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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy **Date:** May 2021

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 0605512N / <i>MEDIUM UNMANNED SURFACE VEHICLES (MUSVs)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	55.285	60.028	-	60.028	-	-	-	-	-	-
3428: <i>Medium Unmanned Surface Vehicle (MUSV)</i>	0.000	0.000	55.285	60.028	-	60.028	-	-	-	-	-	-

Note

FY 2020 and prior funding in Program Element (PE) 0603502N. Medium Unmanned Surface Vehicle (MUSV) (Project 3428) realigned from PE 0603178N in FY 2021.

A. Mission Description and Budget Item Justification

Projects under this Program Element provide resources for the unmanned platforms in the Navy's Future Surface Combatant Force (FSCF), Medium Unmanned Surface Vehicle (MUSV), Sea Hunter, and Seahawk.

Medium Unmanned Surface Vehicle (MUSV) is defined as having a reconfigurable mission capability which is accomplished via modular payloads with an initial capability to support Battlespace Awareness through supporting Intelligence, Surveillance and Reconnaissance (ISR) and Information Operations (IO) mission areas.

MUSVs provide affordable, high endurance, reconfigurable ships able to accommodate various payloads for unmanned missions and augment the Navy's manned surface force. MUSVs will be capable of semi-autonomous operation, with operators in-the-loop or on-the-loop. USV Command and Control (C2) will be maintained via an afloat element (i.e., embarked on a United States Navy (USN) combatant/other assigned afloat asset) or via an ashore element (C2 station ashore).

While unmanned surface vehicles are new additions to fleet units, MUSV is intended to combine robust and proven commercial vessel specifications with existing military payloads to rapidly and affordably expand the capacity and capability of the surface fleet. The MUSV program benefits from years of investment and full scale demonstration efforts in autonomy, endurance, command and control, payloads, and testing from the Defense Advanced Research Projects Agency (DARPA) Anti-Submarine Warfare Continuous Trail Unmanned Vessel (ACTUV), Office of Naval Research (ONR) Medium Displacement Unmanned Surface Vehicle (MDUSV)/Sea Hunter (FY 2017 to FY 2021), and Office of the Secretary of Defense Strategic Capabilities Office (OSD SCO) Ghost Fleet Overlord Large USV experimentation effort (FY 2018 to FY 2021). The combination of fleet-ready C2 solutions developed by the Ghost Fleet Overlord program and initial man-in-the-loop or man-on-the-loop control will reduce the risk of fleet integration of unmanned surface vehicles and allow autonomy and payload technologies to develop in parallel with fielding vehicles with standardized interfaces.

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B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	55.285	60.028	-	60.028
Total Adjustments	0.000	55.285	60.028	-	60.028
• Congressional General Reductions	-	-0.117			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	55.402			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	60.028	-	60.028

Change Summary Explanation

Program Change:

FY20: N/A

FY21: Congressional transfers \$26.302M Medium Unmanned Surface Vehicle from line 27 (project 3428); \$14.000M Medium Unmanned Surface Vehicle machinery plant only, per Navy Large Unmanned Surface Vehicle program restructure from line 27; \$15.100M Naval Surface Warfare Center land-based engineering site for Medium Unmanned Surface Vehicle testing only, per Navy Large Unmanned Surface Vehicle program restructure from line 27; $-\$0.117$ M Congressional General Reduction

FY22: Funds transferred from PE 0603178N. The FY 2022 funding request was reduced by \$4.500M to account for the availability of prior year execution balances that were realigned from PE 0603178N into 0605512N.

Technical: Not applicable.

Schedule: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0605512N / <i>MEDIUM UNMANNED SURFACE VEHICLES (MUSVs)</i>				Project (Number/Name) 3428 / <i>Medium Unmanned Surface Vehicle (MUSV)</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3428: <i>Medium Unmanned Surface Vehicle (MUSV)</i>	0.000	0.000	55.285	60.028	-	60.028	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

FY 2020 and prior funding in Program Element (PE) 0603502N. Medium Unmanned Surface Vehicle (MUSV) (Project 3428) realigned from PE 0603178N in FY 2021.

A. Mission Description and Budget Item Justification

As part of the Unmanned Surface Vehicle (USV) Future Surface Combatant Force (FSCF) program, the Medium Unmanned Surface Vehicle (MUSV) will be the second USV platform. The MUSV project provides resources for the detail design, fabrication, testing, experimentation and support of the MUSV. The MUSV is defined as having a reconfigurable mission capability which is accomplished via modular payloads with an initial capability to support Battlespace Awareness through supporting Intelligence, Surveillance and Reconnaissance (ISR) and Information Operations (IO) mission areas. Modular payloads may be developed separately by other programs or prototyping efforts and will be further developed and/or integrated into MUSV under the Unmanned Surface Vehicle Enabling Capabilities PE (0605513N) that supports MUSV and LUSV.

MUSVs will provide affordable, high endurance, reconfigurable vehicles able to accommodate various payloads for unmanned missions to augment the Navy's manned surface force. MUSVs will support the Navy's ability to produce, deploy and disburse ISR/IO capabilities in sufficient quantities and provide/improve distributed situational awareness in maritime Areas of Responsibility (AORs). MUSVs will be designed to be attritional assets if used in a peer or near-peer conflict. MUSVs will be capable of weeks-long deployments and trans-oceanic transits, and operate aggregated with Carrier Strike Groups (CSGs) and Surface Action Groups (SAGs), as well as have the ability to deploy independently. The MUSV will be a key enabler of the Navy's Distributed Maritime Operations (DMO) concept.

In FY 2020, the Navy conducted a full and open competition for a MUSV prototype, conducting source selection activities Q1-Q3 of FY20. In July 2020, the Navy announced they had awarded a Detail Design & Fabrication (DD&F) contract to L3 Harris for the delivery of the first MUSV prototype for \$35M. The contract contains options for up to 8 additional MUSVs (9 total) for a total contract price of \$281M. L3 Harris will be the system integrator, while also supplying the autonomy and perception systems. Subcontractors Gibbs & Cox and Incat Crowther will provide vessel design and modification services, while the vessel will be produced by Swiftships Shipyard. All work will be performed in various sites along the Louisiana Gulf Coast.

MUSV Machinery Plant - Supports prime contractor detail design, machinery procurement, installation and integration, and test/demonstration support for USV Land Based Test Site (LBTS). LBTS is required to demonstrate unmanned operation of main propulsion and electrical generation/distribution at a minimum of threshold mission duration requirements prior to entering MS B as required by the FY21 NDAA.

NSWC Land Based Test Site (LBTS) for MUSV - Provides NSWC Engineering support for the detail design, procurement, installation and integration, test and demonstration plan development, and test and demonstration execution in support of MUSV LBTS. MUSV LBTS will demonstrate the unmanned operation of MUSV

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Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0605512N / <i>MEDIUM UNMANNED SURFACE VEHICLES (MUSVs)</i>	Project (Number/Name) 3428 / <i>Medium Unmanned Surface Vehicle (MUSV)</i>
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representative propulsion systems and electrical generation and distribution systems to a minimum of the threshold mission durations (720 hours) prior to entering MS B as required by the FY21 NDAA.

The Sea Hunter and Seahawk Operations and sustainment project provides resources for the operation and sustainment of the Sea Hunter and Seahawk. The Sea Hunter and Seahawk are defined as experimentation platforms vessels operated by the Navy's Surface Development Squadron, and are currently homeported in San Diego, CA. Seahawk was delivered to ONR and subsequently transferred ownership to PMS 406 Q3 FY21. Through continued operations and demonstrations utilizing these vessels, the Navy continues to gain valuable insights and lessons learned in the utilization of unmanned systems and their associated payloads. This knowledge is being utilized to influence both Concept of Operation/Employment doctrine to guide fleet operations, as well being incorporated into requirements documents for future USV systems.

Sea Hunter and Seahawk will provide a means for demonstrating a payloads ability to operate in an autonomous manner with no engineering support for multi-day operations simulating a MUSV operational environment. Sea Hunter and Seahawk will inform PMS 406 on technologies for MUSV that demonstrate successfully the Navy's ability to produce, deploy and disburse ISR/IO capabilities in sufficient quantities and provide/improve distributed situational awareness in maritime Areas of Responsibility (AORs).

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: MUSV Product Development	0.000	44.300	24.800	0.000	24.800
Articles:	-	-	-	-	-
FY 2021 Plans:					
Execute Detail Design and Fabrication (DD&F) contract for MUSV prototype (contract award described under Congressional Add of \$42.000M in Project Unit 9999/C442). Procure materials in support of fabrication. Begin construction of hull and assembly of subcomponents. Begin software modifications to existing autonomy systems to comply with Navy requirements. Evaluate and approve industry's preliminary and detailed designs for MUSV through Preliminary Design Review (PDR) and Critical Design Review (CDR) for the MUSV prototype. Develop and review Engineering Change Proposals. The Navy will provide systems engineering, design analysis, hull and assembly oversight, and integration support related to the execution of the DD&F contract. Develop logistics products to enable the operations, training, and sustainment of the MUSV prototype. Perform required engineering and development to support the integration and verification of the modularized payloads for the prototype MUSV. Construct a Land-Based Test Site to be used to simulate the operation of engines and generators to be used for the MUSV prototype.					
FY 2022 Base Plans:					
Execution of the MUSV DD&F contract will continue, with a focus on completion of construction of the vessel and integration of Government Furnished Equipment (GFE). The first MUSV will transition from construction and integration to execution of Sea Trials in Q4FY22. To support the planned construction of MUSV #2 upon					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>exercise of contract option in FY23, the government will assess and direct the incorporation of any Engineering Change Proposals based on findings during the fabrication of MUSV #1.</p> <p>Completion of LBTS in Q2FY22. The test site will perform simulation testing producing the performance data required for certification. To support the planned construction of MUSV #2 upon exercise of contract option in FY23, the government will assess the data from the systems under test for MUSV #1.</p> <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: The decrease in the project development task is due to the phase of construction of MUSV #1 and the oversight required to completed implementation and integration to proceed into Sea Trials.</p> <p>The decrease is also attributed to funding not being required for LBTS in FY22. The construction of LBTS will be funded in FY21 with construction continuing to completion in FY22.</p>					
<p>Title: MUSV Support</p> <p align="right">Articles:</p> <p>FY 2021 Plans: Having transitioned Sea Hunter to Commander, Naval Surface Forces / Surface Development Squadron in Q1FY20, the Navy will award support contracts to enable the sustainment of the vessels delivered to CNSF. Development of training and maintenance documentation in preparation of fleet-based operations and sustainment. Support the operations and sustainment for the operational tempo required by CNSF for MUSVs. Provide engineering and operational and sustainment support for experimental payload integration and demonstration. Transition Seahawk to CNSF Q3FY21. Provide Systems Engineering Support of any Engineering Change Proposals or Ship Alternations required to support continued availability of the MUSV by CNSF.</p> <p>FY 2022 Base Plans: The Navy will continue to execute support contracts to enable the sustainment of Sea Hunter and Seahawk delivered to CNSF. Support the operations and sustainment for the operational tempo required by CNSF for Sea Hunter and Seahawk. Provide engineering and operational support for experimental payload integration and demonstration. Provide Systems Engineering Support of any Engineering Change Proposals or Ship Alternations required to support continued availability of the MUSV by CNSF. Procure networking and communications equipment to begin the upgrade of both Sea Hunter and Seahawk to utilize standard Navy</p>	0.000	5.385	14.600	0.000	14.600
	-	-	-	-	-

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Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0605512N / MEDIUM UNMANNED SURFACE VEHICLES (MUSVs)	Project (Number/Name) 3428 / Medium Unmanned Surface Vehicle (MUSV)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>networks. Support the operational tempo required by the Navy to execute multiple fleet exercises and extended duration transits, which will enable the development of tactics, training, and procedures, as well as validate capabilities through experimentation with Sea Hunter and Seahawk.</p> <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: The increase is attributed to an increase in need for Seahawk and Seahunter support as well as the introduction of Seahunter/Seahawk Milcomms Upgrade.</p>					
<p>Title: MUSV Test and Evaluation</p> <p align="right">Articles:</p> <p>FY 2021 Plans: Conduct test and trial event planning. Coordinate with required Navy and OSD testing organizations to reserve testing resources. Conduct initial Cybersecurity Testing.</p> <p>FY 2022 Base Plans: The Navy will support the initiation of Sea Trials for MUSV #1. The government will provide guidance and oversight prior to and during the execution of testing involving autonomy, machinery control automation, GFE integration, and vessel performance. Cybersecurity testing will be conducted to support Risk Management Framework and Cybersecurity accreditation for MUSV #1. Develop test plans to support post-delivery activities for MUSV #1.</p> <p>Support the operational tempo required by the Navy to execute multiple fleet exercises and extended duration transits, which will enable the development of tactics, training, and procedures, as well as validate capabilities through experimentation with Sea Hunter and Seahawk.</p> <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: The significant increase in test and evaluation is due to the transition of MUSV #1 from construction and integration into Sea Trials.</p>	0.000	4.100	18.428	0.000	18.428
	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
The increase in test and evaluation is also due to the redistribution of Sea Hunter experimentation funding from the Enabling Capabilities project to the MUSV project.					
Title: MUSV Management <div style="text-align: right;">Articles:</div>	0.000	1.500	2.200	0.000	2.200
FY 2021 Plans: Develop all governing MUSV documentation to support the advancement of the prototype program as required by DoDI 5000.80. This includes the creation of the following artifacts or equivalents: System Engineering Plan (SEP), Test and Evaluation Strategy (TES), Life Cycle Support Plan (LCSP), Cybersecurity Strategy, and Program Protection Plan (PPP). The Navy will provide program management support related to the execution of the MUSV Prototype Contract. Develop Draft CDD to capture warfighting requirements of future increment of MUSV.	-	-	-	-	-
FY 2022 Base Plans: Continue to provide management oversight of DD&F contract. Continue drafting of MUSV Capabilities Development Document to capture warfighting requirements of future increment of MUSV. Maintain compliance with DoDI 5000.80 via updating program documentation. Prepare for award of MUSV #2 option.					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: Slight increase to Management Services due to increased contract oversight for support contract and preparations for award of MUSV #2 contract option.					
Accomplishments/Planned Programs Subtotals	0.000	55.285	60.028	0.000	60.028

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTEN/0603502N/3428: <i>Medium Unmanned Surface Vehicle (MUSV)</i>	22.964	0.000	0.000	-	0.000	-	-	-	-	-	-
• RDTEN/0603502N/9999: <i>Medium Displacement Unmanned Surface Vehicle</i>	0.000	0.000	0.000	-	0.000	-	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy	Date: May 2021
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Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0605512N / <i>MEDIUM UNMANNED SURFACE VEHICLES (MUSVs)</i>	Project (Number/Name) 3428 / <i>Medium Unmanned Surface Vehicle (MUSV)</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

MUSV has been designated as a Rapid Prototyping Program designation and follows a Middle Tier Acquisition approach per Section 804 of the Fiscal Year (FY) 2016 National Defense Authorization Act (NDAA), as amended in FY 2017 NDAA (codified at 10 U.S.C. sub sec 2302 note). Required capabilities were codified in a Top Level Requirements (TLR) document approved by the OPNAV Director of Surface Warfare in FY 2019. While the project only has two MUSVs funded in the FYDP (one MUSV in FY 2019 and one in FY 2023), the structure of the contract awarded to L3 Harris in July 2020 allows for options to be added should funding become available. Delivery of the initial prototype is planned in FY 2023 following the completion of initial testing and a Military Utility Assessment (MUA). The prototyping efforts with the FY 2019 MUSV will inform procurement of additional MUSV units and transition to an ACAT program with formalized requirements through a Capability Development Document and procurement funding as part of a decision in future budgets.

The MUSV LBTS will consist of one Main Propulsion Diesel Engine (MPDE) and one Ship Service Diesel Generator (SSDG) with all the necessary support and test equipment at NSWC and will have a STA certified HM&E plant by mid FY2023. Certification will be based on a ABS - USV Reliability Process, which is being jointly developed by ABS, PMS406 and NAVSEA 05. A draft document is currently out for industry comment and there have been several ABS lead engagements with Industry. The goal of this work is to develop a certification program which would establish that manufacturers of the equipment/system have demonstrated product conformance and technology readiness to performance-based standards through assessment of empirical data and related testing of the equipment/system. The certification will attest equipment conformity to requirements established by the Navy, including demonstrated capability for reliable operation for a minimum of 30 days autonomously without external preventive maintenance intervention.

This class standard will be tested on the MUSV LBTS in NSWC for the first time and could be used in future commercially based ship specifications such as MUSV, LUSV, NGLS and LAW.

The full funding requirement for the MTA prototype effort as outlined in the Report to Congress is below:
 FY19: \$29.8M
 FY20: \$5.2M
 FY21: \$3.2M
 FY22: \$3.5M
 The total cost of the MTA prototyping effort is \$41.7M, and is fully funded in RDT&E.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy **Date:** May 2021

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0605512N / <i>MEDIUM UNMANNED SURFACE VEHICLES (MUSVs)</i>	Project (Number/Name) 3428 / <i>Medium Unmanned Surface Vehicle (MUSV)</i>
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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
System Engineering	WR	Various : Various	0.000	0.000		6.300	Jul 2021	5.300	Jan 2022	-		5.300	-	-	-
Vessel Construction and Integration	C/FPIF	L3 Harris : Melbourne, FL	0.000	0.000		3.500	May 2021	3.500	Jan 2022	-		3.500	-	-	-
Logistics Package Development	C/FPIF	L3 Harris : Melbourne, FL	0.000	0.000		2.200	May 2021	0.000		-		0.000	-	-	-
C4I/PNT GFE Development/Integration	C/FPIF	Various : Various	0.000	0.000		0.000		12.200	Jan 2022	-		12.200	-	-	-
Payload Development/Integration	C/FPIF	TBD : TBD	0.000	0.000		3.200	May 2021	3.800	Jan 2022	-		3.800	-	-	-
LBES MUSV Machinery Plant	Various	Various : Various	0.000	0.000		14.000	Sep 2021	0.000		-		0.000	-	-	-
LBES - Land Based Engineering Test Site	Various	Various : Various	0.000	0.000		15.100	Sep 2021	0.000		-		0.000	-	-	-
Subtotal			0.000	0.000		44.300		24.800		-		24.800	-	-	N/A

Support (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Seahunter Support	Various	Not Specified : Not Specified	0.000	0.000		3.185	Jan 2021	4.400	Jan 2022	-		4.400	-	-	-
Seahawk Support	Various	Various : Various	0.000	0.000		2.200	Oct 2020	4.400	Oct 2021	-		4.400	-	-	-
Seahunter/Seahawk Milcomms Upgrade	Various	TBD : TBD	0.000	0.000		0.000		5.800	Oct 2021	-		5.800	-	-	-
Subtotal			0.000	0.000		5.385		14.600		-		14.600	-	-	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy **Date:** May 2021

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Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Sea Hunter Experimentation	Various	Not Specified : Not Specified	0.000	0.000		0.900	May 2021	11.828	Jan 2022	-		11.828	-	-	-
Test Planning	Various	Various : Various	0.000	0.000		1.100	May 2021	1.100	Jan 2022	-		1.100	-	-	-
Government Testing	Various	Various : Various	0.000	0.000		0.000		3.000	Jan 2022	-		3.000	-	-	-
Cybersecurity Testing	Various	Various : Various	0.000	0.000		2.100	Jul 2021	2.500	Jan 2022	-		2.500	-	-	-
Subtotal			0.000	0.000		4.100		18.428		-		18.428	-	-	N/A

Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Requirement Development	WR	Various : Washington, DC	0.000	0.000		0.800	Oct 2020	1.500	Oct 2021	-		1.500	-	-	-
Acquisition Management	Various	Various : Various	0.000	0.000		0.700	Oct 2020	0.700	Oct 2021	-		0.700	-	-	-
Subtotal			0.000	0.000		1.500		2.200		-		2.200	-	-	N/A

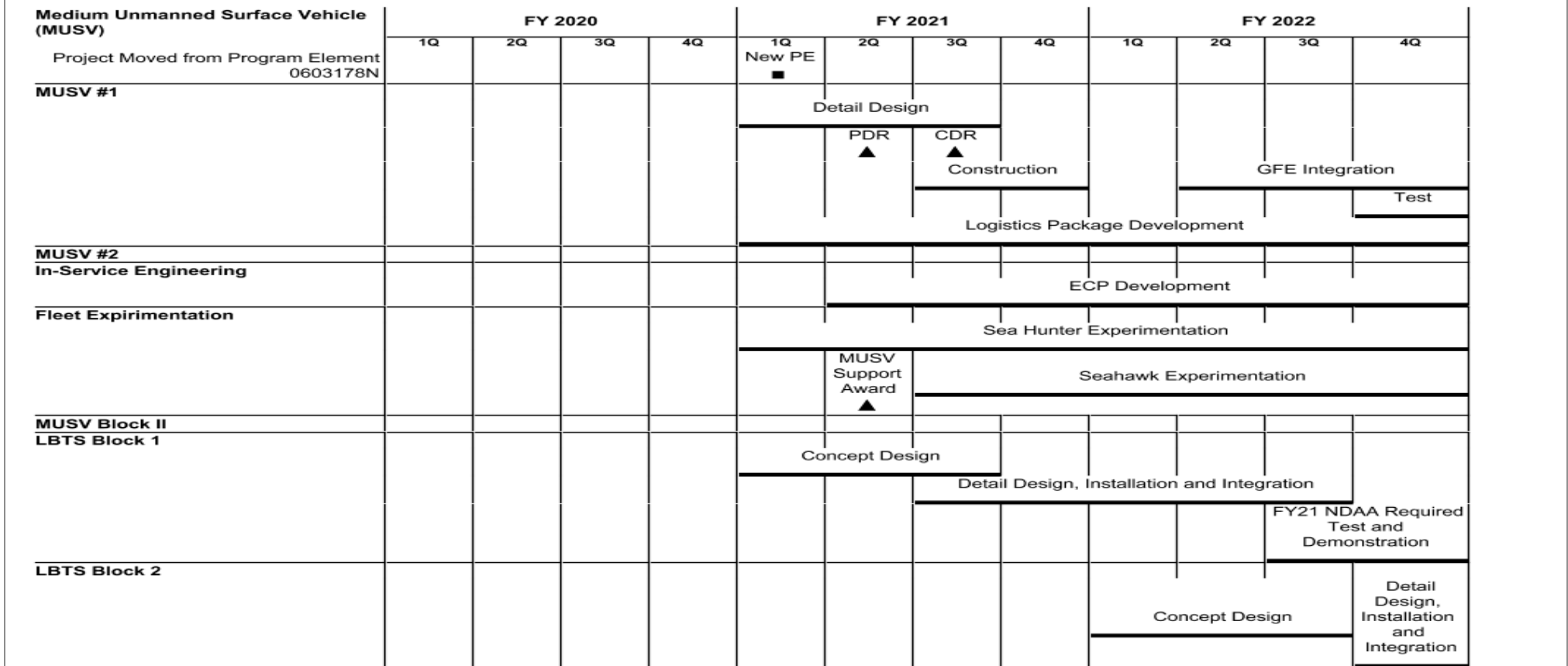
	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	55.285	60.028	-	60.028	-	-	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy **Date:** May 2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0605512N / <i>MEDIUM UNMANNED SURFACE VEHICLES (MUSVs)</i>	Project (Number/Name) 3428 / <i>Medium Unmanned Surface Vehicle (MUSV)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Medium Unmanned Surface Vehicle (MUSV)				
Project Moved from Program Element 0603178N: New PE	1	2021	1	2021
MUSV #1: Detail Design	1	2021	3	2021
MUSV #1: Preliminary Design Review	2	2021	2	2021
MUSV #1: Critical Design Review	3	2021	3	2021
MUSV #1: Construction	3	2021	4	2021
MUSV #1: GFE Integration	2	2022	4	2022
MUSV #1: Test	4	2022	4	2022
MUSV #1: Logistics Package Development	1	2021	4	2022
In-Service Engineering: ECP Development	2	2021	4	2022
Fleet Experimentation: Sea Hunter Experimentation	1	2021	4	2022
Fleet Experimentation: MUSV Support Award	2	2021	2	2021
Fleet Experimentation: Seahawk Experimentation	3	2021	4	2022
LBTS Block 1: Concept Design	1	2021	3	2021
LBTS Block 1: Detail Design, Installation and Integration	3	2021	3	2022
LBTS Block 1: FY21 NDAA Required Test and Demonstration	3	2022	4	2022
LBTS Block 2: Concept Design	1	2022	3	2022
LBTS Block 2: Detail Design, Installation and Integration	4	2022	4	2022