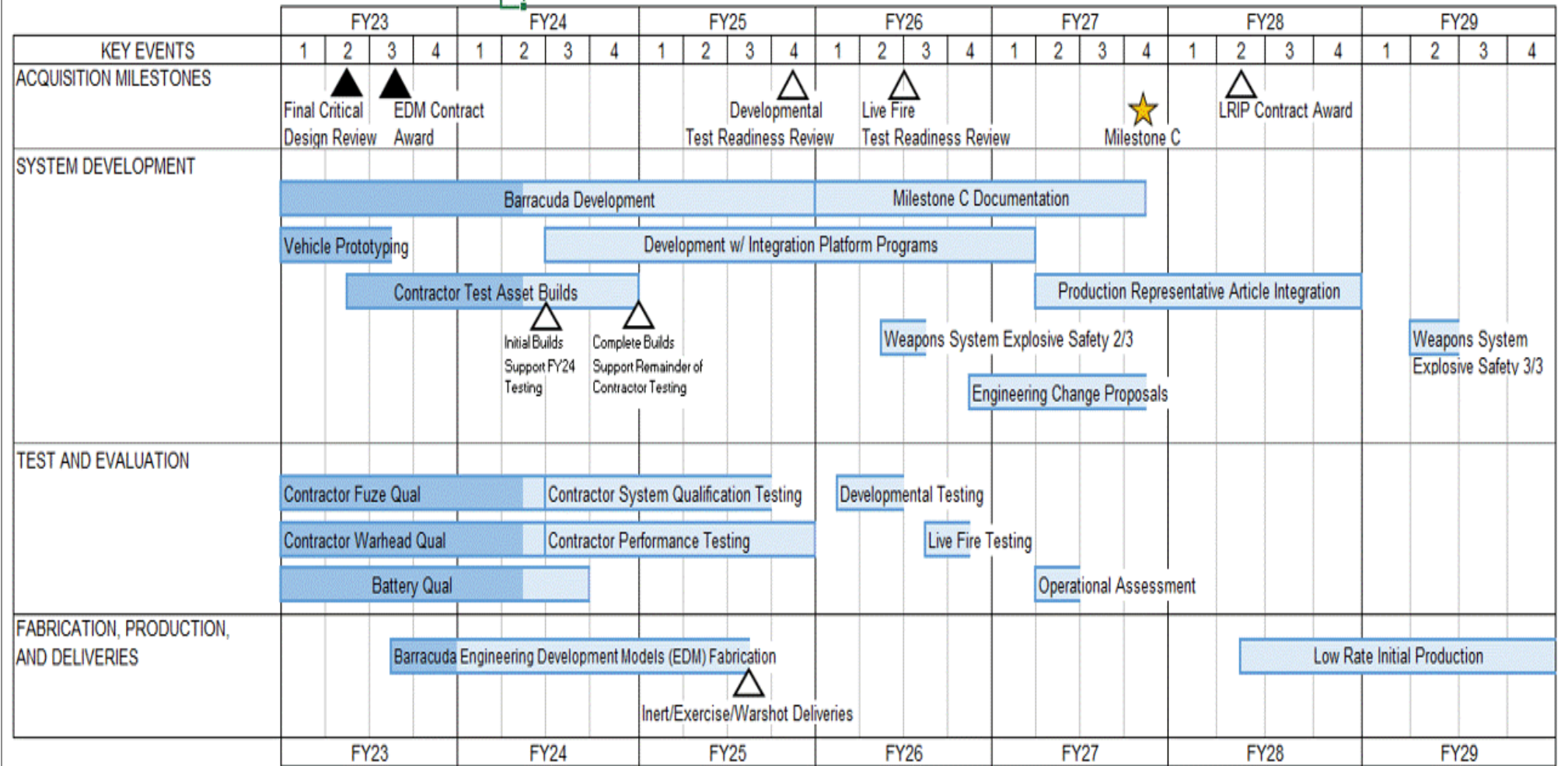
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy												Date: March 2024			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 4				PE 0603502N / Surface & Shallow Water MCM				2989 / Barracuda							
Product Development (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Barracuda Hardware/ Support	C/CPIF	Raytheon (Integrated Defense Systems) : Portsmouth, RI	114.722	56.538	Dec 2022	16.081	Dec 2023	10.965	Dec 2024	-		10.965	Continuing	Continuing	Continuing
Subtotal			114.722	56.538		16.081		10.965		-		10.965	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Barracuda Engineering Support	WR	NUWC NPT : Newport, RI	2.063	0.362	Dec 2022	0.413	Dec 2023	0.137	Dec 2024	-		0.137	Continuing	Continuing	Continuing
Barracuda Engineering Services	C/CPIF	JHU APL : Baltimore, MD	2.542	0.430	Dec 2022	0.481	Dec 2023	0.202	Dec 2024	-		0.202	Continuing	Continuing	Continuing
Barracuda Engineering Support	WR	NSWC, PC : Panama City, FL	8.847	2.524	Nov 2022	2.541	Nov 2023	1.269	Nov 2024	-		1.269	Continuing	Continuing	Continuing
Barracuda Support	WR	NSWC, IHD : Indian Head, MD	3.484	0.526	Nov 2022	0.344	Nov 2023	0.272	Nov 2024	-		0.272	Continuing	Continuing	Continuing
Barracuda Support	WR	Naval Research Lab : Washington, DC	1.015	0.044	Dec 2022	0.055	Dec 2023	0.020	Dec 2024	-		0.020	Continuing	Continuing	Continuing
Barracuda Support	WR	NSWC, Carderock : Bethesda, MD	1.355	0.061	Nov 2022	0.110	Nov 2023	0.035	Nov 2024	-		0.035	Continuing	Continuing	Continuing
Subtotal			19.306	3.947		3.944		1.935		-		1.935	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Barracuda Management Support	WR	NSWC, PC : Panama City, FL	1.344	0.280	Nov 2022	0.202	Nov 2023	0.089	Nov 2024	-		0.089	Continuing	Continuing	Continuing
Subtotal			1.344	0.280		0.202		0.089		-		0.089	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2025 Navy **Date:** March 2024

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603502N / <i>Surface & Shallow Water MCM</i>	Project (Number/Name) 2989 / <i>Barracuda</i>
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Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603502N / <i>Surface & Shallow Water MCM</i>	Project (Number/Name) 2989 / <i>Barracuda</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Acquisition Milestones				
Barracuda Acquisition Milestones: Final Critical Design Review	2	2023	2	2023
Barracuda Acquisition Milestones: Engineering Development Models (EDM) Contract Option	3	2023	3	2023
Barracuda Acquisition Milestones: Developmental Test Readiness Review	4	2025	4	2025
Barracuda Acquisition Milestones: Live Fire Test Readiness Review	2	2026	2	2026
Barracuda Acquisition Milestones: Milestone C	4	2027	4	2027
Barracuda Acquisition Milestones: Low Rate Initial Production (LRIP) Contract Award	2	2028	2	2028
System Development: Barracuda Development	1	2023	4	2025
System Development: Vehicle Prototyping	1	2023	3	2023
System Development: Contractor Test Asset Builds	2	2023	4	2024
System Development: Initial Contractor Test Asset Builds Support FY24 Testing	2	2024	2	2024
System Development: Complete Contractor Test Asset Builds Support Remainder of Testing	4	2024	4	2024
System Development: Development with Integration Platform Programs	3	2024	1	2027
System Development: Weapons Systems Explosive Safety Review Board 2/3	2	2026	3	2026
System Development: Production Representative Article Integration	2	2027	4	2028
System Development: Milestone C Documentation	1	2026	4	2027
System Development: Engineering Change Proposal	4	2026	4	2027
System Development: Weapons Systems Explosive Safety Review Board 3/3	2	2029	3	2029
Test and Evaluation: Contractor Fuze Qualification	1	2023	2	2024
Test and Evaluation: Contractor Warhead Qualification	1	2023	2	2024
Test and Evaluation: Contractor Battery Qualification	1	2023	3	2024

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Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy **Date:** March 2024

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603502N / <i>Surface & Shallow Water MCM</i>	Project (Number/Name) 2989 / <i>Barracuda</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Test and Evaluation: Contractor System Qualification	3	2024	3	2025
Test and Evaluation: Contractor System Performance	3	2024	4	2025
Test and Evaluation: Developmental Testing	1	2026	2	2026
Test and Evaluation: Live Fire Testing	3	2026	4	2026
Test and Evaluation: Operational Assessment	2	2027	3	2027
Fabrication, Production, & Deliveries: Engineering Development Models (EDMs) Fabrication	3	2023	3	2025
Fabrication, Production, & Deliveries: Exercise/Inert Variant EDMs Delivery	3	2025	3	2025
Fabrication, Production, & Deliveries: Warshot Variant EDMs Delivery	3	2025	3	2025
Fabrication, Production, & Deliveries: Low Rate Initial Production (LRIP) Fabrication	2	2028	4	2029