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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Navy **Date:** March 2023

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 0604126N / <i>Airborne Mine Countermeasures</i>
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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
Total Program Element	55.465	18.067	30.240	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	103.772
2131: <i>Assault Breaching System</i>	55.465	18.067	30.240	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	103.772

A. Mission Description and Budget Item Justification

FY 2024 reflects a net decrease of \$63.988 million. Decrease is associated with the COBRA Block II program termination. Upon sundown of the MQ-8B unmanned airborne vehicle in FY 2022, began integrating COBRA Block I with MQ-8C UAV in Q3 FY 2023.

The Assault Breaching System (ABS) program provides a combination of U.S. Navy systems to counter the threat to amphibious forces from obstacles and anti-landing/ sea mines in the Beach Zone and Surf Zone (0-10 ft water).

The Assault Breaching Systems (ABS) consist of a system of systems approach that includes the following programs: Joint Direct Attack Munition (JDAM) Assault Breaching System (JABS); Coastal Battlefield Reconnaissance and Analysis (COBRA); Precision Navigation and Marking System (PNMS); Command, Control, Computers, Communications, and Intelligence (C4I). The Assault Breaching Systems enable the Navy-Marine Corps team to conduct Joint Forcible Entry Operations (JFEO), Ship-To-Objective Maneuver (STOM), and other combat operations to project power ashore. JABS is a fielded system that neutralizes surface mines and obstacles in the Beach Zone (BZ) and Surf Zone (SZ). The ABS Tactical Decision Aid optimizes the Desired Points of Impact (DPI) for JDAM munitions to effectively neutralize mines and obstacles while minimizing the required number of munitions and friendly aircraft sorties. Continued testing is required to optimize the ABS Tactical Decision Aid database for the most common enemy mines and obstacles. COBRA conducts Intelligence Surveillance Reconnaissance and Targeting (ISR/T). This system, which consists of two COBRA Airborne Payloads (CAPS) and one Post Mission Analysis (PMA) station, provides Coastal Mine Reconnaissance (CMR) capability. Block I is a multispectral sensor capable of daytime detection of surface-laid minefields and obstacles in the Beach Zone (BZ) and has on-board real-time processing. Block II capability adds an active illuminator sensor that enables nighttime detection of mines and obstacles in the BZ and the Surf Zone (SZ) (0-10 ft of water), and will detect, classify, and localize mines in the Very Shallow Water (0 - 40 ft of water) and near-surface moored and drifting sea mines. COBRA consists of a modular payload architecture that is integrated onto the MQ-8 Fire Scout, other vessels of opportunity, and in its expeditionary configuration, from the shore. COBRA will serve in the CMR mission module for the SZ and BZ in the Littoral Combat Ship (LCS) Mine Countermeasures (MCM) Mission Package. PNMS provides navigational upgrades for the Landing Craft, Air Cushion (LCAC); Landing Craft, Utility (LCU); and Amphibious Assault Vehicle (AAV). A system of virtual lane marking improved the navigation ability of these two assault craft which enables them to navigate safely through the neutralized assault lanes provided by JABS. LCU Navigation Upgrade provides modernized navigation system to enable safe transit through the breach lane. LCAC autopilot upgrade provides an integrated improvement to the LCAC Service Life Extension Program (SLEP) navigation system for craft control to allow precise navigation and hovering within the breach lane. These software upgrades and backfits occur during scheduled LCAC SLEPs. AAV Navigation Upgrade will provide modernized navigation system to enable precise transit through the breach lane. C4I system will tie all of the above systems together under an integrated ABS architecture that is compatible with the existing Mine Warfare architecture.

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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 0604126N / <i>Airborne Mine Countermeasures</i>
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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	18.669	47.389	63.988	-	63.988
Current President's Budget	18.067	30.240	0.000	-	0.000
Total Adjustments	-0.602	-17.149	-63.988	-	-63.988
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-17.149			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.602	0.000			
• Program Adjustments	0.000	0.000	-63.988	-	-63.988
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

Change Summary Explanation

FY 2022 reflects a net decrease of \$602K for SBIR assessments.

FY 2023 reflects a net decrease of \$17,149K Congressional adjustment due to COBRA Block II Engineering and Manufacturing Development delay.

FY 2024 reflects a net decrease of \$63,988K due to COBRA Block II termination.

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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 0604126N / Airborne Mine Countermeasures	Project (Number/Name) 2131 / Assault Breaching System
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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
2131: Assault Breaching System	55.465	18.067	30.240	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	103.772
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Assault Breaching System (ABS) program provides a combination of U.S. Navy systems to counter the threat to amphibious forces from obstacles and anti-landing/ sea mines in the Beach Zone and Surf Zone (0-10 ft water). The Assault Breaching Systems (ABS) consist of a system of systems approach that includes the following programs: Joint Direct Attack Munition (JDAM) Assault Breaching System (JABS); Coastal Battlefield Reconnaissance and Analysis (COBRA); Precision Navigation and Marking System (PNMS); Command, Control, Computers, Communications, and Intelligence (C4I). The Assault Breaching Systems enable the Navy-Marine Corps team to conduct Joint Forcible Entry Operations (JFEO), Ship-To-Objective Maneuver (STOM), and other combat operations to project power ashore.

JABS is a fielded system that neutralizes surface mines and obstacles in the Beach Zone (BZ) and Surf Zone (SZ). The ABS Tactical Decision Aid optimizes the Desired Points of Impact (DPI) for JDAM munitions to effectively neutralize mines and obstacles while minimizing the required number of munitions and friendly aircraft sorties. Continued testing is required to optimize the ABS Tactical Decision Aid database for the most common enemy mines and obstacles.

COBRA conducts Intelligence Surveillance Reconnaissance and Targeting (ISR/T). This system, which consists of two COBRA Airborne Payloads (CAPS) and one Post Mission Analysis (PMA) station, provides Coastal Mine Reconnaissance (CMR) capability. Block I is a multispectral sensor capable of daytime detection of surface-laid minefields and obstacles in the Beach Zone (BZ) and has on-board real-time processing. Block II capability adds an active illuminator sensor that enables nighttime detection of mines and obstacles in the BZ and the Surf Zone (SZ) (0-10 ft of water), and will detect, classify, and localize mines in the Very Shallow Water (0 - 40 ft of water) and near-surface moored and drifting sea mines. COBRA consists of a modular payload architecture that is integrated onto the MQ-8 Fire Scout, other vessels of opportunity, and in its expeditionary configuration, from the shore. COBRA will serve in the CMR mission module for the SZ and BZ in the Littoral Combat Ship (LCS) Mine Countermeasures (MCM) Mission Package. PNMS provides navigational upgrades for the Landing Craft, Air Cushion (LCAC); Landing Craft, Utility (LCU); and Amphibious Assault Vehicle (AAV). A system of virtual lane marking improved the navigation ability of these two assault craft which enables them to navigate safely through the neutralized assault lanes provided by JABS. LCU Navigation Upgrade provides modernized navigation system to enable safe transit through the breach lane. LCAC autopilot upgrade provides an integrated improvement to the LCAC Service Life Extension Program (SLEP) navigation system for craft control to allow precise navigation and hovering within the breach lane. These software upgrades and back-fits occur during scheduled LCAC SLEPs. AAV Navigation Upgrade will provide modernized navigation system to enable precise transit through the breach lane. C4I system will tie all of the above systems together under an integrated ABS architecture that is compatible with the existing Mine Warfare architecture.

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	12.452	13.849	0.000	0.000	0.000
Articles:	-	-	-	-	-

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Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604126N / Airborne Mine Countermeasures	Project (Number/Name) 2131 / Assault Breaching System

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
<p>FY 2023 Plans: COBRA BLOCK I: - Commence COBRA Block I / MQ-8C Fire Scout Integration design and development to include System Requirements Review / System Functional Review and Preliminary Design Review (PDR) / Critical Design Review (CDR). - Complete COBRA Block I Hardware Development and Obsolescence Upgrades. COBRA BLOCK II: - Complete initial development of tech data, interface control documents, safety documents and test & evaluation planning. - Complete program documentation updates (system/subsystem specification and interface control documents). JABS: - Continue design and engineering of weapon effectiveness for BZ and SZ modeling, simulation and testing.</p> <p>FY 2024 Base Plans: N/A</p> <p>FY 2024 OCO Plans: N/A</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY 2023 to FY 2024 decrease is due to COBRA Block II program termination.</p>					
<p>Title: Technical Support</p> <p align="right">Articles:</p>	2.398	5.716	0.000	0.000	0.000
<p>FY 2023 Plans: COBRA BLOCK I: - Continue to provide management and shipping, contract and test/studies, C4I Data Fusion. - Provide technical support and documentation (data collection / demonstration events and drawings). COBRA BLOCK II: - Complete COBRA Block II Final Technology Readiness Assessment.</p> <p>FY 2024 Base Plans: N/A</p> <p>FY 2024 OCO Plans:</p>	-	-	-	-	-

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Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0604126N / Airborne Mine Countermeasures		Project (Number/Name) 2131 / Assault Breaching System		
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 decrease is due to COBRA Block II program termination.						
Title: Test and Evaluation		0.347	7.675	0.000	0.000	0.000
		Articles:	-	-	-	-
FY 2023 Plans: COBRA Block I: - Perform and complete flight demonstration / data collection of COBRA Block I Upgrades. - Perform and complete COBRA Block I / MQ-8C integration flight tests. COBRA Block II: N/A JABS: - Conduct SZ and BZ characterization testing.						
FY 2024 Base Plans: N/A						
FY 2024 OCO Plans: N/A						
FY 2023 to FY 2024 Increase/Decrease Statement: FY 2023 to FY 2024 decrease is associated with the completion of JABS testing and COBRA Block II program termination.						
Title: Management		2.870	3.000	0.000	0.000	0.000
		Articles:	-	-	-	-
FY 2023 Plans: COBRA: - Continue contract and financial management support. JABS: - Continue to manage Mine magazine inventory management and shipping, contract management and tests/ studies, C4I/Data fusion.						
FY 2024 Base Plans:						

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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 2024 OCO Plans: N/A					
FY 2023 to FY 2024 Increase/Decrease Statement: FY 2023 to FY 2024 decrease is due to COBRA Block II program termination.					
Accomplishments/Planned Programs Subtotals	18.067	30.240	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024 Base</u>	<u>FY 2024 OCO</u>	<u>FY 2024 Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPN/2624: SHALLOW WATER Mine CM SHIP	5.610	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	83.428

Remarks

D. Acquisition Strategy
Countermine/Counter Obstacle (CM/CO) JDAM Assault Breaching System (JABS) and ABS Tactical Decision Aid testing is ongoing. Intelligence/Surveillance/Reconnaissance/ Targeting (ISR/T) - COBRA Block I achieved IOC in July 2017. The COBRA program will continue to use Evolutionary Acquisition and introduce additional COBRA capabilities through the use of Incremental ("Block") Development. Three increments (or Blocks) of development have been planned in order to meet the mine line and minefield detection requirements. The contract for Block I was awarded to Arete in Tucson, AZ in FY 2021 and will complete in FY 2028.

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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 0604126N / Airborne Mine Countermeasures	Project (Number/Name) 2131 / Assault Breaching System
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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware Dev, COBRA	C/CPAF	Arete : Tucson, AZ	19.554	0.000		0.000		0.000		-		0.000	0.000	19.554	-
Design and Development, COBRA Block I Upgrades	C/CPFF	Arete : Tucson, AZ	0.000	7.626	Sep 2022	0.000		0.000		-		0.000	0.000	7.626	-
Design and Development, COBRA Algorithm Development	Various	JHU/APL : Columbia, MD	0.000	2.160	May 2022	0.000		0.000		-		0.000	0.000	2.160	-
Systems Engineering, COBRA	WR	NSWC, PC : PANAMA CITY, FL	3.218	2.540	Nov 2021	1.038	Nov 2022	0.000		-		0.000	0.000	6.796	-
JABS	WR	NSWC PC : NSWC IH	1.153	0.000		0.940	Nov 2022	0.000		-		0.000	0.000	2.093	-
ABS IPT/Test Assets/Proj Eng	WR	NSWC, PC : PANAMA CITY, FL	0.634	0.126	Nov 2021	0.371	Nov 2022	0.000		-		0.000	0.000	1.131	-
Design and Development, COBRA Payload Integration	WR	NAVAIR : Patuxent River, MD	0.000	0.000	Dec 2021	9.314	May 2023	0.000		-		0.000	0.000	9.314	-
Design and Development, COBRA Payload Integration	C/CPFF	Arete, Northrop Grumman : AZ, CA	0.000	0.000		2.186	May 2023	0.000		-		0.000	0.000	2.186	-
Subtotal			24.559	12.452		13.849		0.000		-		0.000	0.000	50.860	N/A

Remarks
FY23 Product Development net decrease associated with Congressional Directed Reduction. FY23 Award Dates for COBRA Payload Integration moved to align with anticipated contract awards.

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Support	WR	NSWC, PC : PANAMA CITY, FL	3.396	1.256	Nov 2021	3.487	Nov 2022	0.000		-		0.000	0.000	8.139	-
Integrated Logistics Support	WR	NSWC PC : PANAMA CITY, FL	0.459	0.411	Nov 2021	0.783	Nov 2022	0.000		-		0.000	0.000	1.653	-

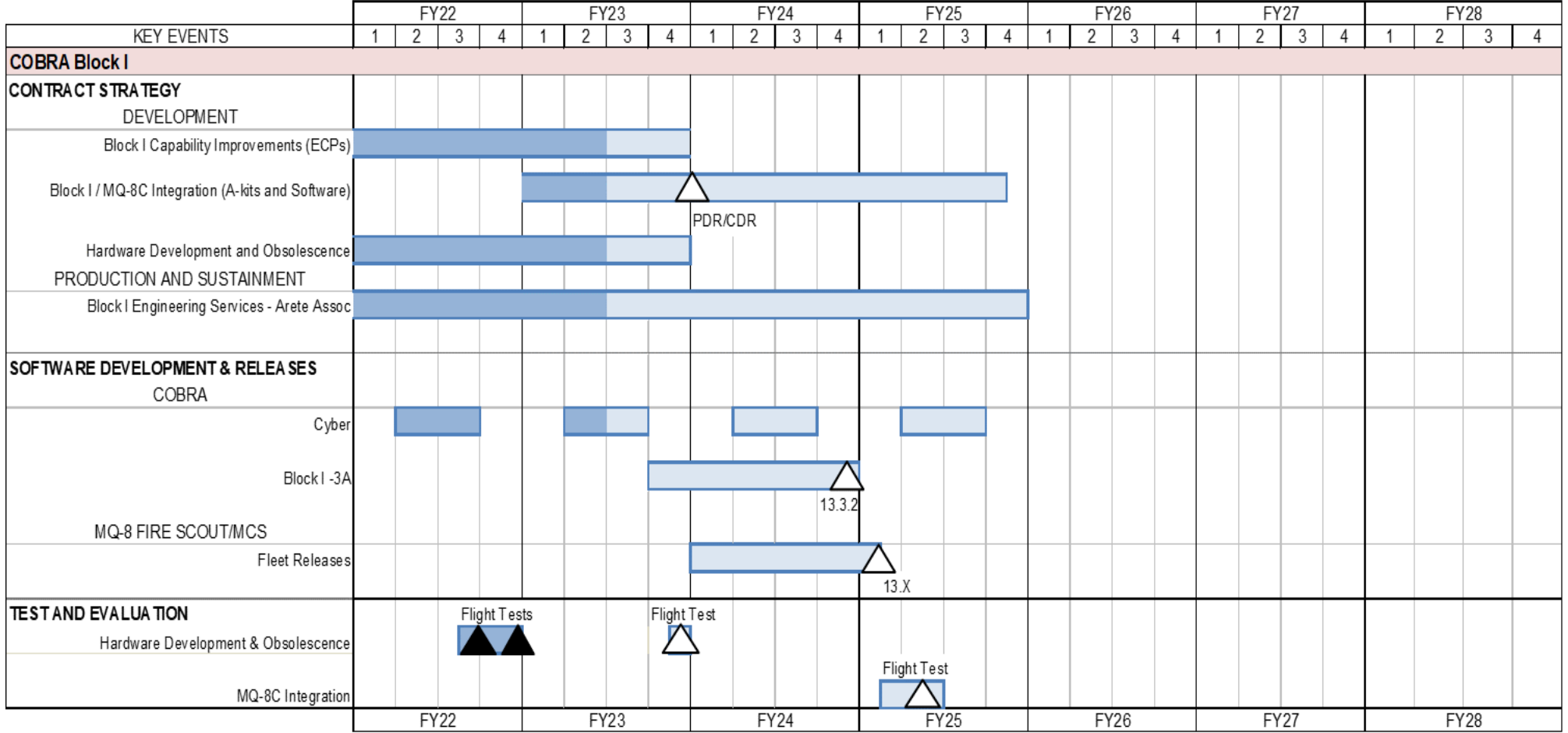
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
1319 / 4				PE 0604126N / Airborne Mine Countermeasures				2131 / Assault Breaching System								
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
Configuration Management	WR	NSWC, PC : PANAMA CITY, FL	0.461	0.360	Nov 2021	0.685	Nov 2022	0.000		-		0.000	0.000	1.506	-	
Studies & Analysis	WR	NSWC IH : INDIAN HEAD, MD	0.968	0.371	Nov 2021	0.761	Nov 2022	0.000		-		0.000	0.000	2.100	-	
Subtotal			5.284	2.398		5.716		0.000		-		0.000	0.000	13.398	N/A	
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
Developmental Test & Evaluation (DT&E)	WR	NSWC, IH : INDIAN HEAD, MD	4.527	0.151	Nov 2021	0.000		0.000		-		0.000	0.000	4.678	-	
Developmental Test & Evaluation (DT&E)	WR	NSWC PC : Panama City, FL	1.984	0.196	Nov 2021	2.650	Dec 2022	0.000		-		0.000	0.000	4.830	-	
Developmental Test & Evaluation (DT&E)	WR	NSWC, PC : Panama City, FL	2.239	0.000		0.000		0.000		-		0.000	0.000	2.239	-	
Developmental Test & Evaluation (DT&E)	WR	NAVAIR : Pax River, MD	12.649	0.000		0.000		0.000		-		0.000	0.000	12.649	-	
Developmental Test & Evaluation (DT&E)	WR	NAVAIR : Patuxent River, MD	0.000	0.000		5.025	Apr 2023	0.000		-		0.000	0.000	5.025	-	
Subtotal			21.399	0.347		7.675		0.000		-		0.000	0.000	29.421	N/A	
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
Contractor Engineering Support	C/CPFF	BAH, Northrop Grumman : DC, FL	0.498	0.353	Dec 2021	0.562	Dec 2022	0.000		-		0.000	0.000	1.413	-	
Government Engineering Support	WR	NSWC, IH : INDIAN HEAD, MD	1.860	1.075	Nov 2021	1.085	Nov 2022	0.000		-		0.000	0.000	4.020	-	

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy **Date:** March 2023

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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 0604126N / Airborne Mine Countermeasures						Project (Number/Name) 2131 / Assault Breaching System					

KEY EVENTS	FY22				FY23				FY24				FY25				FY26				FY27				FY28			
	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
COBRA Block II																												
REQUIREMENTS			CDD Approval ▲																									
ACQUISITION MILESTONES			Program Terminated ▲																									
CONTRACT STRATEGY			AS/AP ▲																									
SYSTEM DEVELOPMENT Engineering & Manufacturing Development																												
			Gov't Sys Eng & Design Review ■																									
TEST AND EVALUATION																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
COBRA BLOCK I				
Development: Capability Improvements (ECPs)	1	2022	4	2023
Development: COBRA Block I / MQ-8C Integration	1	2023	4	2025
Development: COBRA Block I / MQ-8C Integration PDR/CDR	1	2024	1	2024
Development: Hardware Development & Obsolescence	1	2022	4	2023
Production & Sustainment: Block I Engineering, Production, and Sustainment	1	2022	4	2025
Software Development & Releases: COBRA Block I: Cyber	2	2022	3	2022
Software Development & Releases: COBRA Block I: Cyber 2	2	2023	3	2023
Software Development & Releases: COBRA Block I: Cyber 3	2	2024	3	2024
Software Development & Releases: COBRA Block I: Cyber 4	2	2024	3	2024
Software Development & Releases: COBRA Block I: 13.3.2	4	2023	4	2024
Software Development & Releases: MQ-8 Fire Scout/MCS: 13.0 Fleet Releases	1	2024	1	2025
Test & Evaluation: Hardware Development & Obsolescence Flight Tests (Multiple)	3	2022	4	2023
Test & Evaluation: MQ-8C Integration Flight Test	1	2025	2	2025
COBRA BLOCK II				
Requirements: CDD Approval	3	2022	3	2022
Acquisition Milestones: Program Terminated	3	2022	3	2022
Contract Strategy: AS/AP	3	2022	3	2022
System Development: Systems Engineering & Design Review	2	2022	3	2022