Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy	Date: April 2022
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 0605512N *I MEDIUM UNMANNED SURFACE VEHICLES (MUSVs)*

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	0.000	53.402	60.020	104.000	-	104.000	93.809	98.894	97.757	99.229	Continuing	Continuing
3428: *Medium Unmanned Surface Vehicle (MUSV)*	0.000	53.402	60.020	104.000	-	104.000	93.809	98.894	97.757	99.229	Continuing	Continuing

Note

FY 2020 and prior funding in Program Element (PE) 0603502N. Medium Unmanned Surface Vehicle (MUSV) (Project 3428) realigned from PE 0603502N in FY 2021. For FY23, the Navy realigned funding to PE 0605512N for purchase and integration of the Unmanned Surface Vessel Integrated Combat System (USV ICS) aboard MUSV, reflecting the Navy's vision of eventually fielding the USV ICS across all unmanned surface platforms. ICS is required for MUSV platforms for command and control of sensors and payloads. The ICS will support data fusion, forwarding and integration with manned combatants and the force common operating picture."

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 leverages 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy	Date: April 2022
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 0605512N *I MEDIUM UNMANNED SURFACE VEHICLES (MUSVs)*

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	55.285	60.028	0.000	-	0.000
Current President's Budget	53.402	60.020	104.000	-	104.000
Total Adjustments	-1.883	-0.008	104.000	-	104.000
• Congressional General Reductions	-	-0.008			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.883	0.000			
• Program Adjustments	0.000	0.000	0.000	-	0.000
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000
• Adjustments to Budget Year	-	-	104.000	-	104.000

Change Summary Explanation

Program Change:
Technical: Not applicable
Schedule: Not applicable
Cost:
FY21: -$1.883M SBIR/STTR/FTT Assessment (SBIR)
FY22: -$0.008M General Congressional reduction

FY 2023 funding increase reflects the fact that the FY 2022 President’s Budget request did not include out-year funding.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
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)*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
3428: *Medium Unmanned Surface Vehicle (MUSV)*	0.000	53.402	60.020	104.000	-	104.000	93.809	98.894	97.757	99.229	Continuing	Continuing
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 0603502N in FY 2021. The FY 2023 funding request was reduced by $10.127M to account for the availability of prior year execution balances. For FY2023, the Navy realigned funding to PE 0605512N for purchase and integration of the Unmanned Surface Vessel Integrated Combat System (USV ICS) aboard MUSV, reflecting the Navy's vision of eventually fielding the USV ICS across all unmanned surface platforms.

A. Mission Description and Budget Item Justification

The Medium Unmanned Surface Vehicle (MUSV) one of two Unmanned Surface Vessels in the Future Combatant Force (FSCF) program. 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 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 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.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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)*

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.

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 experimentation 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 influences both Concept of Operation/Employment doctrine to guide fleet operations, as well as 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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: MUSV Product Development	42.417	24.800	47.905	0.000	47.905
Articles:	-	-	-	-	-
FY 2022 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). To support a planned Milestone review prior to the award of the MUSV Program of Record, the Government will assess and direct the incorporation of any Engineering Change Proposals based on findings during the fabrication of MUSV #1. Completion of LBTS in Q4FY22. The test site will perform simulation testing producing the performance data required for certification. To support the planned award of MUSV Program of Record, the Government will assess the data from the systems under test for MUSV #1.					
FY 2023 Base Plans: In FY23, the first MUSV will transition from construction and integration to execution of Sea Trials in Q2FY 2023. Additionally, the Government will continue to assess and direct the incorporation of any Engineering Change Proposals (ECPs) based on findings during the fabrication of MUSV #1in support of the MUSV Program of Record. These ECPs will include upgrading MUSV#1 payload interfaces, autonomy behaviors, C4I interfaces, USV ICS interfaces, and maturation of Machinery Control System in support of MUSV#1 certification, Technology Readiness Assessments, and the planned Milestone review prior to the award of MUSV Program of Record (WBS 1.0, WBS 2.0, WBS 3.0, WBS 4.0 and WBS 5.0).					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Additionally, in FY23, the MUSV LBTS will be transitioned from a contractor site to NSWC Philadelphia for long-term support of MUSV testing and integration. Subsequently, the MUSV LBTS will be reconfigured and optimized in preparation for the MUSV Program of Record. The MUSV LBTS efforts in FY23 will be incorporated into the Performance Specification and captured in the MUSV Program of Record acquisition documents and associated artifacts (WBS 1.0). Furthermore, the MUSV program will continue the refinement of requirements and acquisition documentation including a Capability Development Document, SEP, TEMP, LCSP, Cybersecurity Strategy, Open Systems Architecture Management Plan, Quality Assurance Program Plan, Reliability and Maintainability Program Plan, Configuration Management Plan, Software Development Plan, NTSP and PPP, and all other artifacts leading up to a planned Milestone review prior to the award of the MUSV Program of Record. Purchase and integration of the prototype USV ICS hardware aboard the MUSV#1 as well as the purchase of a new payload are also planned in FY23 (WBS 3.0 and WBS 6.0) to support MUSV missions. This will be the first payload purchase for MUSV #1. Efforts in FY23 will also include maturation of the Sea Hunter and Seahawk autonomy and C4I systems to enable the full integration of the prototype platforms into the Fleet networks. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Increase of $23.105M due to purchase and integration of the prototype USV ICS hardware purchase of a new payload, and the LBTS reliability efforts for MUSV #1.					
Title: MUSV Support	5.385	14.600	12.400	0.000	12.400
Articles:	-	-	-	-	-
FY 2022 Plans: The Navy will continue to execute support contracts to enable the operation and sustainment of Sea Hunter and Seahawk as USV research and development prototypes. Provide engineering and operational support for experimental payload integration and demonstration. Provide Systems Engineering Support of any Engineering Change Proposals or Ship Alternations as required. Procure networking and communications equipment to begin the upgrade of both Sea Hunter and Seahawk to utilize standard Navy networks. Support the operational tempo required by the Navy to execute multiple fleet exercises and extended duration transits, which will enable					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
the development of tactics, training, and procedures, as well as validate capabilities through experimentation with Sea Hunter and Seahawk. ***FY 2023 Base Plans:*** Execution of sustainment contracts for Sea Hunter and Seahawk will continue in FY23 to support Fleet operations and exercises to further mature Concept of Operation/Employment for USVs and inform requirements definition of the MUSV Program of Record (WBS 6.0). FY23 efforts will also include executing support contracts to enable sustainment of MUSV#1. Validation of capabilities through experimentation with MUSV#1, Sea Hunter, Seahawk will continue in FY23 to support requirements definition for MUSV Program of Record. The MUSV Program will continue to provide engineering and operational support for experimental payload integration and demonstration as well as Systems Engineering Support of any Engineering Change Proposals or Ship Alternations required to support continued availability of the Sea Hunter, Seahawk, and MUSV. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Decrease of $2.2M to align the award of the MUSV#1 sustainment contracts with the updated construction schedule.					
Title: MUSV Test and Evaluation	4.100	18.420	38.327	0.000	38.327
Articles:	-	-	-	-	-
FY 2022 Plans: 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 for MUSV#1, Sea Hunter, and Seahawk. Cybersecurity testing will be conducted to support Risk Management Framework and Cybersecurity accreditation for MUSV #1, Sea Hunter, and Seahawk. Develop test plans to support post-delivery activities for MUSV #1. 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. ***FY 2023 Base Plans:*** The Navy will support the initiation of Sea Trials for MUSV #1 in Q2 FY2023. Execution of the MUSV DD&F contract will continue, with a focus on System Qualification Testing (SQT) and formal acceptance of the MUSV#1 by the end of Q3 FY2023. The Government will finalize the test plans for Developmental Testing					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
(DT) and continue to mature the Master Test Strategy to define the requirements for Operational Testing (OT). Starting in Q4 FY 2023, the MUSV Program will transition from Contractor Testing (CT) to Government Developmental Testing (DT) to verify that vessel meets the MUSV TLRs (WBS 6.0). In FY2023, Sea Hunter and Seahawk will 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 (WBS 6.0). ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Increase of $19.899M to support certification of MUSV #1, Sea Trials, System Qualification Testing, and planning for Developmental Testing. The increase is also due to increased operational tempo of Sea Hunter and Seahawk.					
Title: MUSV Management	1.500	2.200	5.368	0.000	5.368
Articles:	-	-	-	-	-
FY 2022 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 a planned Milestone review prior to the award of the MUSV Program of Record. ***FY 2023 Base Plans:*** Continue to provide management oversight of DD&F contract including the formal delivery of the MUSV#1 to the Government, implementation of the MUSV certification plan, and Developmental and Operational Testing. Continue to provide management oversight of the Sea Hunter and Seahawk C4I upgrades. 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. Develop governing MUSV program acquisition and requirements documentation and supporting program developmental plans to prepare for a planned Milestone review prior to the award of the MUSV Program of Record. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Increase of $3.168M to support development of acquisition artifacts in preparations for a planned Milestone review prior to the award of MUSV Program of Record.					
Accomplishments/Planned Programs Subtotals	53.402	60.020	104.000	0.000	104.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• RDTE/0603178N/3066: *Large Unmanned Surface Vessel (LUSV)*	67.517	144.846	146.840	-	146.840	125.501	122.643	123.302	128.796	Continuing	Continuing
• RDTE/0603178N/3067: *Unmanned Surface Vehicle Enabling Capabilities*	21.681	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	21.681
• RDTE/0605513N/3067: *Unmanned Surface Vehicle Enabling Capabilities*	0.000	170.838	181.620	-	181.620	192.885	299.182	195.298	195.827	Continuing	Continuing

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 there are no MUSV funded in the FY 2023-FY 2027 FYDP, 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 followed by Developmental and Operational Testing. 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#1 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 a contractor facility in FY2022. The MUSV#1 LBTS will have a STA certified HM&E plant by Q3 FY2023. The MUSV LBTS will be transitioned from a contractor site to NSWC Philadelphia in FY2023 for long-term support of MUSV testing and integration. Subsequently, the MUSV LBTS will be reconfigured and optimized in preparation for the MUSV Program of Record.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
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)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering	WR	Various : Various	0.000	5.429	Jul 2021	5.300	Jan 2022	7.200	Jan 2023	-		7.200	Continuing	Continuing	Continuing
Vessel Construction and Integration	C/FPIF	L3 Harris : Melbourne, FL	0.000	2.950	May 2021	3.500	Jan 2022	3.000	Jan 2023	-		3.000	Continuing	Continuing	Continuing
Logistics Package Development	C/FPIF	L3 Harris : Melbourne, FL	0.000	2.188	May 2021	0.000		1.100	Jan 2023	-		1.100	2.200	5.488	-
C4I/PNT GFE Development/Integration	Various	Various : Various	0.000	0.000		12.200	Jan 2022	10.903	Jan 2023	-		10.903	Continuing	Continuing	Continuing
Payload Development/ Integration	Various	Various : Various	0.000	2.750	May 2021	3.800	Jan 2022	10.200	Jan 2023	-		10.200	Continuing	Continuing	Continuing
LBES MUSV Machinery Plant	Various	Various : Various	0.000	14.000	Sep 2021	0.000		0.000		-		0.000	14.000	28.000	-
LBES - Land Based Engineering Test Site	Various	Various : Various	0.000	15.100	Sep 2021	0.000		7.502	Oct 2022	-		7.502	15.100	37.702	-
MUSV Integrated Combat System HW PUrchase and Integration	Various	Various : Various	0.000	0.000		0.000		8.000	Jan 2023	-		8.000	0.000	8.000	-
		Subtotal	0.000	42.417		24.800		47.905		-		47.905	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Sea Hunter Support	Various	Various : Various	0.000	3.185	Jan 2021	4.400	Jan 2022	4.800	Jan 2023	-		4.800	Continuing	Continuing	Continuing
Seahawk Support	Various	Various : Various	0.000	2.200	Oct 2020	4.400	Oct 2021	4.800	Jan 2023	-		4.800	Continuing	Continuing	Continuing
Sea Hunter/Seahawk Milcomms Upgrade	Various	Various : Various	0.000	0.000		5.800	Oct 2021	0.000		-		0.000	Continuing	Continuing	Continuing
MUSV 1 Support	TBD	TBD : TBD	0.000	0.000		0.000		2.800	Jan 2023	-		2.800	0.000	2.800	-
		Subtotal	0.000	5.385		14.600		12.400		-		12.400	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
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)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Sea Hunter Experimentation	Various	Various : Various	0.000	0.900	May 2021	11.820	Jan 2022	14.900	Oct 2022	-		14.900	Continuing	Continuing	Continuing
Test Planning	WR	Various : Various	0.000	1.100	May 2021	1.100	Jan 2022	2.900	Oct 2022	-		2.900	Continuing	Continuing	Continuing
Government Testing	WR	Various : Various	0.000	0.000		3.000	Jan 2022	13.657	Jan 2023	-		13.657	Continuing	Continuing	Continuing
Cybersecurity Testing	Various	Various : Various	0.000	2.100	Jul 2021	2.500	Jan 2022	2.970	Jan 2023	-		2.970	Continuing	Continuing	Continuing
MUSV #1 Certification	WR	Various : Various	0.000	0.000		0.000		3.900	Jan 2023	-		3.900	0.000	3.900	-
		Subtotal	0.000	4.100		18.420		38.327		-		38.327	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Requirement Development	WR	Various : Various	0.000	0.800	Oct 2020	1.500	Oct 2021	4.608	Oct 2022	-		4.608	Continuing	Continuing	Continuing
Acquisition Management	WR	Various : Various	0.000	0.700	Oct 2020	0.700	Oct 2021	0.760	Oct 2022	-		0.760	Continuing	Continuing	Continuing
		Subtotal	0.000	1.500		2.200		5.368		-		5.368	Continuing	Continuing	N/A

	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	53.402		60.020		104.000		-		104.000	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
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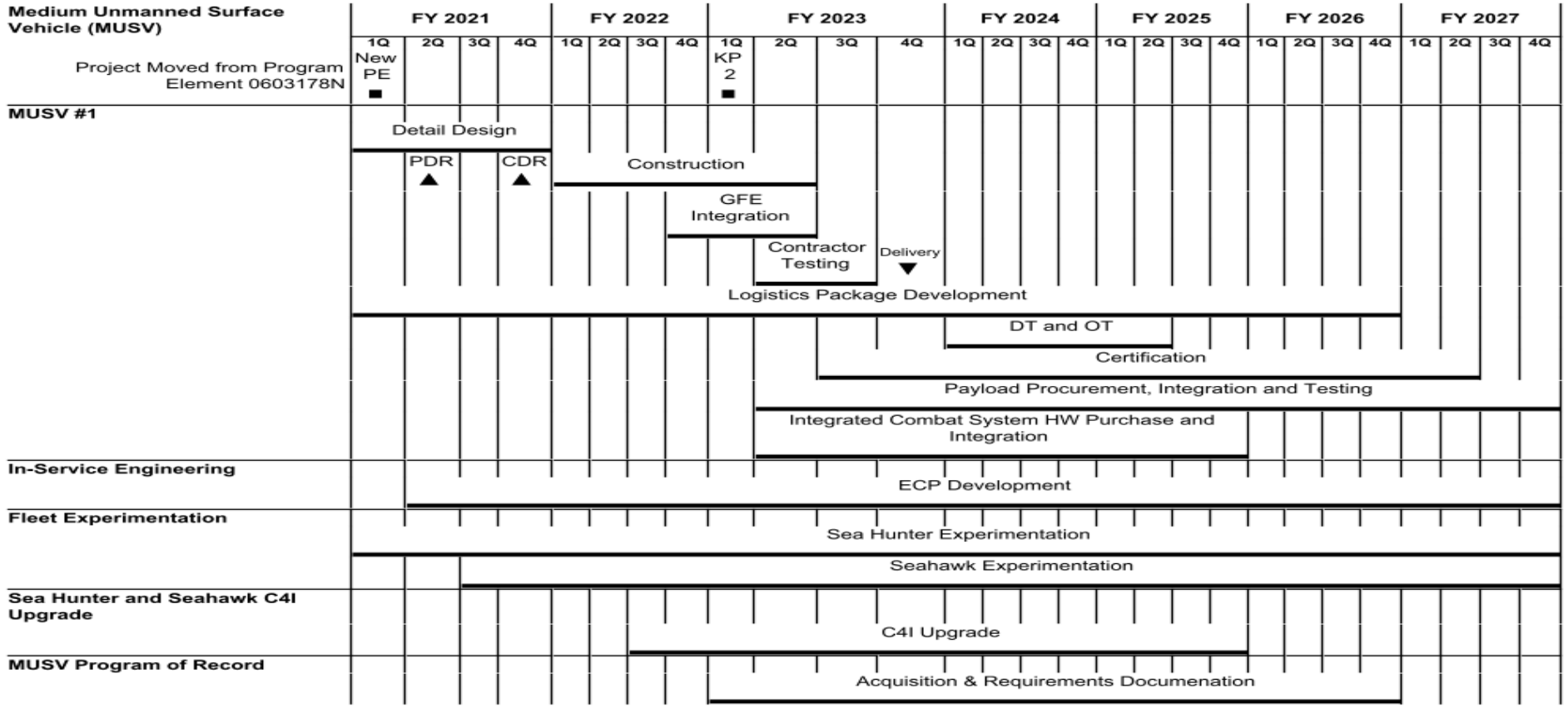

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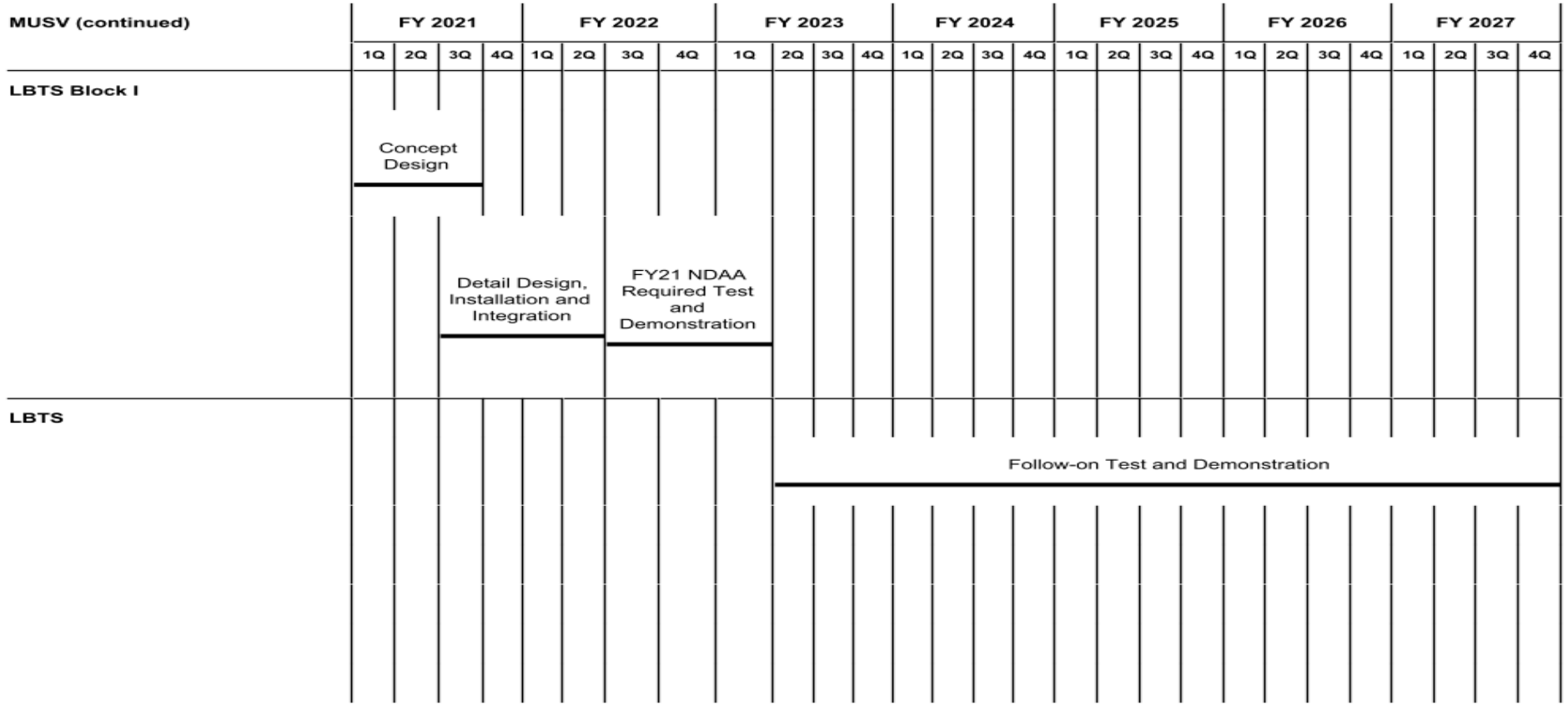
Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0605512N / *MEDIUM UNMANNED SURFACE VEHICLES (MUSVs)*	**Project (Number/Name)** 3428 / *Medium Unmanned Surface Vehicle (MUSV)*



2023PB - 0605512N - 3428

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
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)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Medium Unmanned Surface Vehicle (MUSV)				
Project Moved from Program Element 0603178N: New PE	1	2021	1	2021
Project Moved from Program Element 0603178N: Knowledge Points (KP): Knowledge Point 2	1	2023	1	2023
MUSV #1: Detail Design	1	2021	4	2021
MUSV #1: Preliminary Design Review	2	2021	2	2021
MUSV #1: Critical Design Review	4	2021	4	2021
MUSV #1: Construction	1	2022	2	2023
MUSV #1: GFE Integration	4	2022	2	2023
MUSV #1: Contractor Testing	2	2023	3	2023
MUSV #1: Delivery	4	2023	4	2023
MUSV #1: Logistics Package Development	1	2021	4	2026
MUSV #1: Developmental and Operational Testing	1	2024	2	2025
MUSV #1: Certification	3	2023	2	2027
MUSV #1: Payload Procurement, Integration and Testing	2	2023	4	2027
MUSV #1: Integrated Combat System HW Purchase and Integration	2	2023	4	2025
In-Service Engineering: Engineering Change Proposal (ECP) Development	2	2021	4	2027
Fleet Experimentation: Sea Hunter Experimentation	1	2021	4	2027
Fleet Experimentation: Seahawk Experimentation	3	2021	4	2027
Sea Hunter and Seahawk C4I Upgrade: Sea Hunter and Seahawk C4I Upgrade	3	2022	4	2025
MUSV Program of Record: Program Acquisition and Requirements Documentation	1	2023	4	2026
MUSV (continued)				

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
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)*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
LBTS Block I: Concept Design	1	2021	3	2021
LBTS Block I: Detail Design, Installation and Integration	3	2021	2	2022
LBTS Block I: FY21 NDAA Required Test and Demonstration	3	2022	1	2023
LBTS: Follow-on Test and Demonstration	2	2023	4	2027