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 0603563N *I Ship Concept Advanced Design*							
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	405.148	121.491	136.074	82.205	-	82.205	108.811	78.967	73.002	71.165	Continuing	Continuing
2196: *Design, Tools, Plans and Concepts*	63.846	20.790	15.334	17.369	-	17.369	13.859	13.861	14.129	14.334	Continuing	Continuing
3161: *NAVSEA Tech Authority*	270.348	12.003	13.783	11.569	-	11.569	9.952	8.382	8.536	8.603	Continuing	Continuing
3244: *Cybersecurity Engineering*	0.000	15.468	15.199	15.509	-	15.509	29.829	30.179	30.623	31.187	Continuing	Continuing
3376: *Strategic Sealift*	27.803	1.742	9.003	7.166	-	7.166	21.077	11.558	6.547	5.795	Continuing	Continuing
4037: *Common Hull Auxiliary Multi-Mission Platform (CHAMP)*	28.680	2.538	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	31.218
4044: *Next Generation Medium Amphibious Ship*	0.000	20.030	13.183	12.167	-	12.167	14.737	7.499	6.978	7.074	Continuing	Continuing
4045: *Next Generation Medium Logistics Ship*	0.000	19.978	21.215	2.959	-	2.959	5.889	3.988	3.712	4.172	Continuing	Continuing
5010: *AS(X) Submarine Tender*	0.000	0.000	16.357	15.466	-	15.466	13.468	3.500	2.477	0.000	0.000	51.268
9999: *Congressional Adds*	14.471	28.942	32.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	75.413

A. Mission Description and Budget Item Justification

Project 2196 - This project provides the analytical foundation for making informed force structure, capability and affordability decisions in the development of all future surface ship platforms, weapons, sensors and combat systems. It realizes this through total ship system engineering, technology integration, cost estimation, mission effectiveness analysis, force architecture synthesis, and force-level effectiveness analysis, as well as continuous development of the people, tools and processes required to accomplish these efforts efficiently. This includes early-stage concept development studies for all potential future surface ships. It also includes quantitative mission and force-level analysis to identify future capability gaps and requirements related to advances in threat capabilities, and evaluation of the effectiveness and affordability of potential future technology and concept of operations (CONOP) solutions. Results from this project are used to inform senior Navy leadership in support of budgetary decisions, Capability Evolution Plans (CEP), and requirements related to surface ship force structure, platforms and major combat system elements.

Project 3161 - This project is the only R&D effort that provides a coordinated approach to the development of cross platform ship and weapon system designs and technologies "common" to multiple ships and systems. This project directly influences technical standards for design, construction, certification and operation and provides an avenue for innovative solutions and technologies to compete with legacy product requirements and specifications. This project conducts risk reduction of alternative technical architectures, designs and technology solutions that meet Fleet operational and technical requirements at lower cost; and develops engineering capabilities in the areas of design tools, criteria and methods. This project funds a prioritized portfolio of time-sensitive initiatives through the Cross Platform Systems Development (CPSD) Program, supporting NAVSEA Technical Authority and associated risk reduction activity. The areas of exploration for the CPSD Program include

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 0603563N *I Ship Concept Advanced Design*

Ship Technology Improvements, Fleet Maintenance and Life Cycle Cost Reduction, Advanced Manufacturing and Material Technology, Additive Manufacturing, Digital Framework/Electromagnetic Environment and Development and Unmanned Systems. The research products developed by this project directly support and influence both current Fleet requirements and future acquisition programs by providing a range of technically acceptable alternatives and evaluation of emerging technologies. The prototypes, standards/specs, tools and processes and other products developed in this project focus on technical requirements and technologies applicable to multiple ship classes or systems. Products from this project transition directly to early-stage ship design for Ship Preliminary Design and Feasibility Studies, Program Executive Office (PEO) ship acquisition programs, and Systems Engineering Technical Authority (SETA) requirements documentation. Tasks within this project include R&D efforts focused on increasing sustainment technologies and improving performance at reduced cost for current and future naval platforms. This Project supported Navy COVID Rapid Response Testing (NCR2T) activities.

Project 3244 - This effort funds the research, design, development, testing, and installation of Cybersecurity solutions for all installed integrated computer networks to include shipboard Hull Mechanical and Electrical (HM&E), Navigation Systems, Combat Systems, Fire Control, Sonar, Radar, Communications and all other shipboard computerized control systems for all afloat U.S. Navy platforms. Cybersecurity Engineering supports the development of specifications and standards for the Cybersecurity of all Navy Control Systems (NCS).

Project 3376 - Strategic Sealift Research and Development - Develops new concepts and technologies which can be applied to or will enable future strategic sealift, and Seabasing systems. The technologies include ship configuration concepts, equipment to increase cargo handling and cargo loading/unloading rates (including commercial and merchant ship systems), improved man/machine interfaces, improved structural configurations and materials, and Logistics-Over-the-Shore (LOTS) equipment and system improvements. FY2016 and prior years (FY2014 and earlier) efforts were financed under the National Defense Sealift Fund (NDSF) BA 04 Project 3116 Strategic Sealift Research and Development. FY 2015, FY 2017, and FY 2019 and future efforts are financed under this program element and project (3376).

Project 4037 - This project supports Common Hull Auxiliary Multi-Mission Platform (CHAMP)Design and Total Ship Integration. The CHAMP concept leverages a new approach to requirements generation and shipbuilding to replace aging mission specific designs with a common hull to reduce life cycle costs, leverage tailored payloads, and stabilize the industrial base. Identified missions include: sealift, aviation intermediate maintenance support, medical services, command & control, and submarine tending. Funding will inform requirements definition, early industry engagement and follow-on assessment across CHAMP mission functionality.

Project 4044 - The Light Amphibious Warship (LAW) is a medium-sized landing ship that enables distributed maneuver and logistics such as Distributed Maritime Operations (DMO), Littoral Operations in a Contested Environment (LOCE), and Expeditionary Advanced Base Operations (EABO) in support of the newly established Marine Littoral Regiment (MLR). It is designed to fill the gap in capability between the Navy's large, multipurpose amphibious warfare "L" class ships and smaller landing vessels. This vessel will deploy tailored logistics, select power projection and strike capabilities.

Project 4045 - The Next Generation Logistics Ship (NGLS) is planned to be a new class of ships to augment the traditional Combat Logistics Force (CLF) to enable refueling, rearming, and resupply of Naval assets - afloat and ashore - near contested environments via ship-to-ship operations and ship-to port operations in support of Distributed Maritime Operations (DMO), Littoral Operations Contested Environment (LOCE), and Expeditionary Advanced Base Operations (EABO). Augmenting the traditional CLF, NGLS will provide a flexible, responsive platform to move fuel, personnel, equipment, and supplies between ships, advanced bases, ports, and

dispersed nodes of the sea base; sustaining afloat (Surface Action Group) and ashore (Expeditionary Advanced Base) requirements. RDT&E funding will continue to support development of the NGLS ship design(s), specification development, affordability analyses, and definition of ship mission systems leading to Detail Design & Construction award of the lead ship in FY26.

Project 5010 - This project supports Submarine Tender Recapitalization Acquisition Documentation development, Preliminary Design, Detail Design, Program Management/Engineering Services and Total Ship Integration. The Submarine Tender approach leverages current Submarine Tender capabilities, Nuclear Support Facility, integrating new VACL and CLB capabilities into the requirements generation and shipbuilding contracts. Identified missions include: Submarine Tending, Re-arming, re-supply of material, medical/dental, Nuclear Support, Submarine Systems repair and other maintenance support. Funding will inform requirements definition, early industry engagement preliminary designs, trade studies, and follow-on assessment for Sub Tender.

Project 9999 (Congressional Add)- Funding provided in the Department of Defense Appropriations Act, 2022 for high pressure cold spray system, polymorphic build farm for open source technologies, metallic additive manufacturing, and critical protection technology for cybersecurity engineering. Funding provided in the Department of Defense Appropriations Act, 2021 for additive manufacturing, defense industrial skills and technology training, polymorphic build farm for open source technologies, and portable high pressure cold spray system.

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	131.741	111.590	0.000	-	0.000
Current President's Budget	121.491	136.074	82.205	-	82.205
Total Adjustments	-10.250	24.484	82.205	-	82.205
• Congressional General Reductions	-	-0.544			
• Congressional Directed Reductions	-	-6.972			
• Congressional Rescissions	-	-			
• Congressional Adds	-	32.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-5.952	0.000			
• SBIR/STTR Transfer	-4.298	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	-	-	82.205	-	82.205

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2021	FY 2022
Project: 9999: *Congressional Adds*		
Congressional Add: *Additive Manufacturing*	4.824	0.000
Congressional Add: *High pressure cold spray system*	0.000	10.000
Congressional Add: *Defense industrial Skills and Technology Training*	4.824	0.000

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 0603563N *I Ship Concept Advanced Design*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2021	FY 2022
Congressional Add: *Polymorphic Build Farm for Open Source Technologies*	9.647	10.000
Congressional Add: *Portable High Pressure Cold Spray System*	9.647	0.000
Congressional Add: *Metallic additive manufacturing*	0.000	5.000
Congressional Add: *Critical protection technology for cybersecurity engineering*	0.000	7.000
Congressional Add Subtotals for Project: 9999	28.942	32.000
Congressional Add Totals for all Projects	28.942	32.000

Change Summary Explanation

The FY 2023 funding request was reduced by $1.175 million to account for the availability of prior year execution balances.

Program adjustments include:

4045 Next Generation Logistics Ship (NGLS) - The decrease is due primarily to the completion of Vessel Experimentation/Demonstration/Proof of Concept of Refuel, Resupply and Rearm Logistics missions on chartered commercial offshore support vessels, which were funded in FY 2022.

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 2196 / *Design, Tools, Plans and Concepts*	

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
2196: *Design, Tools, Plans and Concepts*	63.846	20.790	15.334	17.369	-	17.369	13.859	13.861	14.129	14.334	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 2196 - This project provides the analytical foundation for making informed force structure, capability and affordability decisions in the development of all future surface ship platforms, weapons, sensors and combat systems. It realizes this through total ship system engineering, technology integration, cost estimation, mission effectiveness analysis, force architecture synthesis, and force-level effectiveness analysis, as well as continuous development of the people, tools and processes required to accomplish these efforts efficiently. This includes early-stage concept development studies for all potential future surface ships. It also includes quantitative mission and force-level analysis to identify future capability gaps and requirements related to advances in threat capabilities, and evaluation of the effectiveness and affordability of potential future technology and concept of operations (CONOP) solutions. Results from this project are used to inform senior Navy leadership in support of budgetary decisions, Capability Evolution Plans (CEP), and requirements related to surface ship force structure, platforms and major combat system elements.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Future Surface Combatant Force (FSCF) Analysis	12.040	9.563	8.216	0.000	8.216
Articles:	-	-	-	-	-
Description: Description: FSCF analysis focuses on the long time-horizon, approximately 20-25 years in the future, to understand necessary changes in the surface combatant force's structure and capabilities, and informs near-term decisions and planning that drive these changes. FSCF Analysis provides warfighting effectiveness and cost analysis of force structure and concept of operations/employment (CONOP/CONEMP) alternatives, ship and combat system requirements, and key technology enablers for the FSCF to address future threats. It generates insights supporting budgetary decisions by senior Navy leadership, and assists in establishing Capability Evolution Plans (CEP) and long-term future requirements for all future surface combatant ships and major combat system elements.					
FY 2022 Plans: Excursion Analysis, including evaluation of FY 2021 results' sensitivity to key assumptions and exploration of additional cost, capability and CONOP tradeoffs.					
FY 2023 Base Plans: Re-baseline analysis to capture key acquisition, technology, CONOPs and threat developments.					
FY 2023 OCO Plans:					

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 2196 / *Design, Tools, Plans and Concepts*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Decrease from FY 2022 to FY 2023 is due to a decrease in program requirements and efficiencies gained following standup of new analysis capabilities in FYs 2021 and 2022.					
Title: Naval Capability Integration Process (NCIP) - From the Sea (FTS)	1.000	4.271	4.414	0.000	4.414
Articles:	-	-	-	-	-
Description: NCIP is an annual process analyzing current, programmed, and non-programmed near-term capability alternatives relative to stressing threats in the short time-horizon, approximately 10 years in the future. NCIP-FTS focuses on surface combatant contributions to integrated effects chains, especially for Naval Surface Fires and Integrated Air and Missile Defense, and is aligned with NCIP From the Air (FTA), Information Warfare (IW), Anti-Submarine Warfare (ASW), and Marine Corp efforts. NCIP evaluates platform, weapon, sensor and combat system capabilities to address warfighting requirements and gaps, and supports investment decisions that focus resources where they will have the greatest warfighting impact. ***FY 2022 Plans:*** Introduce quantitative mission and force-level effectiveness analysis to the annual NCIP-FTS process. Develop metrics to describe the effectiveness of solutions. Evaluate the ability of current, programmed and non-programmed near-term capabilities to address capability requirements and gaps within integrated effects chains relative to future stressing threats. ***FY 2023 Base Plans:*** Execute NCIP-FTS process and provide analytical insights to support surface combatant related investment decisions. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY 2023 funding supports the full level of effort needed to execute the NCIP-FTS process to include quantitative mission and force-level analysis.					
Title: DDG(X) (Formerly Large Surface Combatant)	7.000	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 2196 / *Design, Tools, Plans and Concepts*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Description: In FY 2020, DDG(X) Design and Analysis was funded within PE 0603563N/2196 as part of the Future Surface Combatant Studies effort. During FY21, DDG(X) Design and Analysis continued to be partially funded through PE 0603563N/2196. In FY 2022, funding for DDG(X) Pre-Preliminary Design (PPD), Preliminary Design (PD) and Contract Design (CD) efforts was fully transitioned to PE 0603564N/0411 and PE 0603573N/2471. ***FY 2022 Plans:*** N/A. Transition to PE 0603564N/0411 and PE 0603573N/2471. ***FY 2023 Base Plans:*** N/A ***FY 2023 OCO Plans:*** N/A					
Title: Ship Design Tool and Workforce Development	0.750	1.500	1.939	0.000	1.939
Articles:	-	-	-	-	-
Description: Develop and maintain the ship design workforce and tools that are critical enablers for affordable and effective maturation of new surface ship programs through continuous concept development and engineering analysis. Tool development focus areas include general rapid ship design and integration, and domain specific tools such as for assessment of shock, damage, hydrodynamic, structures and cost. It also includes utilization of high performance computing (HPC) environments to achieve improved tool fidelity and efficiency. Lastly, it funds workforce development initiatives to develop the next generation naval engineering workforce. ***FY 2022 Plans:*** Continue development of ship design and analysis tools to improve efficiency and fidelity. Support mentorship, knowledge transfer, foundational training, and career development opportunities to develop the next generation naval engineering workforce. ***FY 2023 Base Plans:***					

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 2196 / *Design, Tools, Plans and Concepts*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Continue development of ship design and analysis tools to improve efficiency and fidelity. Support mentorship, knowledge transfer, foundational training, and career development opportunities to develop the next generation naval engineering workforce. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Increase from FY 2022 to FY 2023 is due to an increase in program requirements and an increase in the focus on workforce development to develop the next generation naval engineering workforce.					
Title: Amphibious Capabilities Based Assessment ***Articles:*** ***Description:*** The Amphibious Capabilities Based Assessment (CBA) will identify capability gaps, capacity shortfalls, and risks in the amphibious force in the 2030s and beyond in the context of the Navy's projected roles, missions, and tasks. It will evaluate and prioritize the spectrum of mission needs and required capabilities for the future amphibious ships to support operational concepts in a contested environment namely Distributed Maritime Operations (DMO), Littoral Operations in a Contested Environment (LOCE), and Expeditionary Advanced Base Operations (EABO). It will provide recommendations for potential non-materiel and materiel approaches to the gaps, including the need for modified or new amphibious ships to meet future needs and pace future threats. This analysis will ensure the Marines have the platforms, tactics, and equipment they need to operate effectively in the new USMC missions and operational profiles. This assessment will act as the analytic basis for the development of an Initial Capabilities Document (ICD) and inform a future Analysis of Alternatives (AoA). ***FY 2022 Plans:*** N/A ***FY 2023 Base Plans:*** The Amphibious Capabilities Based Assessment (CBA) will identify capability gaps, capacity shortfalls, and risks in the amphibious force in the 2030s and beyond in the context of the Navy's projected roles, missions, and tasks. It will evaluate and prioritize the spectrum of mission needs and required capabilities for the future amphibious ships to support operational concepts in a contested environment namely Distributed Maritime Operations (DMO), Littoral Operations in a Contested Environment (LOCE), and Expeditionary Advanced Base Operations (EABO). It will provide recommendations for potential non-materiel and materiel approaches to the gaps, including the need for modified or new amphibious ships to meet future needs and pace future threats.	0.000 -	0.000 -	2.800 -	0.000 -	2.800 -

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 2196 / *Design, Tools, Plans and Concepts*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
This analysis will ensure the Marines have the platforms, tactics, and equipment they need to operate effectively in the new USMC missions and operational profiles. This assessment will act as the analytic basis for the development of an Initial Capabilities Document (ICD) and inform a future Analysis of Alternatives (AoA). ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Amphibious Capabilities Based Assessment is a task newly funded under PU 2196 in FY 2023.					
Accomplishments/Planned Programs Subtotals	20.790	15.334	17.369	0.000	17.369

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This is a non-acquisition program for engineering and analysis to inform Navy leadership decisions and plans, as well as to improve and sustain Navy capabilities for ship design and analysis. Work is performed by Navy Warfare Centers and Government Labs with contractor support.

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 2196 / *Design, Tools, Plans and Concepts*	

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
Systems Engineering	C/CPFF	FSCF Analysis Various Contractors : Various	8.803	1.000	Feb 2021	1.000	Jan 2022	0.800	Feb 2023	-		0.800	Continuing	Continuing	Continuing
Systems Engineering	WR	FSCF Analysis NSWC : Various	12.136	0.924	Dec 2020	8.563	Oct 2021	7.416	Oct 2022	-		7.416	Continuing	Continuing	Continuing
Systems Engineering	WR	FSCF Analysis NSWC DD : Dahlgren, VA	4.937	4.616	Dec 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	FSCF Analysis NIWC : San Diego, CA	2.372	0.050	Nov 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	FSCF Analysis JHU APL : Baltimore, MD	0.500	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	FSCF Analysis NSWC CD : Carderock, MD	3.530	2.200	Nov 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	FSCF Analysis NUWC : Newport, RI	0.475	1.200	Dec 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	FSCF Analysis NRL : Washington DC	0.000	1.630	Feb 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	FSCF Analysis NAVAIR : Patuxent River, MD	0.396	0.420	Feb 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering Development	WR	FSCF Analysis NSWC CD : Carderock, MD	4.275	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering Development	C/BA	FSCF Analysis NSWC : Various	1.710	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	DDG(X) Pre-PD Various Contractors : Various	14.000	2.200	Dec 2020	0.000		0.000		-		0.000	0.000	16.200	-
Systems Engineering	WR	DDG(X) Pre-PD NSWC : Various	3.562	1.500	Nov 2020	0.000		0.000		-		0.000	0.000	5.062	-

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 2196 / *Design, Tools, Plans and Concepts*	

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
Systems Engineering	WR	DDG(X) Pre-PD NSWC DD : Dahlgren, VA	1.800	0.500	Dec 2020	0.000		0.000		-		0.000	0.000	2.300	-
Systems Engineering	WR	DDG(X) Pre-PD NSWC PD : Philadelphia, PA	1.600	0.500	Dec 2020	0.000		0.000		-		0.000	0.000	2.100	-
Systems Engineering	WR	DDG(X) Pre-PD NIWC : San Diego, CA	0.600	0.000		0.000		0.000		-		0.000	0.000	0.600	-
Systems Engineering	WR	DDG(X) Pre-PD NSWC CD : Carderock, MD	2.500	2.300	Dec 2020	0.000		0.000		-		0.000	0.000	4.800	-
Systems Engineering	WR	T-AGS(X) NSWC CD : Carderock, MD	0.650	0.000		0.000		0.000		-		0.000	0.000	0.650	-
Systems Engineering	C/CPFF	NCIP NSMA : Washington DC	0.000	0.700	Nov 2020	1.000	Jan 2022	1.000	Feb 2023	-		1.000	Continuing	Continuing	Continuing
Systems Engineering	WR	NCIP Dahlgren : Dahlgren, VA	0.000	0.300	Feb 2021	3.271	Nov 2021	3.414	Oct 2022	-		3.414	Continuing	Continuing	Continuing
Systems Engineering	WR	Tools Development : Carderock, MD	0.000	0.750	Feb 2021	1.500	Jan 2022	1.939	Oct 2022	-		1.939	Continuing	Continuing	Continuing
Systems Engineering	WR	Amphibious CBA NSWC : Various	0.000	0.000		0.000		1.000	Nov 2022	-		1.000	0.000	1.000	-
Systems Engineering	C/CPFF	Amphibious CBA Various Contractors : Various	0.000	0.000		0.000		1.800	Feb 2023	-		1.800	0.000	1.800	-
		Subtotal	63.846	20.790		15.334		17.369		-		17.369	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	63.846	20.790		15.334		17.369		-		17.369	Continuing	Continuing	N/A

Remarks

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 2196 / *Design, Tools, Plans and Concepts*

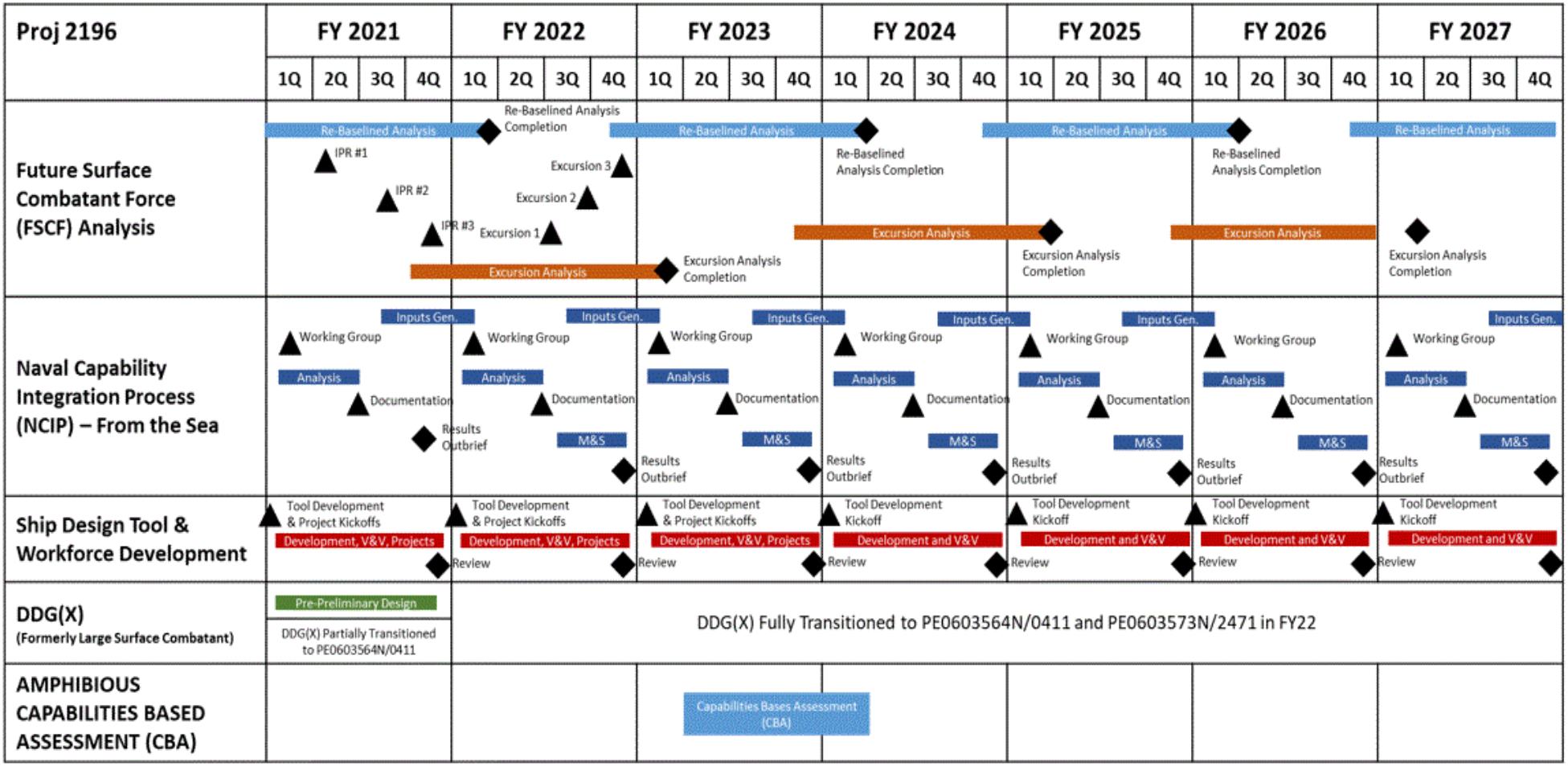


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 2196 / *Design, Tools, Plans and Concepts*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2196				
Proj 2196A: Future Surface Combatant Force Analysis	1	2021	4	2027
Proj 2196B: Naval Capability Integration Process - From the Sea	1	2021	4	2027
Proj 2196C: Ship Design Tools Development	1	2021	4	2027
Proj 2196D: Amphibious Capabilities Based Assessment (CBA)	1	2023	1	2024

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 0603563N / *Ship Concept Advanced Design*				Project (Number/Name) 3161 / *NAVSEA Tech Authority*			
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**
3161: *NAVSEA Tech Authority*	270.348	12.003	13.783	11.569	-	11.569	9.952	8.382	8.536	8.603	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Cross Platform System Development (CPSD) Pillars were re-baselined in FY 2019 to better address CNO and NAVSEA Chief Engineer (SEA05) technical priorities. Starting in FY 2023 the CPSD will evolve away from the Pillar structure to improve efficiency.

A. Mission Description and Budget Item Justification

This project has been established to support the NAVSEA Tech Authority with the coordination of design and development efforts for cross-platform applicability to result in more affordable, mission-capable, and interoperable surface ship forces including ships that are less expensive to build and operate with reduced manning, reduced support costs, and greater utilization of emerging technology.

NAVSEA Tech Authority efforts under Project Unit (PU) 3161, known as the Cross Platform Systems Development (CPSD) Program transition directly to early-stage ship design for Ship Preliminary Design and Feasibility Studies and other Program Executive Office (PEO) ship design programs. While these efforts support concept exploration and mission needs assessment for potential future ship acquisition programs, they also develop cross-program technology solutions and associated Technical Authority products. The CPSD efforts are not direct efforts for specific, authorized shipbuilding programs. This project is the only R&D effort that provides a coordinated, collaborative approach to the development of: cross-platform naval ship and weapon system design, as well as engineering capabilities in the areas of design tools, criteria, and methods. The CPSD project also provides innovative solutions for current Fleet issues involving Technical Authority, such as interoperability issues with new systems or platforms, or broad technology insertion topics. In addition, PU 3161 also includes Additive and Advanced Manufacturing Technology, which focuses heavily on naval ship-specific Additive Manufacturing (AM) technology and transition.

Project Unit 3161 includes efforts of the Additive Manufacturing (AM) program. This program focuses on development and use of AM equipment for Naval applications in land-based and afloat applications including system performance requirements, shipboard integration requirements and considerations, material selection, design optimization, equipment and component certification, and digital engineering integration. Efforts also include considerations of AM applicability across a wide-variety of potential applications ensuring AM manufactured components can meet mission requirements.

In FY 2019, all CPSD Pillars were re-baselined to better address CNO and NAVSEA Chief Engineer (SEA05) technical priorities and comprised of the following functional areas, with the exception of Cyber Security (CPSD F) which was moved to an individual project starting in FY 2021.

CPSD A - Ship Technology Improvements
CPSD B - Fleet Maintenance and Life Cycle Cost Reduction
CPSD C - Additive and Advanced Manufacturing Technology
CPSD D - Digital Framework/Electromagnetic Environment and Development

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*

CPSD E - Unmanned Systems

In FY 2023, CPSD is re-baselining to improve efficient and resilient alignment to CNO and NAVSEA Chief Engineer (SEA05) technical requirements and priorities. CPSD maintains the use of established functional areas for scope prioritization and portfolio diversification; however, the use of pillars for funding allocation has hindered responsiveness and agility. New in FY 2023, CPSD established the project focusing on the functional area "Support of Technical Authority."

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Ship Technology Improvements (CPSD A)	1.332	1.300	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: This effort funds the analysis of ship system technologies to reduce design and construction costs. This also includes the development of validation tools to certify the safety and mission capability of platform concepts and eventually ships.					
FY 2022 Plans: Continue the development of ship construction technology improvements to reduce risk related to alternative technical architectures and designs. This pillar with be a primary support pillar for CPSD in FY 2022 on par with Fleet Maintenance and Life Cycle Cost Reduction.					
FY 2023 Base Plans: The use of pillars as a funding function is discontinued in FY 2022. The program intends to track funds at the project level to increase agility and responsiveness to the changing naval environment.					
FY 2023 OCO Plans: n/a					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding for pillar zeroed in FY 2023 as program moves away from pillars as a funding function.					
Title: Fleet Maintenance and Life Cycle Cost Reduction (CPSD B)	1.565	1.512	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: This effort funds the development of tools, analyses and technologies to reduce fleet life cycle costs, reduce life-cycle failure risk and improved refurbishment cycles. This will allow the Navy to better meet fleet operational and technical requirements and lower cost.					
FY 2022 Plans:					

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Efforts to develop technologies to reduce in-service costs and technical risk associated with deployed technologies and systems will be conducted. This pillar with be a primary support pillar for CPSD in FY 2022 on par with Ship Technology Improvement. ***FY 2023 Base Plans:*** The use of pillars as a funding function is discontinued in FY 2022. The program intends to track funds at the project level to increase agility and responsiveness to changing naval environment. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding for pillar zeroed in FY 2023 as program moves away from pillars as a funding function.					
Title: Additive and Advanced Manufacturing Technology	8.248	10.734	7.958	0.000	7.958
Articles:	-	-	-	-	-
Description: This effort funds the development of additive manufacturing technologies, advanced coating techniques, design and topology optimization, materials selection, characterization and process development. ***FY 2022 Plans:*** FY 2022 funding continues additive manufacturing (AM) technology RDT&E for metal and polymer components including materials characterization and process development, development of AM design and manufacturing standards, application and technical data package development; determining AM equipment performance requirements in dynamic environments (i.e. shipboard), ship integration requirements for AM equipment, afloat AM qualification of equipment and certification of components in shipboard environments and navy-specific AM industrial base requirements including digital file transfer and cyber. ***FY 2023 Base Plans:*** FY 2023 funding continues additive manufacturing (AM) technology RDT&E for metal and polymer components including materials characterization and process development, development of AM design and manufacturing standards, application and technical data package development; determining AM equipment performance requirements in dynamic environments (i.e. shipboard), ship integration requirements for AM equipment, afloat AM qualification of equipment and certification of components in shipboard environments and navy-specific AM					

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
industrial base requirements including digital file transfer and cyber. This funding will also enable exploration of additively manufacturing of energetic materials. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Decrease from FY 2022 to FY 2023 is due to a decrease in program requirements and efficiencies gained during the various stages in the program's operation.					
Title: Digital Framework/Electromagnetic Environment and Development (CPSD D) ***Articles:*** ***Description:*** Develop an understanding of the wireless electromagnetic environment (EME) on numerous ship classes and the vulnerability of these systems to hacking. ***FY 2022 Plans:*** Efforts will continue development of power management wireless capability and distribution technologies. This pillar will be a tertiary priority for CPSD with expectations to support one to two efforts within the electromagnetic environment technical area in coordination with needs identified by the appropriate Technical Authority. ***FY 2023 Base Plans:*** The use of pillars as a funding function is discontinued in FY 2022. The program intends to track funds at the project level to increase agility and responsiveness to a changing naval environment. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding for pillar zeroed in FY 2023 as program moves away from pillars as a funding function.	0.441 -	0.237 -	0.000 -	0.000 -	0.000 -
Title: Unmanned Systems (CPSD E) ***Articles:*** ***Description:*** This effort funds the development and advancement of Navy unmanned systems across various platforms. Note: Unmanned system efforts in years prior to FY 2019 were captured under CPSD Pillar 1.0.	0.417 -	0.000 -	0.000 -	0.000 -	0.000 -

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
FY 2022 Plans: N/A ***FY 2023 Base Plans:*** N/A ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** N/A					
Title: CPSD Support of Technical Authority	0.000	0.000	3.611	0.000	3.611
Articles:	-	-	-	-	-
Description: The CPSD effort funds the analysis of ship system technologies to reduce design and construction costs and tools, analyses and technologies to reduce fleet life cycle costs, reduce life-cycle failure risk and improved refurbishment cycles. Efforts also include the development of validation tools to certify the safety and mission capability of platform concepts and eventually ships, development of advanced manufacturing capabilities, understanding of advanced and additive manufacturing technical properties pertaining to their application in a naval environment, develop an understanding of the changing electromagnetic environment (EME) in the naval environment, adjust and develop practices and standards, development an understanding of digital engineering processes, methodologies, and systems for efficient and cost effective engineering analysis, risk analysis, and risk reduction. CPSD also supports technical authority needs for emerging unmanned systems platforms. The use of pillars as a funding function is expected to be discontinued in FY22 in coordination with resource sponsor (N96). The program intends to track funds at the program/project unit (PU) level to increase agility and responsiveness to a changing naval environment. Starting in FY23 the CPSD will evolve away from the Pillar structure to increase flexibility and efficiency. ***FY 2022 Plans:***					

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
The use of pillars as a funding function is discontinued in FY 2022. The program intends to track funds at the project level to increase agility and responsiveness to a changing naval environment. Starting in FY 2023, the CPSD will evolve away from the Pillar structure to increase flexibility and efficiency. ***FY 2023 Base Plans:*** In FY 2023, continue the development of ship construction technology improvements to reduce risk related to alternative technical architectures and designs. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The use of pillars as a funding function is discontinued in FY 2022. The program intends to track funds at the project level to increase agility and responsiveness to changing naval environment. Increase from FY 2022 to FY 2023 is due to a increase in program requirements and efficiencies gained during the various stages in the program's operation, as well as improved execution of the program's budget.					
Accomplishments/Planned Programs Subtotals	12.003	13.783	11.569	0.000	11.569

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
• RDTEN/0204202N: *DDG-1000*	216.951	112.576	197.436	-	197.436	98.223	35.404	25.462	4.617	Continuing	Continuing
• RDTEN/0603512N: *Carrier Systems Development*	7.406	7.182	11.567	-	11.567	10.085	7.789	7.788	7.697	Continuing	Continuing
• RDTEN/0603564N: *Preliminary Design/Feasibility Studies.*	45.398	40.774	75.327	-	75.327	119.213	50.475	44.541	44.809	Continuing	Continuing
• RDTEN/0604567N: *Ship Contcept Design/Live Fire T&E*	61.758	54.829	60.791	-	60.791	58.149	58.576	40.996	40.503	Continuing	Continuing
• RDTEN/0603582N: *Combat System Integration*	17.273	17.322	18.236	-	18.236	18.589	18.291	18.608	18.870	Continuing	Continuing

Remarks

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*

D. Acquisition Strategy

This is a non-acquisition program that develops, evaluates, and validates early stages of total ship concepts and technologies in support of SCN planning and potential future ship acquisition programs. This program also supports development, demonstration, evaluation, and validation of engineering tools, methods, and criteria for those concept designs and assessments. This program provides validated engineering tools, methods, and criteria for ship, and weapon system concept designs and assessments while fostering collaboration and coordination of efforts resulting in more effective use of funding.

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*

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
CPSD Systems Engineering	C/CPFF	Various Contractors : Various	18.436	0.350	Jan 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CPSD Engineering Support	WR	NSWCCD, NSWCPD, NRL : Various	63.354	1.001	Nov 2020	0.745	Jan 2022	0.000		-		0.000	Continuing	Continuing	Continuing
CPSD Test and Evaluation	WR	NSWC : Various	11.910	0.201	Oct 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CPSD Systems Engineering	WR	NSWC DD : Dahlgren, VA	1.300	0.140	Nov 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CPSD Systems Engineering	WR	NSWC CD : Carderock, MD	5.908	0.550	Dec 2020	0.804	Nov 2021	1.017	Oct 2022	-		1.017	Continuing	Continuing	Continuing
CPSD Systems Engineering	WR	NSWC PD : Philadelphia, PA	3.320	0.310	Oct 2020	1.000	Nov 2021	0.750	Oct 2022	-		0.750	Continuing	Continuing	Continuing
CPSD Systems Engineering	WR	NRL : Washington, D.C.	0.389	0.000		0.500	Nov 2021	0.350	Oct 2022	-		0.350	Continuing	Continuing	Continuing
CPSD Engineering Development	WR	NSWC DD : Dahlgren, VA	2.584	0.000		0.000		0.250	Oct 2022	-		0.250	Continuing	Continuing	Continuing
CPSD Engineering Development	WR	NSWC CD : Carderock, MD	5.143	0.000		0.000		1.100	Oct 2022	-		1.100	Continuing	Continuing	Continuing
CPSD Engineering Development	WR	NSWC PD : Philadelphia, PA	1.852	0.478	Jan 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CPSD SBIR Withold	WR	Various : SBIR Withold	0.000	0.000		0.000		0.144	Jan 2023	-		0.144	0.000	0.144	-
Cybersecurity Technologies	C/CPFF	JHU/APL : Baltimore, MD	10.331	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Cybersecurity Technologies	C/CPFF	MITRE : McLean, VA	1.108	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Cybersecurity Technologies	MIPR	PNNL DOE : Richland, WA	0.900	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Cybersecurity Technologies	WR	NUWC Keyport : Keyport, WA	0.550	0.000		0.000		0.000		-		0.000	0.000	0.550	-
Cybersecurity Technologies	WR	NUWC Newport : Newport, RI	2.306	0.000		0.000		0.000		-		0.000	0.000	2.306	-

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*	

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
Cybersecurity Technologies	WR	NSWC Crane : Crane, IN	0.700	0.000		0.000		0.000		-		0.000	0.000	0.700	-
Cybersecurity Technologies	WR	NSWC DD : Dahlgren, VA	15.914	0.000		0.000		0.000		-		0.000	0.000	15.914	-
Cybersecurity Technologies	WR	NSWC PD : Philadelphia, PA	4.600	0.000		0.000		0.000		-		0.000	0.000	4.600	-
Additive Manufacturing	WR	NSWC CD : Carderock, MD	2.590	3.088	Oct 2020	4.109	Oct 2021	1.643	Oct 2022	-		1.643	Continuing	Continuing	Continuing
Additive Manufacturing	WR	NSWC PD : Philadelphia, PA	1.180	1.244	Oct 2020	2.543	Oct 2021	1.900	Oct 2022	-		1.900	Continuing	Continuing	Continuing
Additive Manufacturing	Various	NUWC Newport : Newport, RI	0.317	0.286	Nov 2020	0.278	Oct 2021	0.450	Oct 2022	-		0.450	Continuing	Continuing	Continuing
Additive Manufacturing	WR	NUWC Keyport : Keyport, WA	0.100	0.000		0.000		0.000		-		0.000	0.000	0.100	-
Additive Manufacturing	WR	NUWC Keyport : Mechanicbsurg, PA	0.083	0.052	Nov 2020	0.084	Oct 2021	0.000		-		0.000	0.000	0.219	-
Additive Manufacturing	C/CPFF	JHU APL : Baltimore, MD	0.735	0.149	Jan 2021	1.460	Jan 2022	0.650	Jan 2023	-		0.650	Continuing	Continuing	Continuing
Additive Manufacturing	C/CPFF	PSU ARL : State College, PA	0.825	0.000		0.125	Jan 2022	0.000	Jan 2023	-		0.000	Continuing	Continuing	Continuing
Additive Manufacturing	C/CPFF	Various Contracts : Various	1.378	0.677	Jan 2021	0.324	Jan 2022	0.538	Jan 2023	-		0.538	Continuing	Continuing	Continuing
Additive Manufacturing	WR	NRL : Washington DC	0.125	0.000		0.000		0.000		-		0.000	0.000	0.125	-
Additive Manufacturing	WR	NSWC Port Hueneme : Port Hueneme, CA	0.075	0.000		0.150	Jan 2022	0.000		-		0.000	0.000	0.225	-
Additive Manufacturing	WR	NAVAIR : Patuxent River, MD	0.100	0.000		0.075	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Additive Manufacturing	WR	NSWC Crane : Crane, IN	0.153	0.000		0.100	Oct 2021	0.350	Oct 2022	-		0.350	Continuing	Continuing	Continuing

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 3161 / *NAVSEA Tech Authority*	

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
Additive Manufacturing	WR	NSWC IH : Indian Head, MD	0.085	0.234	Dec 2020	0.300	Nov 2021	1.800	Nov 2022	-		1.800	Continuing	Continuing	Continuing
Additive Manufacturing	WR	Various : Not Specified	0.000	0.480	Nov 2020	0.000		0.000		-		0.000	0.000	0.480	-
Additive Manufacturing	Various	Various : SBIR Withold	0.320	0.336	Jan 2021	0.391	Jan 2022	0.327	Jan 2023	-		0.327	Continuing	Continuing	Continuing
NCR2T AM	WR	Various : Not Specified	0.000	1.275	Oct 2020	0.000		0.000		-		0.000	0.000	1.275	-
NCR2T CPSD	WR	Various : Not Specified	0.000	0.776	Oct 2020	0.000		0.000		-		0.000	0.000	0.776	-
NCR2T BTR	C/CPFF	Various : Not Specified	4.400	0.000		0.000		0.000		-		0.000	0.000	4.400	-
Prior Years G/WR	WR	Various : Not Specified	89.747	0.000		0.000		0.000		-		0.000	0.000	89.747	-
Prior Years C/CPFF	C/BA	Various : Not Specified	4.899	0.000		0.000		0.000		-		0.000	0.000	4.899	-
Additive Manufacturing	WR	NUWC Keyport : Portsmouth, NH	0.000	0.000		0.320	Jan 2022	0.000		-		0.000	0.000	0.320	-
Additive Manufacturing	WR	NAVSUP : Mechanicsburg, PA	0.000	0.000		0.175	Jan 2022	0.000		-		0.000	0.000	0.175	-
		Subtotal	257.717	11.627		13.483		11.269		-		11.269	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
Cybersecurity Technologies	WR	NSWC CD : Carderock, MD	2.569	0.000		0.000		0.000		-		0.000	0.000	2.569	-
Cybersecurity Technologies	MIPR	NIWC : Various	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	-
Cybersecurity Technologies	C/CPFF	Various Contractors : Various	3.303	0.000		0.000		0.000		-		0.000	0.000	3.303	-

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*

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
		Subtotal	6.372	0.000		0.000		0.000		-		0.000	0.000	6.372	N/A

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
Cybersecurity Technologies	WR	NSWC CD : Carderock, MD	0.950	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Cybersecurity Technologies	C/CPFF	JHU/APL : Baltimore, MD	1.650	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Cybersecurity Technologies	WR	NSWC PD : Philadelphia, PA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
		Subtotal	2.600	0.000		0.000		0.000		-		0.000	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
PM/Travel	Allot	NAVSEA HQ : Washington, DC	0.999	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Mgmt Spt	WR	NSWC CD : Carderock, MD	1.250	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Mgmt Spt	C/CPFF	CSC : Washington, D.C.	0.815	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Cybersecurity Technologies	C/CPFF	CSC : Washington, D.C.	0.250	0.000		0.000		0.000		-		0.000	0.000	0.250	-
Cybersecurity Technologies	C/CPFF	Alion : Washington, D.C.	0.250	0.000		0.000		0.000		-		0.000	0.000	0.250	-
Cybersecurity Technologies	MIPR	NAVSEA HQ : Washington, D.C.	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Additive Manufacturing	C/CPFF	Various : Various	0.090	0.374	Jan 2021	0.250	Jan 2022	0.250	Jan 2023	-		0.250	Continuing	Continuing	Continuing

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*

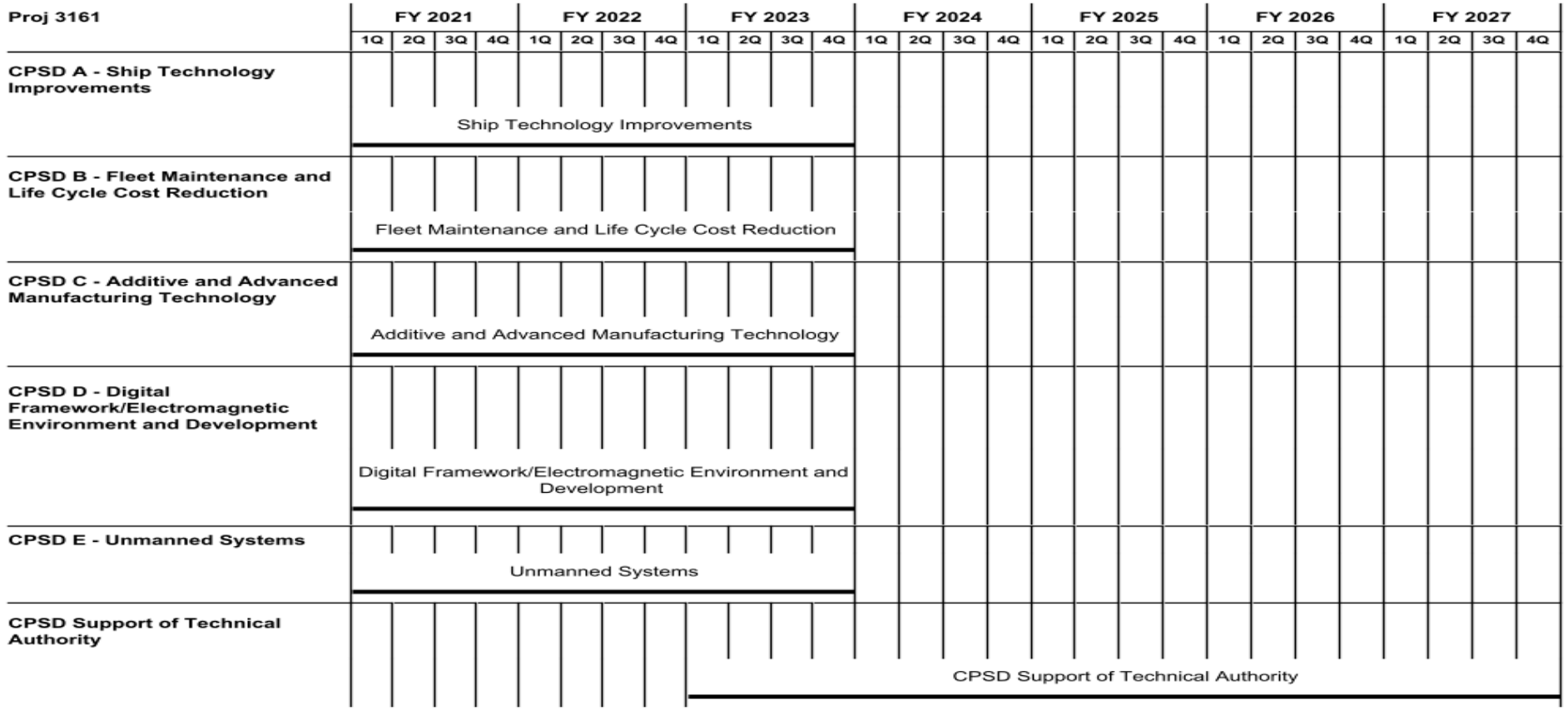
Management Services ($ in Millions)

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
Additive Manufacturing	Allot	Various : Not Specified	0.005	0.002	Dec 2020	0.050	Dec 2021	0.050	Dec 2022	-		0.050	Continuing	Continuing	Continuing
		Subtotal	3.659	0.376		0.300		0.300		-		0.300	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	270.348	12.003		13.783		11.569		-		11.569	Continuing	Continuing	N/A

Remarks

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*



2023DON - 0603563N - 3161

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3161				
CPSD A - Ship Technology Improvements:	1	2021	4	2023
CPSD B - Fleet Maintenance and Life Cycle Cost Reduction:	1	2021	4	2023
CPSD C - Additive and Advanced Manufacturing Technology:	1	2021	4	2023
CPSD D - Digital Framework/Electromagnetic Environment and Development:	1	2021	4	2023
CPSD E - Unmanned Systems:	1	2021	4	2023
CPSD Support of Technical Authority:	1	2022	4	2027

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 3244 / *Cybersecurity Engineering*	

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
3244: *Cybersecurity Engineering*	0.000	15.468	15.199	15.509	-	15.509	29.829	30.179	30.623	31.187	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This effort funds two critical Cybersecurity programs, Situational Awareness Boundary Enforcement and Response (SABER) and USS SECURE. SABER is the research, design, development, testing, and installation of Cybersecurity solutions for all installed integrated computer networks to include shipboard Hull Mechanical and Electrical (HM&E), Navigation Systems, Combat Systems, Fire Control, Sonar, Radar, Communications and all other shipboard computerized control systems for all afloat U.S. Navy platforms. USS SECURE is a cross-SYSCOM, operationally representative, distributed system of systems test environment that supports cybersecurity testing at the system, enclave, platform, and strike group level.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Cybersecurity	15.468	15.199	15.509	0.000	15.509
Articles:	-	-	-	-	-
FY 2022 Plans: This program will continue to develop and refine the SABER Secure Operating Environment, which is a virtualized environment, designed for cyber resiliency. The SABER program maintains a continuous and rigorous testing and evaluation program by conducting two red team events in FY 2022 that will ensure the hardening and resiliency of the Secure Operating Environment. This program will participate in two Hack the Machine events, which will test SABER in a contested environment. Automatic Test and Re-test (ATRT) will deliver two SABER software releases that has been tested for platform compatibility. The SABER Software Capability Toolkit (SCT) Team will continue the research and development of situational awareness tools, boundary defense capabilities, Cybersecurity-optimized network design tools, and network inspection and detection. Selected tools will be recommended to for the qualification and validation process. The SCT Team has developed a four-phase process to qualify and validate capabilities as a component of SABER. The SCT team will qualify, validate, and then virtualize five capabilities in FY 2022. This program will build upon testing completed in FY 2021 to advance and employ the use of Machine Learning and Artificial Intelligence tool, Cognitive Autonomous Artificial System Intelligence (CAASI) by transitioning it into a SABER Capability Tool (SCT). In FY 2022, this program will deliver three different platform's Hull Mechanical and Electrical (HM&E) network maps as well as begin to incorporate a network-mapping tool into SABER through the SCT process.					

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3244 / *Cybersecurity Engineering*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
This program will continue its mission to support the necessary development of core SABER software by delivering two software release in FY 2022. This will support the configuration and assist PEO's in the deployment of advanced defensive cyber capabilities on afloat Navy platforms. As the Lead Cross-Platform Integration Manager, SEA 03Q will continue to manage and conduct all the non-recurring engineering, modifications, tailoring, and provide support to PEOs for life cycle maintenance and Rule Set maturity as executed by the respective PEOs. SEA 03Q manages and leads the SABER Configuration Control Boards (CCB). Software lifecycle sustainment requirements of reliability, maintainability, and supportability will be completed to support the nine shipboard installations in FY 2022 and support the ten SABER systems in the Fleet. In FY 2022, this program will commence the non-recurring engineering efforts, collaborating with PEO IWS, for determining the technical effort required to integrate SABER on all Combat Enclaves on Afloat Platforms. In FY 2022, this program will migrate the Cybersecurity Vulnerability Assessment Tool (CVAST) into SECRET High Performance Compute (HPC) Environment. A select group of users will beta test CVAST in the SECRET HPC Environment with the intent of going FOC in Q4 of FY 2022. This program will develop both a training pipeline, required documentation, and certification to be delivered at the end of CY 2022. In FY 2022, this program will complete the Boundary Defense and Situational Awareness System Top Level Requirements. USS SECURE will continue to develop and expand the Navy's enterprise solution for addressing cyber Test & Evaluation policy and requirements. Cybersecurity requirements are increasing to mitigate emerging threats and policy documents such as DODI 5000.89 are directing all system owners to improve cyber resiliency; for example, system owners must now perform iterative DT and OT testing throughout the systems lifecycle. Many legacy systems must now incorporate these new cyber requirements into their lifecycle operations and will soon be looking for test capabilities. USS SECURE must prepare for the increasing demand by planning for more tests per year and tailoring testing services to the size, complexity, frequency, and lifecycle stage of the systems involved. USS SECURE must also accommodate new acquisitions by adapting processes to support the different Adaptive Acquisition Framework Pathways. USS SECURE will conduct three Cyber Risk					

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3244 / *Cybersecurity Engineering*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Assessments in FY 2022 and emergent testing needs that cannot be accommodated during those three events can be scheduled separately. ***FY 2023 Base Plans:*** The SABER program will continue the testing and evaluation program in FY 2023 by conducting two red team events and participating in two Hack the Machine events. ATRT will deliver two SABER software releases that have been tested for platform compatibility. The SCT team will qualify, validate, and then virtualize five additional capabilities in FY 2023. In FY 2023, this program will deliver five different platform's Hull Mechanical and Electrical (HM&E) network maps. This program will continue its mission to support the necessary development of core SABER software by delivering two software releases in FY 2023. This will support the configuration and assist PEO's in the deployment of advanced defensive cyber capabilities on afloat Navy platforms. As the Lead Cross-Platform Integration Manager, SEA 03Q will continue to manage and conduct all the non-recurring engineering, modifications, tailoring, and provide support to PEOs for life cycle maintenance and Rule Set maturity as executed by the respective PEOs. SEA 03Q manages and leads the SABER Configuration Control Boards (CCB). Software lifecycle sustainment requirements of reliability, maintainability, and supportability will be completed to support the 13 shipboard installations in FY 2023 and support the 19 SABER systems in the Fleet. In FY 2023, this program will continue the integration of SABER on all Combat Enclaves on Afloat Platforms. In FY 2023, this program will migrate the Cybersecurity Vulnerability Assessment Tool (CVAST) into TS HPC Environment. A select group of users will beta test CVAST in TS HPC Environment with the intent of going FOC in Q4 of FY 2023. Beginning in FY 2023, the CVAST team will begin building software updates that will then be installed on a HPC container and delivered for installation. The CVAST team will deliver at a minimum two software updates in FY 2023. USS SECURE will continue to develop and expand the Navy's enterprise solution for addressing cyber Test & Evaluation policy and requirements. Cybersecurity requirements are increasing to mitigate emerging threats and policy documents such as DODI 5000.89 are directing all system owners to improve cyber resiliency; for example, system owners must now perform iterative DT and OT testing throughout the systems lifecycle. Many legacy systems must now incorporate these new cyber requirements into their lifecycle operations and will soon be looking for test capabilities. USS SECURE must prepare for the increasing demand by planning					

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3244 / *Cybersecurity Engineering*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
for more tests per year and tailoring testing services to the size, complexity, frequency, and lifecycle stage of the systems involved. USS SECURE must also accommodate new acquisitions by adapting processes to support the different Adaptive Acquisition Framework Pathways. USS SECURE will conduct four Cyber Risk Assessments in FY 2023 and emergent testing needs that cannot be accommodated during those three events can be scheduled separately. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** USS SECURE to accommodate a decrease from FY 2021 to FY 2022, suspended infrastructure maintenance for FY 2022. With an increase in FY 2023, USS SECURE will resume infrastructure maintenance, which includes routine maintenance, updates, and upgrades as appropriate, and fact-of-life or end-of-life replacements of deployed equipment as necessary to meet planned and future USS SECURE testing requirements.					
Accomplishments/Planned Programs Subtotals	15.468	15.199	15.509	0.000	15.509

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This is a non-acquisition program that designs, develops, and tests Cybersecurity solutions and technologies in support of control systems and combat system enclaves for all afloat U.S. Navy platforms. The capabilities are transitioned to acquisition programs for installation and sustainment. This program sustains and expands the USS SECURE cybersecurity testing capability and infrastructure to ensure compliance with DoD and Navy Cybersecurity test and evaluation requirements in direct support of Navy acquisition programs.

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3244 / *Cybersecurity Engineering*

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
Cybersecurity Technologies	C/CPFF	JHU APL : Baltimore, MD	0.000	0.900	Mar 2021	0.000	Oct 2021	0.279	Oct 2022	-		0.279	Continuing	Continuing	Continuing
Cybersecurity Technologies	WR	NUWC Newport : Newport, RI	0.000	1.250	Oct 2020	1.359	Oct 2021	1.800	Oct 2022	-		1.800	0.000	4.409	-
Cybersecurity Technologies	WR	NSWC DD : Dahlgren, VA	0.000	1.000	Oct 2020	1.351	Oct 2021	1.400	Oct 2022	-		1.400	0.000	3.751	-
Cybersecurity Technologies	WR	NSWC PD : Philadelphia, PA	0.000	2.100	Oct 2020	2.087	Oct 2021	2.500	Oct 2022	-		2.500	0.000	6.687	-
Cybersecurity Technologies	C/CPFF	Various Contractors : Various	0.000	1.200	Oct 2020	1.200	Oct 2021	1.200	Oct 2022	-		1.200	0.000	3.600	-
		Subtotal	0.000	6.450		5.997		7.179		-		7.179	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
Program Management Support	WR	NSWC CD : Carderock, MD	0.000	0.300	Oct 2020	0.500	Oct 2021	0.500	Oct 2022	-		0.500	0.000	1.300	-
Program Management Support	WR	NIWC PAC : San Diego, CA	0.000	0.237	Oct 2020	0.277	Oct 2021	0.280	Oct 2022	-		0.280	0.000	0.794	-
Program Management Support	C/CPFF	Various Contractors : Various	0.000	3.200	Jan 2021	3.125	Jan 2022	2.850	Jan 2023	-		2.850	0.000	9.175	-
		Subtotal	0.000	3.737		3.902		3.630		-		3.630	0.000	11.269	N/A

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
Cybersecurity Technologies	WR	NAWC CL : China Lake, CA	0.000	0.173	Oct 2020	0.000	Oct 2021	0.000	Oct 2022	-		0.000	Continuing	Continuing	Continuing

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 3244 / *Cybersecurity Engineering*	

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
Cybersecurity Technologies	WR	NSWC PD : Philadelphia, PA	0.000	0.090	Oct 2020	0.000	Oct 2021	0.000	Oct 2022	-		0.000	0.000	0.090	-
Cybersecurity Technologies	WR	NSWC CO : Corona, CA	0.000	0.830	Oct 2020	1.200	Oct 2021	1.200	Oct 2022	-		1.200	0.000	3.230	-
Cybersecurity Technologies	WR	NSWC DD : Dahlgren, VA	0.000	3.138	Oct 2020	2.700	Oct 2021	2.700	Oct 2022	-		2.700	0.000	8.538	-
Cybersecurity Technologies	MIPR	GSA : O'Fallon, IL	0.000	1.000	May 2021	0.600	May 2022	0.600	May 2023	-		0.600	0.000	2.200	-
		Subtotal	0.000	5.231		4.500		4.500		-		4.500	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
HQ PM Travel	Allot	NAVSEA HQ : Washington, DC	0.000	0.050	Oct 2020	0.800	Oct 2021	0.200	Oct 2022	-		0.200	0.000	1.050	-
		Subtotal	0.000	0.050		0.800		0.200		-		0.200	0.000	1.050	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	15.468		15.199		15.509		-		15.509	Continuing	Continuing	N/A

Remarks

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3244 / *Cybersecurity Engineering*

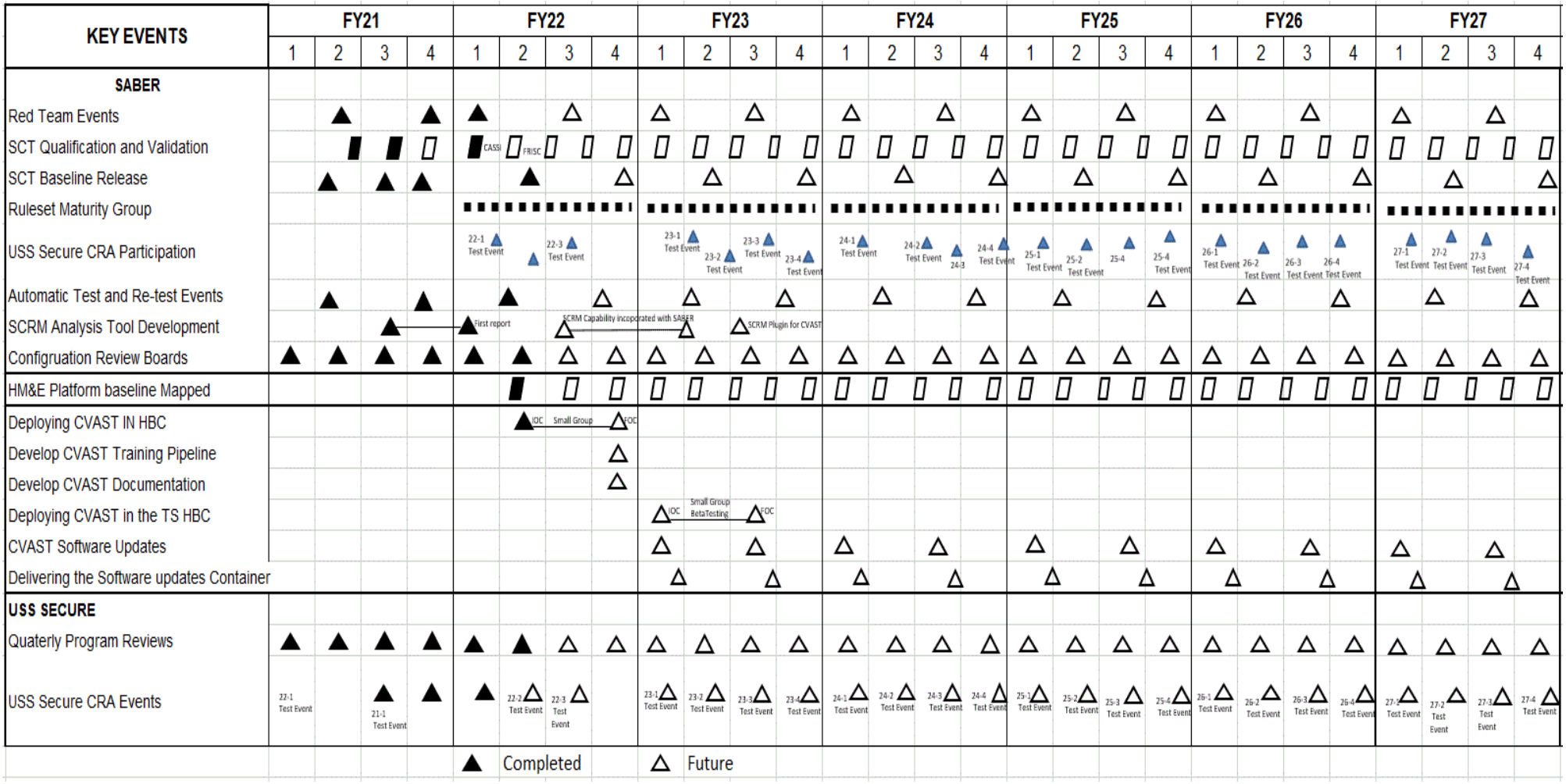


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3244 / *Cybersecurity Engineering*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3244				
SABER: Red Team Events	2	2021	4	2027
SABER: SCT Qualification and Validation	2	2021	4	2027
SABER: SCT Baseline Release	2	2021	4	2027
SABER: Ruleset Maturity Group	1	2022	4	2027
SABER: USS Secure CRA Participation	3	2021	4	2027
SABER: Automatic Test and Re-test Events	2	2021	4	2027
SABER: SCRM Analysis Tool Development	3	2021	3	2023
SABER: Configruation Review Boards	1	2021	4	2027
HM&E: Platform baseline Mapped	2	2022	4	2027
SABER: Deploying CVAST in the TS HBC	1	2023	3	2023
SABER: CVAST Software Updates	1	2023	4	2027
SABER: Delivering the Software updates Container	1	2023	4	2027
SABER: Deploying CVAST in the HBC	2	2022	4	2022
SABER: Develop CVAST Training Pipeline	4	2022	4	2022
SABER: Develop CVAST Documentation	4	2022	4	2022
USS SECURE: USS SECURE Quarterly Program Reviews	1	2021	4	2027
USS SECURE: USS SECURE CRA Event 23-1 to 23-4	1	2023	4	2023
USS SECURE: USS SECURE CRA Events	1	2021	4	2027
USS SECURE: USS SECURE CRA Event 24-1 to 24-4	1	2024	4	2024

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 3376 / *Strategic Sealift*	

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
3376: *Strategic Sealift*	27.803	1.742	9.003	7.166	-	7.166	21.077	11.558	6.547	5.795	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 3376 - Strategic Sealift Research and Development - Develops new concepts and technologies which can be applied to or will enable future strategic sealift, and Seabasing systems. The technologies include ship configuration concepts, equipment to increase cargo handling and cargo loading/unloading rates (including commercial and merchant ship systems), improved man/machine interfaces, improved structural configurations and materials, and Logistics-Over-the-Shore (LOTS) equipment and system improvements.

Prior Years include: FY2016 and prior years (FY2014 and earlier) efforts financed under the National Defense Sealift Fund (NDSF) BA 04 Project 3116 Strategic Sealift Research and Development; FY2015, FY2017, FY2019, FY2020, FY2021, and FY2022 efforts financed under this program element, RDT&E,N BA04, Project 3376 (Strategic Sealift); and FY2018 efforts financed under RDT&E,N BA 04 Project 9999/C403 (Congressional Adds).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Shipboard Crane Systems/Shipboard Cargo Systems	1.459	3.027	6.078	0.000	6.078
Articles:	-	-	-	-	-
FY 2022 Plans: Continue investigation and demonstration of shipboard crane/cargo system improvements including Vertical Launch System (VLS) Rearming and transfer capabilities. VLS rearming scope to include testing of newly developed ordnance handling equipment on board MSC vessels, and detailed design and start of fabrication of intermodal container system for transportation of VLS missile canisters. Develop sustainment concepts for Unmanned Surface Vessels (USV). Prototype fabrication for improved modular fuel delivery system.					
FY 2023 Base Plans: Continue investigation and demonstration of shipboard crane/cargo system improvements including Vertical Launch System VLS Rearming and transfer capabilities. VLS rearming scope to include completion of fabrication and start of testing of intermodal container system for transportation of VLS missile canisters. Begin analysis and concept development for rearming of Naval Strike Missile. Begin analysis and concept development for T-AKE (dry cargo/ammunition ship) upgrades to enhance VLS and heavyweight torpedo rearming capabilities. Begin engineering design and development for VLS Strike Up/Strike Down System transition.					
FY 2023 OCO Plans:					

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3376 / *Strategic Sealift*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Budget increase of $3.051M reflects start of efforts for T-AKE enhancements and Strike Up/Strike Down System transition.					
Title: Sealift Concept Development	0.000	1.581	0.674	0.000	0.674
Articles:	-	-	-	-	-
FY 2022 Plans: Resume Sealift Research and Technology development and program guidance and conduct Sealift ship concept development and analysis. This includes interacting with resource sponsors and fleet operators to develop concepts for sealift improvements, conducting feasibility and engineering analysis of concepts, and developing concepts into specific lines of effort, and providing program and technical management of projects. Initiate projects investigating concepts for improving the survivability of sealift vessels, sealift platform concepts for maritime prepositioning (MPF(X) and fuel consolidation tanker (CONSOL) requirements analysis. ***FY 2023 Base Plans:*** Continue Sealift Research and Technology development and program guidance. Continue investigation of improved sealift vessel survivability. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Budget decrease of $0.907M reflects completion of projects investigating maritime prepositioning concepts and fuel consolidation requirements.					
Title: Lighter/HSV Seabase to Shore Cargo Transfer	0.000	3.843	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2022 Plans: Concept development for Unmanned Surface Vessels (USV) logistics delivery system, including delivery of fuel from the seabase to shore. ***FY 2023 Base Plans:*** N/A ***FY 2023 OCO Plans:***					

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3376 / *Strategic Sealift*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Budget decrease of $3.843M reflects completion of projects investigating USV logistics delivery systems and delivery of fuel from seabase to shore.					
Title: Advanced Tools	0.283	0.552	0.414	0.000	0.414
Articles:	-	-	-	-	-
FY 2022 Plans: Continue investigation and demonstration of individual and multi-ship motion measurement and prediction Environmental and Ship Motion Forecasting (ESMF) system including continued testing of the ESD installation from FY19. Complete installation of system on board an EPF. ***FY 2023 Base Plans:*** Continue investigation and demonstration of individual and multi-ship motion measurement and prediction Environmental and Ship Motion Forecasting (ESMF) system to include installation and testing of the EPF 10. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Budget decrease of $0.138M reflects completion of system installation activities and expected completion of ESD system testing prior to the end of FY23.					
Accomplishments/Planned Programs Subtotals	1.742	9.003	7.166	0.000	7.166

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Not applicable for SEALIFT R&D efforts.

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 3376 / *Strategic Sealift*	

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
Shipboard Crane Systems/ Shipboard Cargo Systems	WR	Various Contractors : Various	10.510	1.459	Jan 2021	3.027	Jan 2022	6.078	Jan 2023	-		6.078	Continuing	Continuing	Continuing
Sealift Concept Development	WR	Various Contractors : Various	6.327	0.000		1.581	Jan 2022	0.674	Jan 2023	-		0.674	Continuing	Continuing	Continuing
Lighter/HSV Seabase to Shore Cargo Transfer	WR	Various Contractors : Various	7.376	0.000		3.843	Jan 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Advanced Tools	WR	Various : Various	3.590	0.283	Jan 2021	0.552	Jan 2022	0.414	Jan 2023	-		0.414	Continuing	Continuing	Continuing
		Subtotal	27.803	1.742		9.003		7.166		-		7.166	Continuing	Continuing	N/A

Remarks

1. Prior Years column only includes FY2015 (project 3376), FY2017 (project 3376), FY2018 Congressional Add (project C403) and FY2019 (project 3376), and FY2020 (project 3376) funding as FY2016 and prior years (FY14 and earlier) were funded under NDSF BA 04 Project 3116 Strategic Sealift Research and Development.
2. Award dates reflect initial award of incremental execution.

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	27.803	1.742		9.003		7.166		-		7.166	Continuing	Continuing	N/A

Remarks

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3376 / *Strategic Sealift*

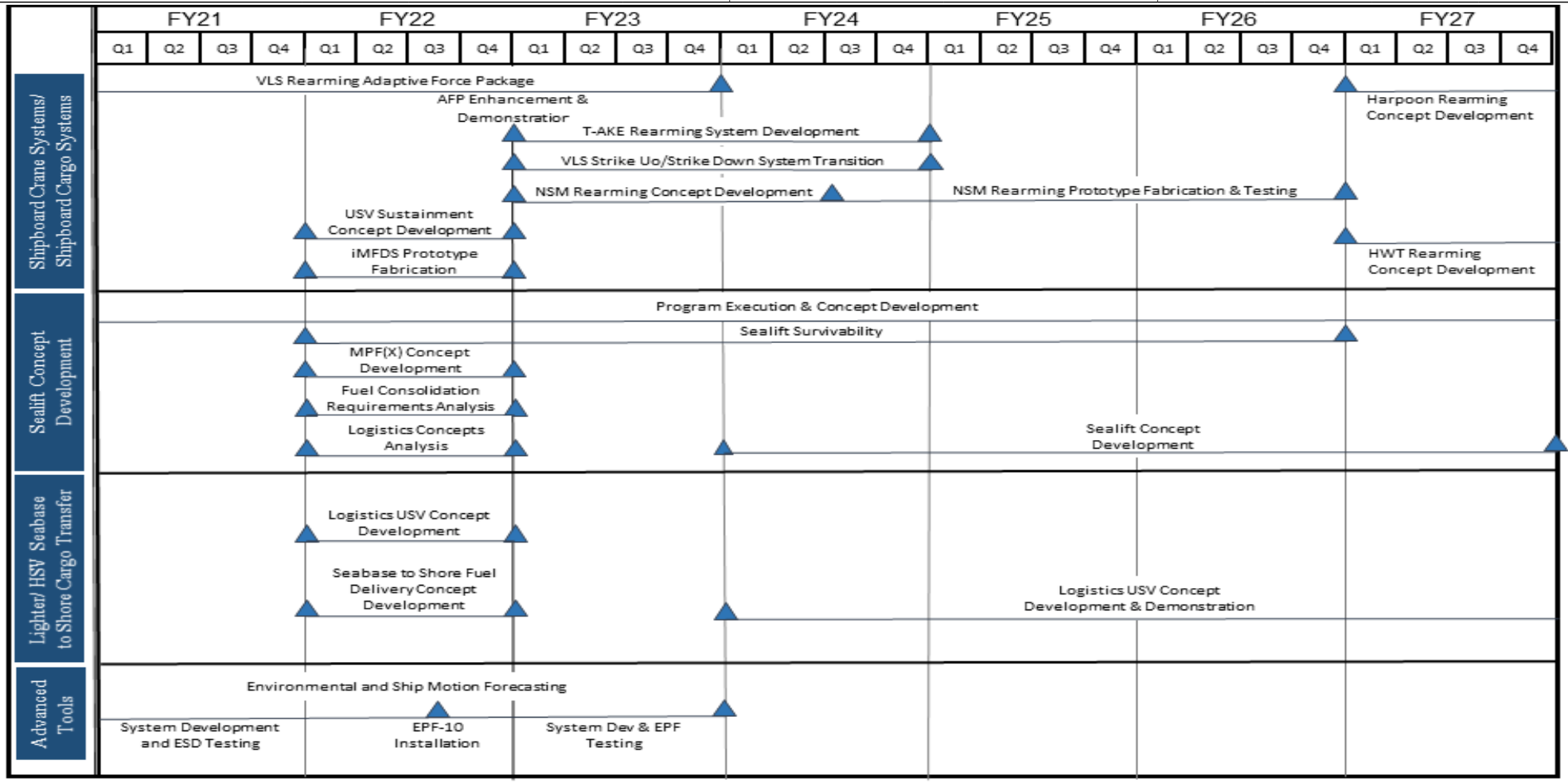


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3376 / *Strategic Sealift*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3376				
Shipboard Crane Systems/Shipboard Cargo Systems	1	2021	4	2027
Sealift Concept Development	1	2021	4	2027
Lighter/HSV Seabase to Shore Cargo Transfer	1	2022	4	2022
Lighter/HSV Seabase to Shore Cargo Transfer FY24-FY27	1	2024	4	2027
Advanced Tools	1	2021	4	2023

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 4037 / *Common Hull Auxiliary Multi-Mission Platform (CHAMP)*	

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
4037: *Common Hull Auxiliary Multi-Mission Platform (CHAMP)*	28.680	2.538	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	31.218
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Common Hull Auxiliary Multi-Mission Platform (CHAMP) concept leverages a new approach to requirements generation and shipbuilding to replace aging mission specific and has evolved over the last two years. In FY 2021 the new construction SEALIFT program was cancelled with the SCN funding being reallocated to MARAD buy used program for RRF.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: CHAMP Design and Total Ship Integration	2.538	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2022 Plans: None					
FY 2023 Base Plans: N/A					
FY 2023 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	2.538	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The CHAMP Sealift T-AKR(X) Acquisition Strategy and Planning ended with cancellation of program. Submarine Tender Acquisition Strategy is in developmental phase and is being developed.

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 4037 / *Common Hull Auxiliary Multi-Mission Platform (CHAMP)*	

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
Industry Studies & Design	C/FFP	Various : Various	19.058	0.000	Nov 2020	0.000		0.000		-		0.000	0.000	19.058	-
PM & Engineering Support	Various	Various : Various	8.372	2.038	Oct 2020	0.000		0.000		-		0.000	0.000	10.410	-
		Subtotal	27.430	2.038		0.000		0.000		-		0.000	0.000	29.468	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
Program Documentation Development	Various	Various : Various	1.250	0.500	Oct 2020	0.000		0.000		-		0.000	0.000	1.750	-
		Subtotal	1.250	0.500		0.000		0.000		-		0.000	0.000	1.750	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	28.680	2.538		0.000		0.000		-		0.000	0.000	31.218	N/A

Remarks

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 4037 / *Common Hull Auxiliary Multi-Mission Platform (CHAMP)*

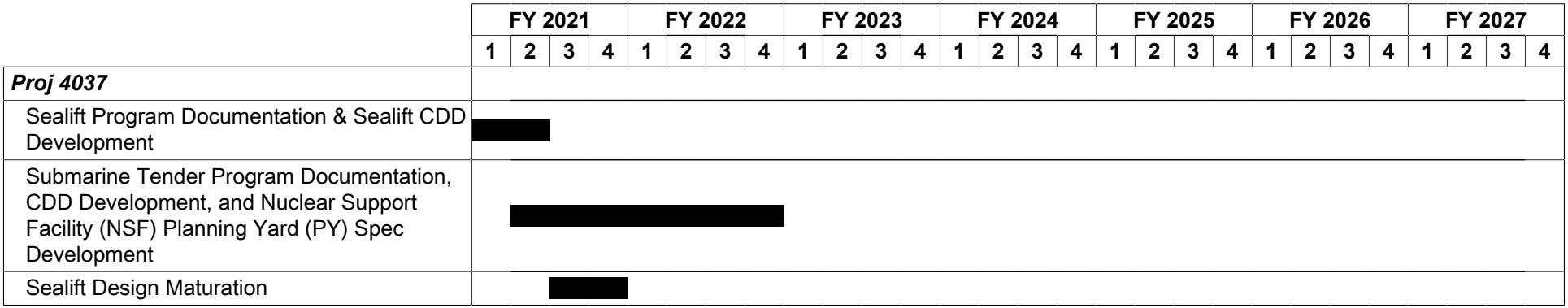


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 4037 / *Common Hull Auxiliary Multi-Mission Platform (CHAMP)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 4037				
Sealift Program Documentation & Sealift CDD Development	1	2021	2	2021
Submarine Tender Program Documentation, CDD Development, and Nuclear Support Facility (NSF) Planning Yard (PY) Spec Development	2	2021	4	2022
Sealift Design Maturation	3	2021	4	2021

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 4044 / *Next Generation Medium Amphibious Ship*	

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
4044: *Next Generation Medium Amphibious Ship*	0.000	20.030	13.183	12.167	-	12.167	14.737	7.499	6.978	7.074	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Light Amphibious Warship (LAW) is a medium-sized landing ship that enables distributed maneuver and logistics such as Distributed Maritime Operations (DMO), Littoral Operations in a Contested Environment (LOCE), and Expeditionary Advanced Base Operations (EABO) in support of the newly established Marine Littoral Regiment (MLR). It is designed to fill the gap in capability between the Navy's large, multipurpose amphibious warfare "L" class ships and smaller landing vessels. This ship will deploy tailored logistics, select power projection and strike capabilities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Next Generation Medium Amphibious Ship	20.030	13.183	12.167	0.000	12.167
Articles:	-	-	-	-	-
FY 2022 Plans: In FY2022 the LAW program transitions from Concept Studies (CS) into Preliminary Design (PD) Phase I with five industry partners. Tasks include Engineering, Logistics, Program Management and Test and Evaluation Support. The Engineering team is conducting design studies with the goal of reducing acquisition and lifecycle costs. The Engineering team conducts weekly Technical Exchange Meetings (TEMs) with the Shipbuilders to provide clarification on LAW requirements and answer technical questions posed by the Shipbuilders. Monthly Design Reviews will be held with industry to status the progress of PD. The Engineering team also provided technical support during the Analysis of Alternatives (AoA). Logistics efforts include manpower and training development, strategic laydown facilities planning and operations, and sustainment cost modeling development for reliability, availability, and maintainability of the ship. Program Management efforts include participation in the AoA Working-level Integrated Product Teams, Senior Advisory Groups and other tasks in support of the Navy's Gate 2 Program Review. The program management team efforts also included maturing the draft Capabilities Development Document (CDD) informed by the AoA					

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 4044 / *Next Generation Medium Amphibious Ship*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
and Preliminary Design in order to support the Navy's Gate 3 Program Review and the program management team continued to develop the statutory and regulatory program Milestone documentation. Test and Evaluation Support includes coordination with the Operational and Developmental Test communities to support the development of the LAW Test and Evaluation Master Plan (TEMP). Additionally, the Test and Evaluation efforts include review of the vessel specifications/general arrangements in order to provide design feedback to industry. ***FY 2023 Base Plans:*** Following the conclusion of PD Phase I and completion of the CDD, the program will utilize the Special Studies Options under the previously awarded contracts with the five industry partners to conduct sensitivity analysis and design excursions. The program is also evaluating the potential to conduct a PD Phase II. This will help the program maintain affordability by maximizing industry participation and increase design maturity to reduce risk for DD&C execution. FY2023 efforts will focus on maturing the circular of requirements and developing the Command, Control, Communications, Computers, and Intelligence (C4I) baseline for the program. Risk reduction efforts will focus on integration of the Government Furnished Equipment (GFE) baseline. Tasks include Engineering, Logistics, Program Management, and Test and Evaluation support. Engineering efforts in FY2023 provide technical support in the evaluation of the proposals and the development of technical documentation required for the Navy's Gate Program Reviews. Logistics tasks continue in training development, Integrated Logistics Assessment (ILA) preparation, facilities planning, homeporting and strategic laydown, operations and sustainment cost modeling development, and analysis for reliability, availability, and maintainability of the ship. Program Management support continues for development of the statutory and regulatory required program Milestone documentation to support upcoming Navy Gate Program Reviews as well as the development of PD Phase II/DD&C RFP and subsequent proposals.					

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 4044 / *Next Generation Medium Amphibious Ship*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Test and Evaluation support continues the development of the TEMP and participation in Marine Corps Warfighting Lab (MCWL) Offshore Support Vessel experimentation efforts to reduce risk and prove out the concept of employment. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY2022 to FY2023 decrease in funding is due to lead ship in FY2025.					
Accomplishments/Planned Programs Subtotals	20.030	13.183	12.167	0.000	12.167

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Navy awarded the Concept Study /Preliminary Design contracts on 14 June 2021. Concept Studies completed in October 2021 and Preliminary Design (Phase I) options were exercised January 2022. The Detail Design and Construction award is planned for FY2025. This will allow the program to continue maturation of the design.

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 4044 / *Next Generation Medium Amphibious Ship*

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
Concept Studies/ Preliminary Design/ Sensitivity Analysis	TBD	Various : Various	0.000	12.194	Jun 2021	6.693	Jan 2022	1.607	Dec 2022	-		1.607	Continuing	Continuing	Continuing
		Subtotal	0.000	12.194		6.693		1.607		-		1.607	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
Engineering Support	TBD	Various : Various	0.000	4.947	Nov 2020	1.897	Nov 2021	6.288	Nov 2022	-		6.288	Continuing	Continuing	Continuing
Logistics Support	TBD	Various : Various	0.000	1.874	Nov 2020	3.622	Nov 2021	1.747	Nov 2022	-		1.747	Continuing	Continuing	Continuing
Program Mgmt Support	TBD	Various : Various	0.000	0.507	Nov 2020	0.757	Nov 2021	1.554	Nov 2022	-		1.554	Continuing	Continuing	Continuing
		Subtotal	0.000	7.328		6.276		9.589		-		9.589	Continuing	Continuing	N/A

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
Test Plans	TBD	Various : Various	0.000	0.508	Nov 2020	0.214	Nov 2021	0.971	Dec 2022	-		0.971	Continuing	Continuing	Continuing
Model & Simulation Plan	TBD	Various : Various	0.000	0.000	Nov 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	0.000	0.508		0.214		0.971		-		0.971	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	20.030		13.183		12.167		-		12.167	Continuing	Continuing	N/A

Remarks

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 4044 / *Next Generation Medium Amphibious Ship*

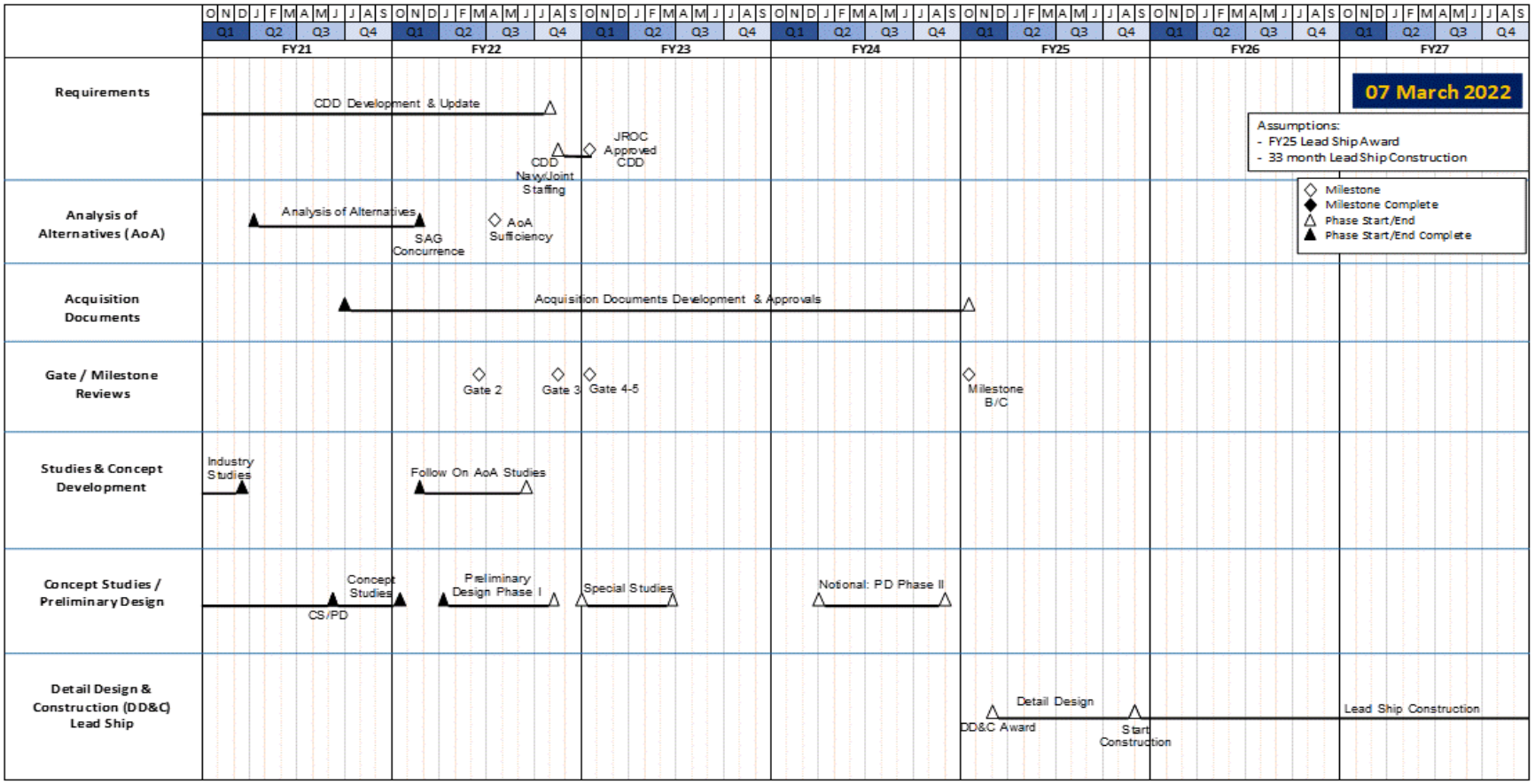


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 4044 / *Next Generation Medium Amphibious Ship*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 4044				
Capability Development Document	1	2021	4	2022
Analysis of Alternatives	2	2021	1	2022
Gate 2	2	2022	2	2022
Preliminary Design Phase I	2	2022	4	2022
Gate 3	4	2022	4	2022
Gate 4/5	1	2023	1	2023
Notional Preliminary Design Phase II	2	2024	4	2024
Milestone B/C	1	2025	1	2025
Detail Design & Construction Award	1	2025	1	2025
Start of Construction for Lead Ship	1	2026	1	2026

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 4045 / *Next Generation Medium Logistics Ship*	

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
4045: *Next Generation Medium Logistics Ship*	0.000	19.978	21.215	2.959	-	2.959	5.889	3.988	3.712	4.172	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Next Generation Logistics Ship (NGLS) is planned to be a new class of ships to augment the traditional Combat Logistics Force (CLF) to enable refueling, rearming, and resupply of Naval assets - afloat and ashore - near contested environments via ship-to-ship operations and ship-to port operations in support of Distributed Maritime Operations (DMO), Littoral Operations in a Contested Environment (LOCE), and Expeditionary Advanced Base Operations (EABO). Augmenting the traditional CLF, NGLS will provide a flexible, responsive platform to move fuel, personnel, equipment, and supplies between ships, advanced bases, ports, and dispersed nodes of the seabase; sustaining afloat (Surface Action Group) and ashore (Expeditionary Advanced Base) requirements. RDT&E funding will continue to support development of the NGLS ship design(s), specification development, affordability analyses, and definition of ship mission systems leading to Detail Design & Construction award of the lead ship in FY26. Funds are required to conduct Vessel Experimentation/Demonstration/Proof of Concept by chartering commercial offshore support vessels to experiment and demonstrate concepts related to the Refuel, Resupply and Rearm logistics missions that NGLS will perform.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Next Generation Logistics Ship	19.978	21.215	2.959	0.000	2.959
Articles:	-	-	-	-	-

FY 2022 Plans:

FY 2022 funds will be used to fund Industry Study concept development as well as continuing to support design development, operations research analysis, requirements development, finalization of indicative designs, and specification development. Efforts include systems engineering, naval architecture and marine engineering in support of NGLS design development. Additional work will be to develop and conduct demonstrations on a chartered logistics ship for experimentation and proof-of-concepts focused on the Refuel, Resupply, and Rearm logistics missions that NGLS will perform. Efforts will also support the kickoff of the Analysts of Alternatives (AoA).

FY 2023 Base Plans:

FY2023 funds will be used to support the AoA efforts and design maturation.

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 4045 / *Next Generation Medium Logistics Ship*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
The funding decreases from FY2022 to FY2023 is due to the completion of the Indicative Design, Industry Studies and Design, Special Studies, and Vessel Demos and AoA.					
Accomplishments/Planned Programs Subtotals	19.978	21.215	2.959	0.000	2.959

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
• SCN/5028: *Next Generation Logistics Ship (NGLS)*	0.000	0.000	0.000	-	0.000	0.000	0.000	150.000	156.000	0.000	306.000

Remarks

NGLS procurement is included in Ship Construction & Conversion, Navy - PE: 0204452N BLI: 5028; current procurement in the FYDP includes $150M in FY2026 and $156M in FY2027.

D. Acquisition Strategy

Preliminary Design efforts will be performed by at least two industry partners. The acquisition strategy for the future Detail Design & Construction efforts will be developed during FY 2024.

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 4045 / *Next Generation Medium Logistics Ship*

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
Industry Studies & Design	Various	TBD : TBD	0.000	6.000	Dec 2021	2.500	Jul 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Preliminary Design	Various	Various : Various	0.000	0.000		0.000		1.494	Aug 2023	-		1.494	0.000	1.494	-
		Subtotal	0.000	6.000		2.500		1.494		-		1.494	Continuing	Continuing	N/A

Remarks

The funding decreases from FY 2022 to FY 2023 is due to the completion of the Indicative Design, Industry Studies and Design, Special Studies, and Vessel Demos and AoA.

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
PM & Engineering Support	C/BA	CACI : Virginia	0.000	2.860	Feb 2021	1.076	May 2022	0.625	Nov 2022	-		0.625	Continuing	Continuing	Continuing
Special Studies	C/BA	Various : Not Specified	0.000	1.565	Feb 2021	1.500	Jul 2022	0.000		-		0.000	0.000	3.065	-
Warfare Center Analysis and Support	C/BA	Various WFC : Various WFC	0.000	1.378	Feb 2021	1.416	May 2022	0.840	Nov 2022	-		0.840	Continuing	Continuing	Continuing
AoA Support	C/BA	CACI/Systems Planning & Analysis : Virginia	0.000	1.025	Sep 2021	4.381	May 2022	0.000		-		0.000	0.000	5.406	-
		Subtotal	0.000	6.828		8.373		1.465		-		1.465	Continuing	Continuing	N/A

Remarks

The funding decreases from FY 2022 to FY 2023 is due to the completion of the Indicative Design, Industry Studies and Design, Special Studies, and Vessel Demos and AoA.

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
Indicative Design	C/BA	NSWC CD : Maryland	0.000	2.500	Feb 2021	2.671	Jul 2022	0.000		-		0.000	0.000	5.171	-
Vessel Experimentation and Demonstration	C/BA	Various : Various	0.000	4.650	Feb 2021	7.671	May 2022	0.000		-		0.000	0.000	12.321	-

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 4045 / *Next Generation Medium Logistics Ship*	

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
		Subtotal	0.000	7.150		10.342		0.000		-		0.000	0.000	17.492	N/A

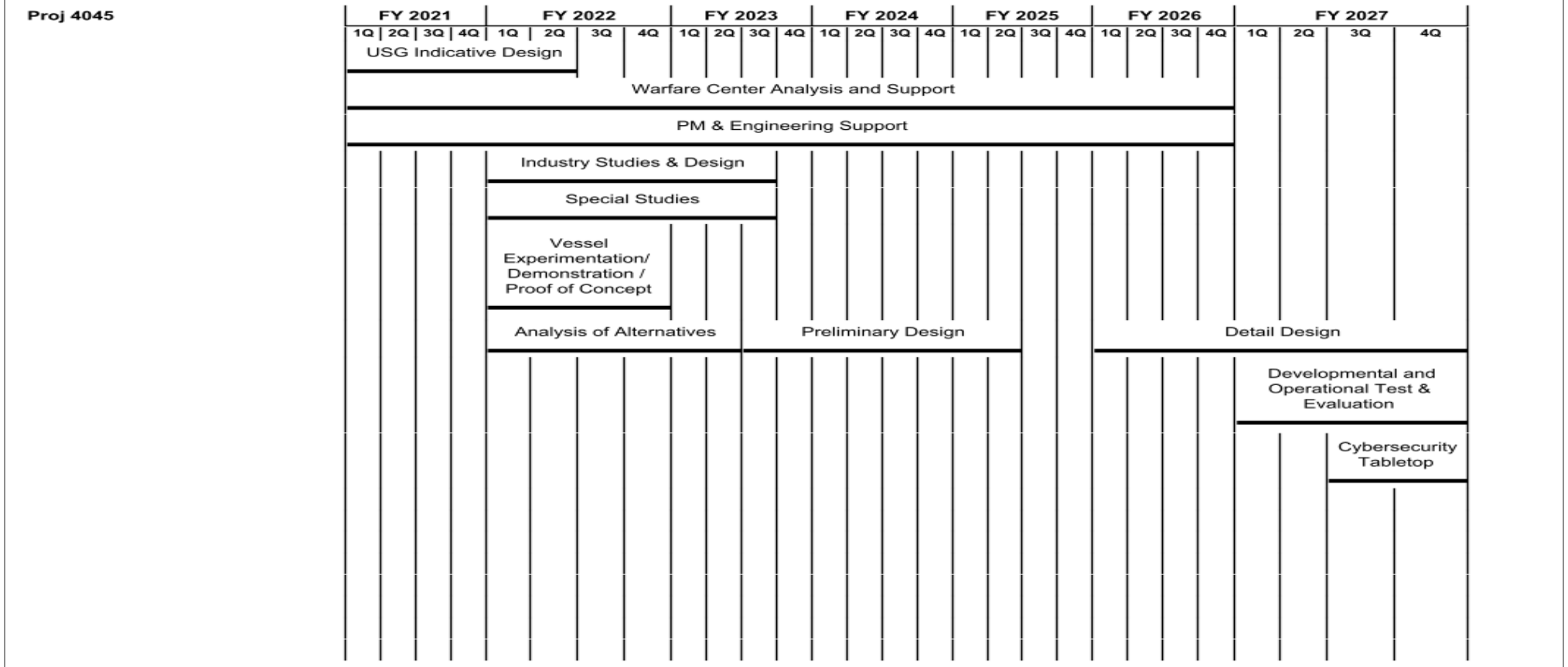
Remarks

The funding decreases from FY 2022 to FY 2023 is due to the completion of the Indicative Design, Industry Studies and Design, Special Studies, and Vessel Demos and AoA.

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	19.978		21.215		2.959		-		2.959	Continuing	Continuing	N/A

Remarks

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 4045 / *Next Generation Medium Logistics Ship*



2023PB - 0603563N - 4045

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 4045 / *Next Generation Medium Logistics Ship*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 4045				
USG Indicative Design	1	2021	2	2022
Warfare Center Analysis and Support	1	2021	4	2026
PM & Engineering Support	1	2021	4	2026
Industry Studies & Design	1	2022	3	2023
Special Studies	1	2022	3	2023
Vessel Experimentation/ Demonstration / Proof of Concept	1	2022	4	2022
Analysis of Alternatives	1	2022	2	2023
Preliminary Design	3	2023	2	2025
Detail Design	1	2026	4	2027
Developmental and Operational Test & Evaluation	1	2027	4	2027
Cybersecurity Tabletop	3	2027	4	2027

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 5010 / *AS(X) Submarine Tender*	

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
5010: *AS(X) Submarine Tender*	0.000	0.000	16.357	15.466	-	15.466	13.468	3.500	2.477	0.000	0.000	51.268
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

AS(X) will conduct steady state and wartime sustained, forward-based tending, resupply, depot and intermediate level repair operations on submarines and ships while anchored or pier side. In steady state, AS(X) will provide pier side support in a forward deployed submarine homeport, providing sustained repair, supply, weapons handling, and tending operations for submarines.

AS(X) is being specifically designed to support deployed VIRGINIA class (VCS), COLUMBIA class (CLB) and future generation submarines in the 21st century. AS(X) is required to support all aspects of Intermediate level maintenance and support to deliver expeditionary tending operations to VCS block V (and later) submarines.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: AS(X) Submarine Tender Design and Total Ship Integration	0.000	16.357	15.466	0.000	15.466
Articles:	-	-	-	-	-
FY 2022 Plans: Continue Submarine Tender (Sub Tender) program documentation, RFP for Preliminary Design (PD) execution, CDD development, Milestone Decision Authority (MDA) assignment, tailoring letter from MDA, and Sub Tender and Sub Tender Nuclear Support Facility Planning Yard specification development. Award PD Contract for Sub Tender to provide the preliminary design, Ship Specification Analysis, and final draft ship specification in support of the preparation and release of the RFP and Source Selection for Detailed Design and Construction (DD&C) for the first Sub Tender.					
FY 2023 Base Plans: Continue AS(X) Program development efforts, including exercising the Design Maturation option CLIN on PD contract and continued development of acquisition documentation to support Gate 4/5 and Milestone B/C including: Reliability, Availability, Maintainability, Cost (RAM-C) Rationale Report, Program Protection Plan (PPP) with Cybersecurity Strategy, Life Cycle Sustainment Plan (LCSP), Diminishing Manufacturing Plan (DMP), Item Unique Identification (IUID) Plan, Core Logistics Determination, Systems Engineering Plan (SEP), Information Support Plan (ISP), Navy Training Systems Plan (NTSP), Preliminary Ships Manning Document (PMSD), System Safety Management Plan, Programmatic Environmental Safety and Occupational Health Evaluation (PESHE), Cost Position, Design Reviews, and more. Additional efforts include the development of					

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 5010 / *AS(X) Submarine Tender*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
the AS(X) System Specification, with the Nuclear Support Facility (NSF) Specification included, and DD&C RFP development efforts supporting release of the AS(X) DD&C RFP. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Budget decrease of $0.891M reflects AS(X) Special Studies not being executed with FY 2023 funds under the PD contract.					
Accomplishments/Planned Programs Subtotals	0.000	16.357	15.466	0.000	15.466

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The AS(X) Program is pursuing a full and open contract for Preliminary Design, and a streamlined tailored acquisition approach with Acquisition Category (ACAT) II designation with tailoring of acquisition required documentation to support the FY 2022-2023 PD contract and FY 2023 Acquisition Documentation, Detail Design and Construction (DD&C) RFP and specification development based on PD. The program will be a single step to full capability, competitive contract, recapitalizing the existing 2 Submarine Tenders, and not an incremental procurement. AS(X) source selection, Preliminary Design contracts in FY 2022-2023 will aid in the development and finalization of the ship specification, Nuclear Support Facility (NSF) Interface Control Document (which will then be used to finalize the NSF specification), ship cost estimate, and detailed design and ship construction schedule. FY 2023 will focus on the DD&C contract solicitation and integrated Future Afloat Logistics Force (FALF) support for force logistics function of the sub tender.

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 5010 / *AS(X) Submarine Tender*

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
Submarine Tender Design Maturation (PD)	Various	Various : Various	0.000	0.000		10.000	Jan 2022	9.000	Jan 2023	-		9.000	0.000	19.000	-
		Subtotal	0.000	0.000		10.000		9.000		-		9.000	0.000	19.000	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
Program and Engineering Support	Various	Various : Various	0.000	0.000		3.900	Jan 2022	4.200	Jan 2023	-		4.200	0.000	8.100	-
		Subtotal	0.000	0.000		3.900		4.200		-		4.200	0.000	8.100	N/A

Remarks

1. Award dates reflect initial award of incremental execution.
2. $300K increase from FY 2022 to FY 2023 is to support Preliminary Design efforts.

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
Acquisition Document Development	Various	Various : Various	0.000	0.000		2.457	Jan 2022	2.266	Jan 2023	-		2.266	0.000	4.723	-
		Subtotal	0.000	0.000		2.457		2.266		-		2.266	0.000	4.723	N/A

Remarks

1. Award dates reflect initial award of incremental execution.

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		16.357		15.466		-		15.466	0.000	31.823	N/A

Remarks

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 5010 / *AS(X) Submarine Tender*

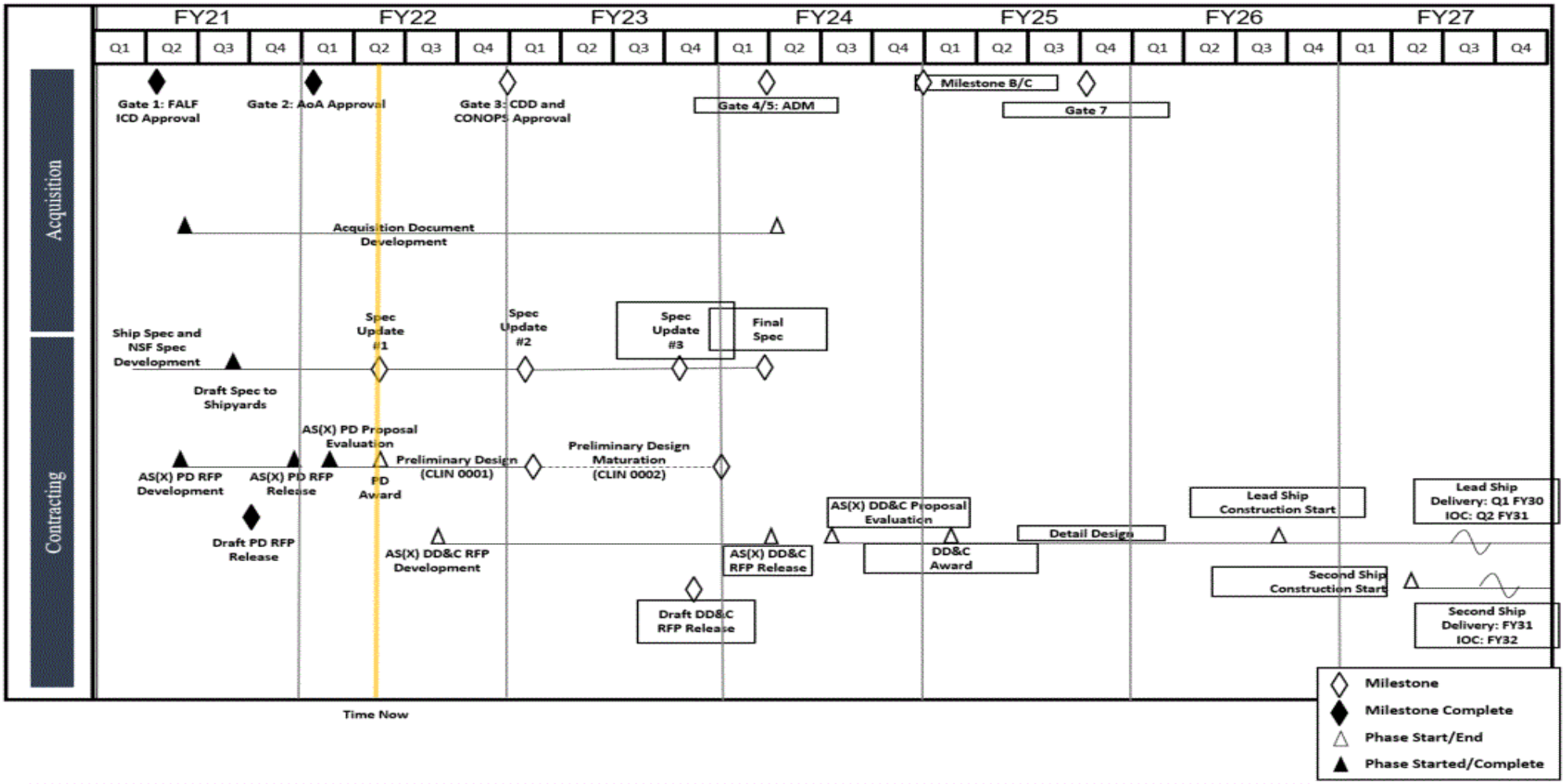


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 5010 / *AS(X) Submarine Tender*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 5010				
Submarine Tender and NSF Specification Development	1	2021	2	2024
Submarine Tender Acquisition Documentation	2	2021	2	2024
Preliminary Design Award	2	2022	2	2022
Submarine Tender Preliminary Design Maturation/Special Studies	2	2022	4	2023
Submarine Tender DD&C RFP Development	3	2022	2	2024
CDD and CONOPS Approval	4	2022	4	2022
Submarine Tender DD&C RFP Release	2	2024	2	2024
Award DDC contract	2	2025	2	2025

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 9999 / *Congressional Adds*	

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
9999: *Congressional Adds*	14.471	28.942	32.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	75.413
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project C439 - Advanced Manufacturing
Funding provided in the Department of Defense Appropriations Act, 2021. To ensure the next generation of submarines incorporates the most cutting edge technologies, the Navy must advance the qualification and certification of Advanced Manufacturing (AM) processes, materials, and components to allow the Navy to integrate AM capabilities into current and future systems and platforms.

Project C580 - High-pressure Cold Spray System
Funding provided in the Department of Defense Appropriations Act, 2022. Funding will be applied to conduct research, development, and prototyping for high-pressure cold spray systems. Sustainment drives significant lifecycle costs to ships and submarines. The utilization of high-pressure cold spray systems for ship and submarine sustainment, including maintenance and repairs can result in significant efficiencies and cost savings for the Navy.

Project C602 - Defense Industrial Skills and Technology Training (DISTT)
Funding provided in the Department of Defense Appropriations Act, 2021. Funding will support leading the coordinated transformation of the workforce in industry and in the government (both civilian and military sectors) and ensure that the training and capability of skilled personnel in the government sector (both uniformed and civilian) are able to adapt and keep pace with the accelerated rate of change in advanced and additive manufacturing practices.

Project C634 - Polymorphic Build Farm for Open Source Technologies
Funding provided in the Department of Defense Appropriations Act, 2021 and 2022. Funding will establish two Polymorphic Build Farms (PBFs) for distribution of polymorphic operating systems for NAVSEA use. This includes the engineering, set up, delivery, implementation, and support for 2 GovCloud PBFs. The build farm includes technologies such as the Point in Time Cache that allows for faithful and accurate builds of operating systems, both current and legacy/end-of-life. This includes the ability to lock down a specific version and configuration if needed for compliance/accreditation etc. This project will adapt Polyverse's PBF technologies to the unique environments needed by NAVSEA. The PBF will provide complete, end-to-end source code with the ability to create and update those operating systems as needed. The build out of 2 PBFs facilitates the critical distribution of software to the fleet by providing scalability, redundancy and ensures availability of resources.

Project C635 - Portable High-Pressure Cold Spray Systems
Funding provided in the Department of Defense Appropriations Act, 2021 to conduct research, development, and prototyping for portable high-pressure cold spray systems. Sustainment drives significant lifecycle costs to ships and submarines. The utilization of high-pressure cold spray systems for ship and submarine sustainment, including maintenance and repairs can result in significant efficiencies and cost savings for the Navy.

Project C752 - Metallic Additive Manufacturing

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 9999 / *Congressional Adds*

Funding provided in the Department of Defense Appropriations Act, 2022. Funding will support additive manufacturing of metal parts using 3D printers, which are used to support the needs of the U.S. Navy Fleet.

Project C753 - Critical Protection Technology for Cybersecurity Engineering
Funding provided in the Department of Defense Appropriations Act, 2022. Funding will support programs with a controlled resilient supply chain Anti-Tamper solution that enhances current cybersecurity protection measures and provides a value-added extension to the technologies at the enclave core.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022
Congressional Add: Additive Manufacturing ***FY 2021 Accomplishments:*** The Navy will continue its work to develop and execute testing and qualification procedures for additive manufacturing in order to ensure that its weapons systems are able to be maintained at the highest level of readiness by utilizing this rapidly growing technology. ***FY 2022 Plans:*** N/A	4.824	0.000
Congressional Add: High pressure cold spray system ***FY 2021 Accomplishments:*** N/A ***FY 2022 Plans:*** The High-Pressure Cold Spray Systems Congressional Add will conduct research, development, and prototyping for high-pressure cold spray systems. Sustainment drives significant lifecycle costs to ships and submarines. The utilization of high-pressure cold spray systems for ship and submarine sustainment, including maintenance and repairs can result in significant efficiencies and cost savings for the Navy.	0.000	10.000
Congressional Add: Defense industrial Skills and Technology Training ***FY 2021 Accomplishments:*** Lead the coordinated transformation of the workforce in industry and in the government (both civilian and military sectors) and ensure that the training and capability of skilled personnel in the government sector (both uniformed and civilian) are able to adapt and keep pace with the accelerated rate of change in advanced and additive manufacturing practices. ***FY 2022 Plans:*** N/A	4.824	0.000
Congressional Add: Polymorphic Build Farm for Open Source Technologies ***FY 2021 Accomplishments:*** The FY 2021 plans will provide an engineering implementation plan. Develop a calculation tool that will project GovCloud consumption costs based on activity and operating systems in the	9.647	10.000

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 9999 / *Congressional Adds*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022
PBFs. Set-up 2 PBFs in the AWS GovCloud environment. Build and serve a scrambled repository. Create a repository from a list of the Customer-supported packages. ***FY 2022 Plans:*** Transition both Commercial instances of the PBF into the IL5 and IL6 NAVSEA Cloud environment. Mature the DevSecOp PBF environment to include Polyscripting, MANTID and VIRSEC Software packages.		
Congressional Add: Portable High Pressure Cold Spray System ***FY 2021 Accomplishments:*** The Navy will continue research, development, and prototyping for high-pressure cold spray systems. Sustainment drives significant lifecycle costs to ships and submarines. The utilization of high-pressure cold spray systems for ship and submarine sustainment, including maintenance and repairs can result in significant efficiencies and cost savings for the Navy. ***FY 2022 Plans:*** N/A	9.647	0.000
Congressional Add: Metallic additive manufacturing ***FY 2021 Accomplishments:*** N/A ***FY 2022 Plans:*** Additive manufacturing of metal parts using 3D printers, which are used to support the needs of the U.S. Navy Fleet.	0.000	5.000
Congressional Add: Critical protection technology for cybersecurity engineering ***FY 2021 Accomplishments:*** N/A ***FY 2022 Plans:*** Conduct Non-recurring Engineering (NRE) in support of Software and hardware development of Keystone for Preliminary Design Reviews (PDR) and Critical Design Reviews (CDR).	0.000	7.000
Congressional Adds Subtotals	28.942	32.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 9999 / *Congressional Adds*

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
Advanced Manufacturing of Critical Scale Materials	TBD	Various : Various	0.988	0.000		0.000		0.000		-		0.000	0.000	0.988	-
Battery Prototype	TBD	Various : Various	1.482	0.000		0.000		0.000		-		0.000	0.000	1.482	-
Defense Inudstrial Skills	MIPR	Various : Not Specified	0.000	7.400	Sep 2021	0.000		0.000		-		0.000	0.000	7.400	-
C439 Additive Manufacturing (AM)	MIPR	AFRL : WPAFB, OH	0.000	2.980	Apr 2021	0.000		0.000		-		0.000	0.000	2.980	-
C439 Additive Manufacturing (AM)	WR	NSWC CD : Bethesda, MD	0.000	1.820	Apr 2021	0.000		0.000		-		0.000	0.000	1.820	-
C439 Additive Manufacturing (AM)	WR	NSWC : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
C439 Additive Manufacturing (AM)	C/CPFF	Contracts : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Cold Spray - C580	MIPR	ARMY : Various	0.000	1.342	Jul 2021	1.500	Jun 2023	0.000		-		0.000	0.000	2.842	-
C752 - Metallic Additive Manufacturing (AM)	TBD	Various : Various	0.000	0.000		2.000	Jun 2023	0.000		-		0.000	0.000	2.000	-
C634 - Polymorphic Build Farms	MIPR	GSA : Various	0.000	0.000		8.000	Jun 2022	0.000		-		0.000	0.000	8.000	-
C753 - Critical Protection Technology	MIPR	Various : Various	0.000	0.000		5.000	Oct 2022	0.000		-		0.000	0.000	5.000	-
		Subtotal	2.470	13.542		16.500		0.000		-		0.000	0.000	32.512	N/A

Remarks

Project Unit C752-Metallic Additive Manufacturing is new in FY22.

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
Program Management Support	WR	Various : Various	0.494	0.000		0.000		0.000		-		0.000	0.000	0.494	-

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 0603563N / *Ship Concept Advanced Design*	Project (Number/Name) 9999 / *Congressional Adds*	

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
Program Mgmt Support - C580	TBD	Various : Various	0.000	0.000		0.500	Jan 2023	0.000		-		0.000	0.000	0.500	-
C752 - Metallic Additive Manufacturing (AM)	TBD	Various : Various	0.000	0.000		0.500	Jun 2023	0.000		-		0.000	0.000	0.500	-
C634 - Polymorphic Build Farms	WR	NSWC DD : NSWC DD	0.000	0.000		0.990	Oct 2022	0.000		-		0.000	0.000	0.990	-
C634 - Polymorphic Build Farms	C/CPFF	Various : Various	0.000	0.000		0.887	Sep 2022	0.000		-		0.000	0.000	0.887	-
C753 - Critical Protection Techonology	C/CPFF	Various : Various	0.000	0.000		1.900	Sep 2022	0.000		-		0.000	0.000	1.900	-
		Subtotal	0.494	0.000		4.777		0.000		-		0.000	0.000	5.271	N/A

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
Battery T&E	TBD	Various : Various	9.531	0.000		0.000		0.000		-		0.000	0.000	9.531	-
Advanced Manufacturing of Critical Scale Materials	TBD	Various : Various	1.976	0.000		0.000		0.000		-		0.000	0.000	1.976	-
AM to include Cold Spray	MIPR	GSA : Various	0.000	13.400	Jun 2021	0.000		0.000		-		0.000	0.000	13.400	-
Cold Spray	TBD	Various : Various	0.000	0.000		8.000	Jun 2023	0.000		-		0.000	0.000	8.000	-
C752 - Metallic Additive Manufacturing (AM)Need Item Text	TBD	Various : Various	0.000	0.000		2.000	Jun 2023	0.000		-		0.000	0.000	2.000	-
		Subtotal	11.507	13.400		10.000		0.000		-		0.000	0.000	34.907	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
Project Support	WR	NUWC : Keyport	0.000	2.000	Jun 2021	0.000		0.000		-		0.000	0.000	2.000	-

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 9999 / *Congressional Adds*

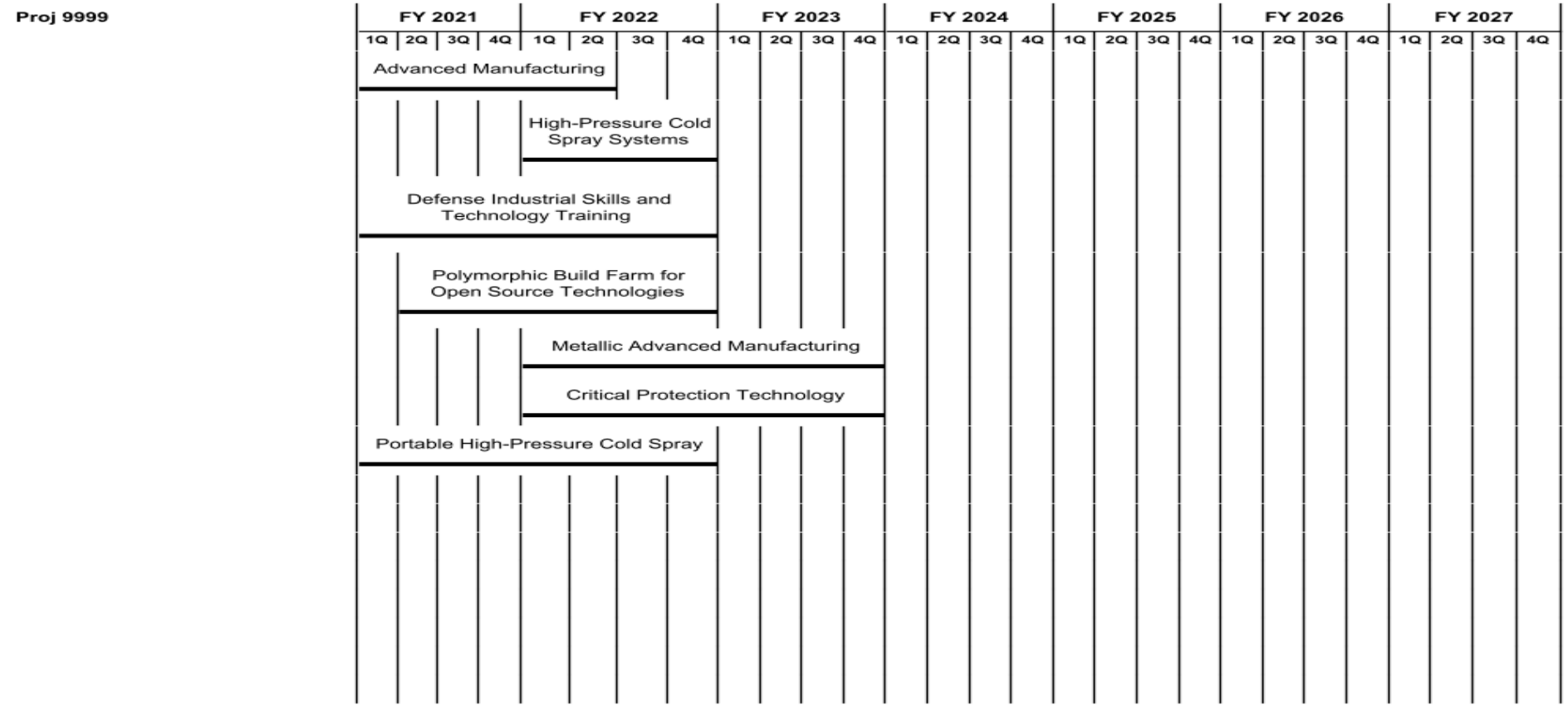
Management Services ($ in Millions)

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
C752 - Metallic Additive Manufacturing (AM)	TBD	Various : Various	0.000	0.000		0.500	Jun 2023	0.000		-		0.000	0.000	0.500	-
C634 - Polymorphic Build Farms	WR	NSWC CD : Bethesda, MD	0.000	0.000		0.123	Oct 2022	0.000		-		0.000	0.000	0.123	-
C753 - Critical Protection Technology	WR	NSWC CD : Besthesda, MD	0.000	0.000		0.100	Oct 2022	0.000		-		0.000	0.000	0.100	-
		Subtotal	0.000	2.000		0.723		0.000		-		0.000	0.000	2.723	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	14.471	28.942		32.000		0.000		-		0.000	0.000	75.413	N/A

Remarks

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 9999 / *Congressional Adds*



2023PB - 0603563N - 9999

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 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 9999				
Advanced Manufacturing	1	2021	2	2022
High-Pressure Cold Spray Systems	1	2022	4	2022
Defense Industrial Skills and Technology Training	1	2021	4	2022
Polymorphic Build Farm for Open Source Technologies	2	2021	4	2022
Metallic Advanced Manufacturing	1	2022	4	2023
Critical Protection Technology	1	2022	4	2023
Portable High-Pressure Cold Spray	1	2021	4	2022