Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy											Date: March 2019	
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 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
Total Program Element	204.955	23.856	74.603	81.846	-	81.846	47.514	30.366	32.026	32.862	Continuing	Continuing
2196: *Design, Tools, Plans and Concepts*	2.779	4.309	22.451	33.595	-	33.595	22.400	6.923	6.898	7.234	Continuing	Continuing
3161: *NAVSEA Tech Authority*	192.430	13.346	27.817	34.247	-	34.247	18.987	17.193	18.751	19.123	Continuing	Continuing
3376: *Strategic Sealift*	9.746	0.000	6.335	6.004	-	6.004	6.127	6.250	6.377	6.505	Continuing	Continuing
4037: *Common Hull Auxiliary Multi-Mission Platform (CHAMP)*	0.000	0.000	18.000	8.000	-	8.000	0.000	0.000	0.000	0.000	0.000	26.000
9999: *Congressional Adds*	0.000	6.201	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.201

A. Mission Description and Budget Item Justification

The FY 2020 funding request was reduced by $1.185 million to account for the availability of prior year execution balances.

Explore alternative surface and expeditionary ship force structures (encompassing amphibious warfare), advanced surface ship and unmanned surface vehicles concepts, and new and emerging technical architectures and solutions in support of pre-acquisition mission needs analysis, mission area analysis and planning, and systems engineering. The objective is a more affordable, mission capable surface ship force including increased ship production capability; ships with reduced manning, reduced operating and support costs, and greater utilization of the latest technology. The program directly supports the Navy Shipbuilding Plan and NAVSEA Technical Authority with state-of-the-art design tools and methods that develop technical options and requirements for surface ship force structure, ship & unmanned vehicle concepts, advanced material and manufacturing efforts, and improved engineering prototypes and solutions for ships that may become part of the shipbuilding plan.

Project 2196 - This project provides the foundation for an affordable and mission capable surface ship force. It also supports the next step in the development of a transformed naval force by accomplishing the pre-milestone A (especially pre-concept decision) efforts for all potential surface ships. These efforts are the required first step in the integration of total ship systems, including combat systems, weapons systems and Hull, Mechanical and Electrical (HM&E) systems. Inadequate early planning and ship concept formulation can result in down-stream design, construction and operational problems. A subtler and severely negative impact of neglecting this early effort is that the "best" concepts and technologies may never even be considered and the greatest potential ship design advances never realized. Designs and technologies must consider how to meet the threat. This project supports this requirement.
This project funds concept development engineering, mission effectiveness analysis, force architecture analysis, and other analyses for formulation of future surface ship force structure along with development of the tools required to accomplish these efforts. Advanced ship concept studies, ship and ship systems technology assessments, and the development and upgrade of ship concept design and engineering tools, methods, and criteria are also funded in this project.
This project:
(1) Develops alternative surface ship force structure concepts including ships and unmanned vehicles.
(2) Evaluates the mission capability effectiveness and costs for these alternative surface fleet architectures.
(3) Performs fleet war fighting/mission effectiveness assessment studies.

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy	Date: March 2019
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*

(4) Identifies future surface ship requirements and characteristics necessary to meet future threats and support mission needs.
(5) Investigates new affordable ship concepts and evaluates technologies necessary to support these concepts.
(6) Provides design methods and automated design tools to develop and evaluate ship concepts.
(7) Supports development of Initial Capabilities Documents (ICD) and analogous early requirements documents for future ships.
These efforts are done to support analysis; mission needs development and technology assessment in support of future fleet concepts and potential ship acquisition programs. These efforts are fundamental to the Navy's formulation of the future fleet requirements.
These efforts support and maintain naval ship design and engineering capabilities in the design phase of developing concept design tools, criteria and methods.

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 informs 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 CPSD include 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 and Cyber security. The research products developed by this project directly support and influence both in-service 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.

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. FY2015, FY2017, and FY2019-FY2024 efforts are financed under this RDT&E,N 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy	Date: March 2019
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*

Project 9999 (Congressional Add)- Continues efforts previously financed under the National Defense Sealift Fund (NDSF) BA 04 Project 3116 Strategic Sealift Research and Development (FY14 and prior) and RDT&E,N BA04, Project 3376 Strategic Sealift (FY2015 and FY2017)to develop new concepts and technologies which can be applied to or will enable future strategic sealift, and Seabasing systems.

B. Program Change Summary ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	36.891	89.419	82.387	-	82.387
Current President's Budget	23.856	74.603	81.846	-	81.846
Total Adjustments	-13.035	-14.816	-0.541	-	-0.541
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-14.816			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.461	0.000			
• Program Adjustments	0.000	0.000	0.218	-	0.218
• Rate/Misc Adjustments	0.001	0.000	-0.759	-	-0.759
• Congressional Directed Reductions Adjustments	-19.000	-	-	-	-
• Congressional Add Adjustments	6.425	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2018	FY 2019
Project: 9999: *Congressional Adds*		
Congressional Add: *Strategic Sealift Research and Development*	6.201	0.000
Congressional Add Subtotals for Project: 9999	6.201	0.000
Congressional Add Totals for all Projects	6.201	0.000

Change Summary Explanation

The FY 2020 funding request was reduced by $1.185 million to account for the availability of prior year execution balances.

The FY 2019 funding was reduced by 14.816 million for Future Surface Combatant Studies Excess Growth. (Proj 2196).

The FY 2018 funding was reduced by $19.000 million Congressional adjustment for Future Surface Combatant Studies Early to Need (Proj 2196).

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy	Date: March 2019
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*

The FY 2018 funding was increased by $6.425 million Congressional adjustment for Strategic Sealift Research and Development - Transfer from NDSF (Proj 9999).

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
2196: *Design, Tools, Plans and Concepts*	2.779	4.309	22.451	33.595	-	33.595	22.400	6.923	6.898	7.234	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides the foundation for an affordable and mission capable surface ship force. It also supports the next step in the development of a transformed naval force by accomplishing the pre-milestone A (especially pre-concept decision) efforts for all potential surface ships. These efforts are the required first step in the integration of total ship systems, including combat systems, weapons systems and Hull, Mechanical and Electrical (HM&E) systems. Inadequate early planning and ship concept formulation can result in down-stream design, construction and operational problems. A more subtle and severely negative impact of neglecting this early effort is that the "best" concepts and technologies may never even be considered and the greatest potential ship design advances never realized. Designs and technologies must consider how to meet the threat. This project supports this requirement.

This project funds concept development engineering, mission effectiveness analysis, force architecture analysis, and other analyses for formulation of future surface ship force structure along with development of the tools required to accomplish these efforts. Advanced ship concept studies, ship and ship systems technology assessments, and the development and upgrade of ship concept design and engineering tools, methods, and criteria are also funded in this project.

This project:
(1) Develops alternative surface ship force structure concepts including ships and unmanned vehicles.
(2) Evaluates the mission capability effectiveness and costs for these alternative surface fleet architectures.
(3) Performs fleet war fighting/mission effectiveness assessment studies.
(4) Identifies future surface ship requirements and characteristics necessary to meet future threats and support mission needs.
(5) Investigates new affordable ship concepts and evaluates technologies necessary to support these concepts.
(6) Provides design methods and automated design tools to develop and evaluate ship concepts.
(7) Supports development of Initial Capabilities Documents (ICD) and analogous early requirements documents for future ships.

These efforts are done to support analysis, mission needs development, and technology assessment in support of future fleet concepts and potential ship acquisition programs which are fundamental to the Navy's formulation of the future fleet requirements. These efforts support and maintain naval ship design and engineering capabilities in the design phase of developing concept design tools, criteria, and methods.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Ship Concepts and Mission Need Analysis	0.452	0.473	0.494	0.000	0.494
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Description: Develop ship concepts and perform analysis for potential ships and Force Architectures 5-30 years out in shipbuilding plan. Develop design methods and engineering tools to support the development of ship concepts and forces. ***FY 2019 Plans:*** Evaluate multi-mission effectiveness and costs, and develop ship concept designs. ***FY 2020 Base Plans:*** Continue development of ship and force designs and their evaluations for multi-mission effectiveness and costs. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** The FY 2020 increase covers expanded scope of continued and new development of ship and force designs as well as their evaluations for multi-mission effectiveness.					
Title: Future Surface Combatant Studies	3.857	21.978	33.101	0.000	33.101
Articles:	-	-	-	-	-
Description: This effort will lay the analytic foundation for the development of the Future Surface Combatant (FSC). Ships produced from this effort will fill critical gaps in the fleet in the 2030 timeframe created by the decommissioning of CG 47, DDG 51, and LCS 1/2 ships. Unmanned vehicle efforts will expand CONOPS to decouple mission capability from manned force structure. ***FY 2019 Plans:*** The resources necessary to support a shipyard engagement requires a significant increase in human capital (both government and contractor) to perform the requisite studies and analyses necessary to develop, finalize and evaluate system and mission requirements; and develop Milestone-documentation in support of Preliminary Design. Funding will also be used to continue to conduct ship design and unmanned vehicle studies to support analytic foundation for the development of a Future Surface Combatant Force. Develop FSCs and associated unmanned surface vehicles including mission payloads, sensors and handling systems. Define Top Level requirements for: modular unmanned system mission payloads, common control systems, ship concepts. ***FY 2020 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Continued development for the Large Surface Combatant (LSC) platform as a part of the Future Surface Combatant Force, including shipyard engagement. Technology integration studies to support the LSC as well as other platforms within the Surface Combatant Force required to deliver the Future Surface Combatant Force. Unmanned Surface Vehicle requirements evaluation and development. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** The FY 2020 increase is due to increased tasking associated of pre-preliminary design efforts for the Large Surface Combatant as part of the Future Surface Combatant Force. The Future Surface Combatant Force (FSCF) AOA team will be performing detailed analysis for threshold and objective requirements, and multiple concept formulation teams will be stood up to both develop the workforce as well as to develop concepts in order to shorten the acquisition timeline for future programs.					
Accomplishments/Planned Programs Subtotals	4.309	22.451	33.595	0.000	33.595

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• RDTEN/0204202N: *DDG-1000*	134.664	140.264	111.435	-	111.435	107.912	72.025	15.042	10.164	Continuing	Continuing
• RDTEN/0603512N: *Carrier Systems Development*	9.184	5.440	4.997	-	4.997	5.658	5.719	5.702	5.814	Continuing	Continuing
• RDTEN/0603564N: *Ship Preliminary Design/Feasibility*	18.369	13.348	69.084	-	69.084	75.480	75.544	55.217	21.810	Continuing	Continuing
• RDTEN/0604567N: *Ship Contract Design/Live Fire T&E*	65.857	71.062	46.809	-	46.809	61.547	55.036	55.612	56.726	Continuing	Continuing
• RDTEN/0603582N: *Combat System Integration*	15.471	16.351	17.251	-	17.251	16.015	15.509	15.826	16.142	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

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.

E. Performance Metrics

Quarterly Program Reviews

Monthly Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	C/CPFF	Various Contractors : Various	0.584	0.000		2.677	Feb 2019	3.571	Feb 2020	-		3.571	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : Various	0.906	0.000		1.000	Feb 2019	1.500	Feb 2020	-		1.500	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC DD : Dahlgren, VA	0.000	1.662	Jul 2018	1.275	Nov 2018	2.500	Nov 2019	-		2.500	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC PL : Philadelphia, PA	0.000	0.675	Jul 2018	1.250	Nov 2018	3.000	Nov 2019	-		3.000	Continuing	Continuing	Continuing
Systems Engineering	WR	SPAWAR : San Diego, CA	0.000	0.172	Jul 2018	0.000		1.500	Nov 2019	-		1.500	Continuing	Continuing	Continuing
Systems Engineering	WR	JHU APL : Baltimore, MD	0.000	0.000		0.000		2.500	Feb 2020	-		2.500	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC CD : Carderock, MD	0.000	0.612	Nov 2017	1.918	Oct 2018	4.000	Oct 2019	-		4.000	Continuing	Continuing	Continuing
Engineering Development	C/CPFF	Various Contractors : Various	0.171	0.000		7.127	Feb 2019	4.794	Feb 2020	-		4.794	Continuing	Continuing	Continuing
Engineering Development	WR	NSWC CD : Carderock, MD	1.069	0.917	Jul 2018	1.289	Nov 2018	4.000	Nov 2019	-		4.000	Continuing	Continuing	Continuing
Engineering Development	C/BA	NSWC : Various	0.000	0.000		1.610	Feb 2019	1.500	Feb 2020	-		1.500	Continuing	Continuing	Continuing
Demonstration & Evaluation	C/CPFF	Various Contractors : Various	0.029	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test & Evaluation	C/CPFF	Various Contractors : Various	0.020	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering Development	WR	NSWC PL : Philadelphia, PA	0.000	0.000		1.900	Nov 2018	2.500	Nov 2019	-		2.500	0.000	4.400	-
Engineering Development	WR	NSWC DD : Dahlgren, VA	0.000	0.000		2.405	Nov 2018	2.230	Nov 2019	-		2.230	0.000	4.635	-
Engineering Development	WR	NAVAIR : Patuxent River	0.000	0.196	Jun 2018	0.000		0.000		-		0.000	0.000	0.196	-
Systems Engineering	WR	NUWC : Newport	0.000	0.075	Jul 2018	0.000		0.000		-		0.000	0.000	0.075	-
		Subtotal	2.779	4.309		22.451		33.595		-		33.595	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Changes in Systems Engineering between FY19 and FY20 to support changing program priorities and needs to support continuing and future AoA's and RET's. This is reflected mainly in Large Surface Combatant Pre-Preliminary design, continuous efforts to investigate and define the future force, and in Top Level Requirements development for specific platforms as they begin to move from the concept phase to preliminary design. Some of the larger items will include LSC beginning hull-form development and model testing at warfare center facilities. The Future Surface Combatant Force (FSCF) AOA team will be performing detailed analysis to move from IOVs set out in the FSCF Initial Capabilities Document(ICD) to threshold and objective requirements, and multiple concept formulation teams will be stood up to both develop the workforce as well as to develop concepts in order to shorten the acquisition timeline for future programs.

This funding is essential to:
- Ensure participation in AoA/RET to examine the alternative concepts and feasibility of acquisition strategies
- Prepare required documents for Alternative Systems Reviews (ASR) after the AoA and Navy determines preferred material solution(s)
- Perform operational & technical analysis on preferred material solutions
- Establish program framework and strategies
- Prepare required Milestone A documents for preferred material solution(s)
- Develop technology development strategy

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	2.779	4.309		22.451		33.595		-		33.595	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*

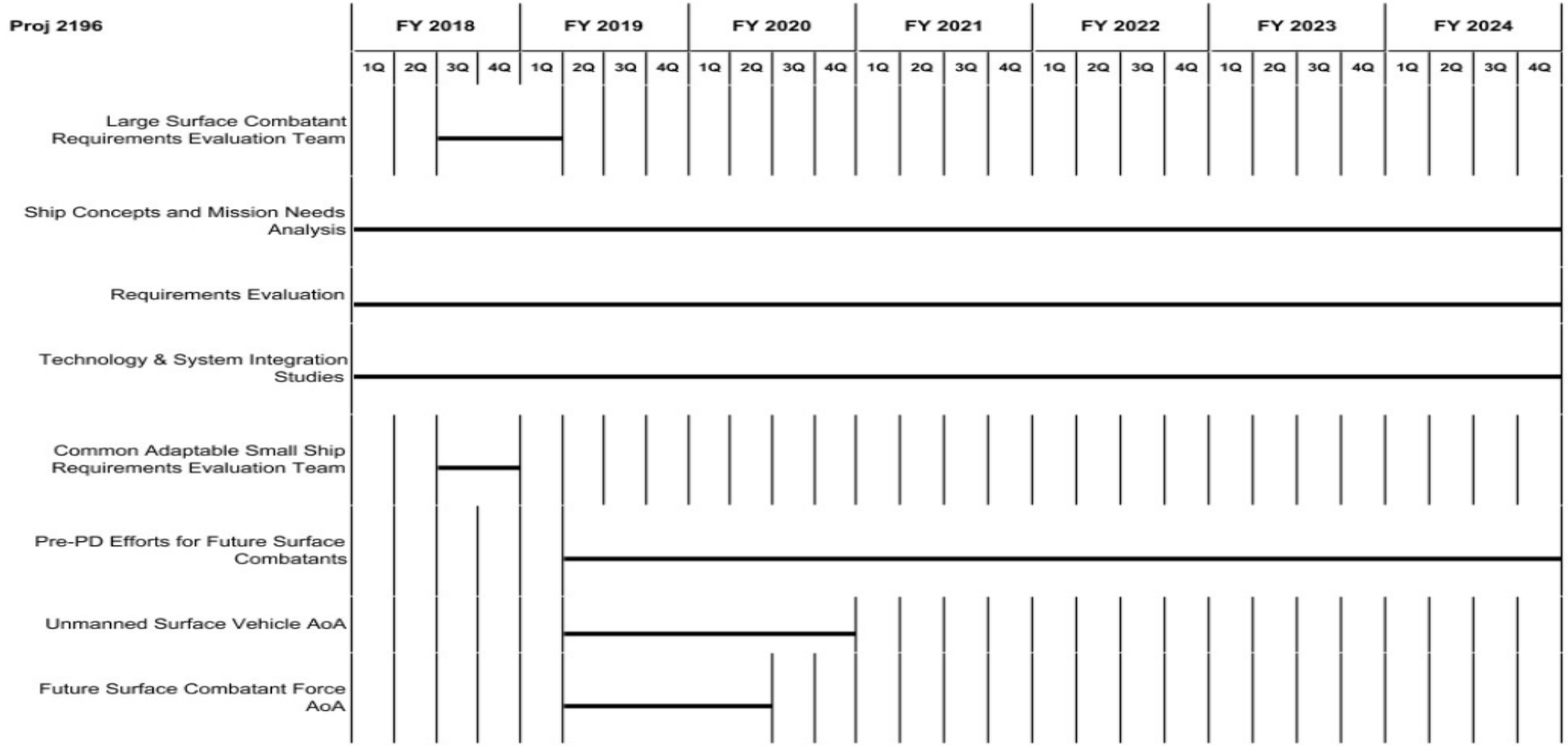

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 2196 / *Design, Tools, Plans and Concepts*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2196				
Large Surface Combatant Requirements Evaluation Team: Large Surface Combatant Requirements Evaluation Team	3	2018	1	2019
Ship Concepts and Mission Needs Analysis: Ship Concepts and Mission Needs Analysis	1	2018	4	2024
Requirements Evaluation: Requirements Evaluation	1	2018	4	2024
Technology & System Integration Studies: Technology & System Integration Studies	1	2018	4	2024
Common Adaptable Small Ship Requirements Evaluation Team: Common Adaptable Small Ship Requirements Evaluation Team	3	2018	4	2018
Pre-PD Efforts for Future Surface Combatants: Pre-PD Efforts for Future Surface Combatants	2	2019	4	2024
Unmanned Surface Vehicle AoA: Unmanned Surface Vehicle AoA	2	2019	4	2020
Future Surface Combatant Force AoA: Future Surface Combatant Force AoA	2	2019	2	2020

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
3161: *NAVSEA Tech Authority*	192.430	13.346	27.817	34.247	-	34.247	18.987	17.193	18.751	19.123	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

All Cross Platform System Development (CPSD) Pillars have been rebaselined in FY19 to better address CNO and NAVSEA Chief Engineer (SEA05) technical priorities. FY18 Pillars remain as requested in PRESBUD.

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 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. They 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. This 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 FY18, the CPSD program was rebaselined to account for a decreasing budget to the following functional areas:

CPSD 1.0 - Platform Concept Advanced Development
CPSD 2.0 - Platform Design and Certification Tools/Engineering and Tech Data Exchange Development
CPSD 3.0 - Ship Systems Engineering/Modular Ship Systems Development
CPSD 5.0 - High Speed Ships and Craft Engineering
CPSD 6.0 - Alternate Power Systems Engineering
CPSD 8.0 - Embedded Interoperability (I/O) Engineering
CPSD 9.0 - Mission Capability Systems Engineering
CPSD 13.0 - Cybersecurity
CPSD 14.0 - Future Surface Combatant Study

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*

In FY19, all CPSD Pillars have been rebaselined again to better address CNO and NAVSEA Chief Engineer (SEA05) technical priorities and shall be comprised of the following functional areas:

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
CPSD E - Unmanned Systems
CPSD F - Cybersecurity

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Platform Design and Certification Tools/Engineering and Tech Data Exchange (CPSD 2.0)	1.313	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: This effort supports the development of validation tools to certify the safety and mission capability of platform concepts and subsequently ships; establishes the integrated NAVSEA suite; and advances design methods, validation tools, and manpower tools to aid in rapid total platform definition and assessment.					
FY 2019 Plans: N/A					
FY 2020 Base Plans: N/A					
FY 2020 OCO Plans: N/A					
Title: Ship Systems Engineering /Modular Ship Systems Development (CPSD 3.0)	1.937	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: This effort supported Ship system development with a focus on technology transition, modularity and ship system technology integration to support ongoing ship modernization.					
FY 2019 Plans: N/A					
FY 2020 Base Plans:					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2020 OCO Plans:*** N/A					
Title: Alternative Power Systems Engineering (CPSD 6.0) ***Articles:*** ***Description:*** This effort investigates concepts for ships with alternative HM&E/power/propulsion systems evaluating effectiveness in mobility, survivability, hull, mechanical/electrical and in traditional and evolving warfare mission areas. ***FY 2019 Plans:*** N/A ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A	0.500 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: Mission Capability Systems Engineering (CPSD 9.0) ***Articles:*** ***Description:*** This effort supports the development of force-level systems engineering criteria and guidance at the Systems of Systems (SoS) and Family of Systems (FoS) level. This effort allows for the enhanced warfighter and system performance with reduced personnel costs with project costs savings. ***FY 2019 Plans:*** N/A ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A	1.500 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: Cybersecurity (CPSD 13.0) ***Articles:***	8.096 -	0.000 -	0.000 -	0.000 -	0.000 -

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Description: This supports the research, design, development and testing of cybersecurity solutions for shipboard Hull Mechanical and Electrical (HM&E) , Navigation Systems, Combat Systems, and other shipboard control systems. It also supports the development of specifications and standards for the cybersecurity of all Navy Control Systems (NCS). ***FY 2019 Plans:*** N/A ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A					
Title: Cybersecurity (CPSD F) ***Articles:***	0.000 -	16.739 -	20.953 -	0.000 -	20.953 -
Description: This supports the research, design, development, and testing of Cybersecurity solutions for shipboard Hull Mechanical and Electrical (HM&E), Navigation Systems, Combat Systems, and other shipboard control systems. It also supports the development of specifications and standards for the Cybersecurity of all Navy Control Systems (NCS). This pillar was created for FY19 and follow-on years and includes FY18 pillars CPSD 13.0. ***FY 2019 Plans:*** Efforts will concentrate on ensuring the stability and supportability of hardware and software to be deployed operationally. Long term ownership and maintenance of capabilities will be established. Since cybersecurity is a constantly evolving environment, efforts will continue to research, develop, and mature various cross-platform cybersecurity solutions including but not limited to: situational awareness tools, boundary defense capabilities, cyber security optimized network design, network reconnaissance and discovery, and operational indifference to malicious intent. Continue development of specifications and standards for cybersecurity of NCS. Cybersecurity implementation will be expanded to additional classes of ships on a schedule to be determined based on availability. ***FY 2020 Base Plans:***					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Continue engineering and development efforts to mature numerous cross-platform hardware and software cybersecurity solutions that will be rapidly deployed on afloat systems to increase Ship platforms and ships forces' ability to protect, detect, react to, and recover from Cybersecurity incidents on NCS's. The plan will fund the research and development of situational awareness tools, boundary defense capabilities, to include Government Off The Shelf (GOTS) tool Situational Awareness Boundary Enforcement and Response (SABER), cyber security optimized network design, network inspection and detection, and operational indifference to cybersecurity threats. This effort will also continue development of system specifications related to cybersecurity and development of enterprise standards for cybersecurity of NCS's. The implementation, which started with a targeted set of systems and platforms, will be expanded to additional classes of ships on a schedule to be determined based on availability. These solutions take system reliability, maintainability, and supportability requirements into account allowing lifecycle sustainment requirements to be developed and tailored to suit future needs and the constantly evolving Cybersecurity threat landscape This effort will continue to address Navy Cyber T&E policy and requirements through the development of USS Secure, a distributed system of system cyber test and assessment capability. USS Secure provides full mission assurance cyber risk assessments through vulnerability and resolution testing of operational platforms and systems. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** The increase from FY 2019 to FY 2020 is attributed to the continued maturation of numerous cross-platform hardware and software cybersecurity solutions.					
Title: Ship Technology Improvements (CPSD A)	0.000	1.572	1.787	0.000	1.787
Articles:	-	-	-	-	-
Description: This effort provides for 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 subsequently ships. ***FY 2019 Plans:*** Continue the development of ship construction technology improvements to reduce risk related to alternative technical architectures and designs. Complete support of tri-maran hull configuration performance evaluation. ***FY 2020 Base Plans:***					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Continue the development of ship construction technology improvements to reduce risk related to alternative technical architectures and designs. The Next Generation Cooling Systems (NGCS) to support our higher powered systems is a technology that will be improved. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to improvements required to the NGCS in order to support high powered systems.					
Title: Fleet Maintenance and Life Cycle Cost Reduction (CPSD B)	0.000	1.153	2.118	0.000	2.118
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 2019 Plans:*** Develop technologies to reduce in-service costs and technical risk associated with deployed technologies and systems. FY19 shall include a focus on technology improvements to reduce known in-service deficiencies. ***FY 2020 Base Plans:*** Develop technologies to reduce in-service costs and technical risk associated with deployed technologies and systems. FY20 shall include a focus on technology improvements to reduce known in-service deficiencies. A suite of Standardized Guidelines for design tools will be researched to establish criteria for determining when a Departure of Specification (DFS) should be written. Also, the integration issues within Combat Systems is another fleet maintenance criteria investigated which will improve life cycle costs. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase attributed to increased scope and added focus on technology improvements to reduce known in-service deficiencies as well as the assessment of integration issues within Combat Systems which will improve life cycle costs					
Title: Additive and Advanced Manufacturing Technology (CPSD C)	0.000	7.360	8.155	0.000	8.155
Articles:	-	-	-	-	-

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Description: This effort funds the development of additive manufacturing technologies, advanced coating techniques, topology optimization and materials characterization and selection. This pillar was created for FY19 and follow-on years and includes FY18 pillars CPSD 3.0. ***FY 2019 Plans:*** Funding transitioned from FY18 CPSD Pillar 3.0 will be utilized to analyze the logistical and engineering aspects of the application of 3D modeling and additive manufacturing (AM) technology for metal and polymer components. Further conduct material characterization and selection efforts for both additively manufactured and conventional materials. Additional funding provided in FY19 will be used to accelerate CNO additive manufacturing priorities and aligns them with technical authority requirements and products. Solutions will provide the foundation to increase Fleet readiness and improve warfighting capacity by enabling production at or near the point of need. Specific efforts include development of AM design and manufacturing standards; determining AM equipment performance requirements in dynamic environments (I.e. shipboard); ship integration requirements for AM equipment; and navy-specific AM industrial base requirements including digital file transfer and cyber. ***FY 2020 Base Plans:*** FY20 funding will be utilized to analyze the logistical and engineering aspects of the application of 3D modeling and additive manufacturing (AM) technology for metal and polymer components. Further conduct material characterization and selection efforts for both additively manufactured and conventional materials. Continue development of AM design and manufacturing standards; determining AM equipment performance requirements in dynamic environments (I.e. shipboard); ship integration requirements for AM equipment; and navy-specific AM industrial base requirements including digital file transfer and cyber. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increased funding is required to realize the cost-savings potential of additive manufacturing in maintenance facilities and improve sustainability by additively manufacturing parts at point of use.					
Title: Digital Framework/Electromagnetic Environment and Development (CPSD D)	0.000	0.405	0.631	0.000	0.631
Articles:	-	-	-	-	-

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Description: Develop an understanding and address the energy demands of the future fleet including power management and energy harvesting. ***FY 2019 Plans:*** Develop power management and distribution technologies. Complete ship display system testing. ***FY 2020 Base Plans:*** Continue development of power management and distribution technologies. Complete ship display system testing. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** The second year of development of power management and distribution technologies will involve more lab time and personnel than the year prior which will result in higher cost in FY20. The FY 2020 funding request was reduced by $0.013 million to account for the availability of prior year execution balances.					
Title: Unmanned Systems (CPSD E)	0.000	0.588	0.603	0.000	0.603
Articles:	-	-	-	-	-
Description: This effort funds the development and advancement of NAVY unmanned systems across various platforms. Note: Unmanned system efforts in years prior to FY19 were captured under CPSD Pillar 1.0. ***FY 2019 Plans:*** Efforts focus on the development of rapid deployment and swarming technologies (and the deployment of such weapon systems). Swarming technologies require funding to provide weapon system alternatives for both large and small scale unmanned platforms. Perform evaluation of multi-scaled vehicles for deployment from various host vessels. ***FY 2020 Base Plans:*** Continue efforts to focus on the development of rapid deployment and swarming technologies (and the deployment of such weapon systems). Swarming technologies require funding to provide weapon system					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
alternatives for both large and small scale unmanned platforms. Perform evaluation of multi-scaled vehicles for deployment from various host vessels. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to direction to develop rapid deployment and swarming technologies to aid in Naval capabilities.					
Accomplishments/Planned Programs Subtotals	13.346	27.817	34.247	0.000	34.247

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• RDTEN/0204202N: *DDG-1000*	140.500	161.264	132.337	-	132.337	133.781	88.573	16.617	0.000	Continuing	Continuing
• RDTEN/0603512N: *Carrier Systems Development*	9.296	5.440	5.401	-	5.401	5.531	5.637	5.778	0.000	Continuing	Continuing
• RDTEN/0603564N: *Ship Preliminary Design/ Feasibility Studies*	12.012	13.348	22.534	-	22.534	9.320	9.494	9.687	0.000	Continuing	Continuing
• RDTEN/0604567N: *Ship Contract Design/Live Fire T&E*	67.166	60.062	59.688	-	59.688	54.596	55.677	56.859	0.000	Continuing	Continuing
• RDTEN/0603582N: *Combat System Integration*	24.674	16.351	27.921	-	27.921	16.015	15.509	26.496	0.000	Continuing	Continuing

Remarks

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.

E. Performance Metrics

Quarterly Program Reviews

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	C/CPFF	Various Contractors : Various	18.436	0.000		0.000		3.655	May 2020	-		3.655	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC, NUWC, CDSA : Various	62.829	0.000		0.000		1.150	Feb 2020	-		1.150	Continuing	Continuing	Continuing
Engineering Development	C/CPFF	DRS : Stevensville, MD	3.249	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering Development	WR	NSWC, NUWC : Various	53.465	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Demonstration & Evaluation	WR	NSWC : Various	20.044	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Demonstration & Evaluation	WR	SPAWAR : Various	1.922	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test and Evaluation	WR	NSWC : Various	11.910	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC DD : Dahlgren, VA	0.400	0.200	May 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC CD : Carderock, MD	2.280	1.000	Dec 2017	1.050	Dec 2018	2.500	Nov 2019	-		2.500	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC PL : Philadelphia, PA	1.748	0.872	May 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	NRL : Washington, D.C.	0.092	0.046	Aug 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	ALION : Wahington, D.C.	0.240	0.120	May 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	CSC : Washington, D.C.	0.600	0.300	Jul 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	MIPR	Army Research Lab : Aberdeen Proving Ground, MD	0.150	0.075	Jul 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering Development	WR	NUWC Newport : Newport, RI	0.264	0.382	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering Development	WR	NUWC Keyport : Keyport, WA	0.300	0.150	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Development	WR	NSWC Crane : Crane, IN	0.338	0.169	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering Development	WR	NSWC DD : Dahlgren, VA	0.850	0.800	May 2018	0.500	Dec 2018	0.487	Dec 2019	-		0.487	Continuing	Continuing	Continuing
Engineering Development	WR	NSWC CD : Carderock, MD	1.589	1.775	Dec 2017	1.278	Dec 2018	1.250	Dec 2019	-		1.250	Continuing	Continuing	Continuing
Engineering Development	WR	NSWC PD : Philadelphia, PA	0.488	0.294	Nov 2017	0.500	Nov 2018	1.120	Nov 2019	-		1.120	Continuing	Continuing	Continuing
Engineering Development	C/CPFF	CSC : Washington, D.C.	0.200	0.100	Jul 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering Development	C/CPFF	JHU APL : Baltimore, MD	0.400	0.200	May 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Demonstration & Evaluation	WR	NUWC Keyport : Keyport, WA	0.100	0.050	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Demonstration & Evaluation	WR	NSWC CD : Carderock, MD	0.500	0.250	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Demonstration & Evaluation	WR	NSWC PD : Philadelphia, PA	0.250	0.125	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Cybersecurity Technologies	C/CPFF	JHU/APL : Baltimore, MD	3.168	3.555	May 2018	1.500	May 2019	3.000	May 2020	-		3.000	Continuing	Continuing	Continuing
Cybersecurity Technologies	C/CPFF	MITRE : McLean, VA	0.608	0.500	Oct 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Cybersecurity Technologies	MIPR	PNNL DOE : Richland, WA	0.600	0.300	Jul 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering Development	WR	NSWC Carderock : Carderock, MD	0.000	0.000		1.330	Oct 2018	0.000		-		0.000	0.000	1.330	-
Engineering Development	WR	NUWC Keyport Washington : Keyport, WA	0.000	0.000		0.020	Oct 2018	0.000		-		0.000	0.000	0.020	-
Engineering Development	WR	PHD NSWC : Port Hueneme, CA	0.060	0.030	May 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Development	C/CPFF	Various Contractors : Various	0.000	0.000		5.350	Oct 2018	0.000		-		0.000	0.000	5.350	-
Cybersecurity Technologies	WR	NUWC Keyport : Keyport, WA	0.000	0.000		0.350	Dec 2018	1.704	Dec 2019	-		1.704	0.000	2.054	-
Cybersecurity Technologies	WR	NUWC Newport : Newport, RI	0.000	0.000		0.600	Dec 2018	2.000	Dec 2019	-		2.000	0.000	2.600	-
Cybersecurity Technologies	WR	NSWC Crane : Crane, IN	0.000	0.000		0.350	Dec 2018	0.350	Dec 2019	-		0.350	0.000	0.700	-
Cybersecurity Technologies	WR	NSWC DD : Dahlgren, VA	0.000	0.000		7.600	Dec 2018	7.126	Dec 2019	-		7.126	0.000	14.726	-
Cybersecurity Technologies	WR	NSWC PD : Philadelphia, PA	0.000	0.000		2.100	Dec 2018	2.935	Dec 2019	-		2.935	0.000	5.035	-
Systems Engineering	WR	NSWC IH : Indian Head, MD	0.000	0.000		0.000		1.000	Nov 2019	-		1.000	0.000	1.000	-
Systems Engineering	WR	NSWC PD : Philadelphia, PA	0.000	0.000		0.000		0.500	Nov 2019	-		0.500	0.000	0.500	-
Systems Engineering	WR	NUWC Keyport : Keyport, WA	0.000	0.000		0.000		0.500	Nov 2019	-		0.500	0.000	0.500	-
		Subtotal	187.080	11.293		22.528		29.277		-		29.277	Continuing	Continuing	N/A

Remarks

Product development cost growth identified for Systems Engineering in FY20 is required to support CPSD efforts. Additive Manufacturing and traditional materials technology are high growth areas in FY20 that will provide increased Fleet readiness and improve warfighting capacity by enabling production at or near the point of need.
Cybersecurity Technologies reflects a growth in funding to FY20 levels for continued development of cybersecurity technologies, tools and test capabilities to address existing Fleet cybersecurity gaps and enhance warfighting defensive cybersecurity capability needs. The addition of funding dedicated for cyber test and assessment capabilities, development of cybersecurity T&E policy and directives, and development of requirements supports Navy's goal to certify enhancements to NCS's, modernization of NCS's and innovative technologies prior to operational use.

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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NUWC Newport : Newport, RI	0.200	0.100	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC DD : Dahlgren, VA	0.200	0.100	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC CD : Carderock, MD	0.500	0.250	Dec 2017	0.500	Dec 2018	0.500	Dec 2019	-		0.500	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC PD : Philadelphia, PA	0.250	0.175	Oct 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	G2OPS : Virginia Beach, VA	0.500	0.250	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	JHU/APL : Baltimore, MD	0.200	0.100	May 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Cybersecurity Technologies	WR	NSWC CD : Carderock, MD	0.000	0.000		1.489	Dec 2018	1.080	Dec 2019	-		1.080	0.000	2.569	-
Cybersecurity Technologies	MIPR	SPAWAR : Various	0.000	0.000		0.250	Dec 2018	0.250	Dec 2019	-		0.250	0.000	0.500	-
Cybersecurity Technologies	C/CPFF	Various Contractors : Various	0.000	0.000		1.500	Jan 2019	1.990	Jan 2020	-		1.990	0.000	3.490	-
		Subtotal	1.850	0.975		3.739		3.820		-		3.820	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Planning & Execution	WR	NSWC DD : Dahlgren, VA	0.040	0.020	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Cybersecurity Technologies	WR	NSWC CD : Carderock, MD	0.700	0.250	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Cybersecurity Technologies	C/CPFF	JHU/APL : Baltimore, MD	0.550	0.100	May 2018	0.500	May 2019	0.500	May 2020	-		0.500	Continuing	Continuing	Continuing
		Subtotal	1.290	0.370		0.500		0.500		-		0.500	Continuing	Continuing	N/A

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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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PM/Travel	Allot	NAVSEA HQ : Washington, DC	0.749	0.050	Dec 2017	0.050	Dec 2018	0.150	Dec 2019	-		0.150	Continuing	Continuing	Continuing
DAWDF	Various	Not Specified : Not Specified	0.145	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Mgmt Spt	WR	NUWC Newport : Newport, RI	0.064	0.032	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Mgmt Spt	WR	NSWC DD : Dahlgren, VA	0.200	0.100	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Mgmt Spt	WR	NSWC CD : Carderock, MD	0.500	0.250	Nov 2017	0.250	Nov 2018	0.250	Nov 2019	-		0.250	Continuing	Continuing	Continuing
Program Mgmt Spt	C/CPFF	CSC : Washington, D.C.	0.210	0.105	Jul 2018	0.250	Nov 2018	0.250	Nov 2019	-		0.250	Continuing	Continuing	Continuing
Program Mgmt Spt	C/FFP	ARDEC : Picatinny Arsenal, NJ	0.200	0.100	Jun 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Mgmt Spt	MIPR	PNNL DOE : Richland, WA	0.142	0.071	Jul 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Cybersecurity Technologies	C/CPFF	CSC : Washington, D.C.	0.000	0.000		0.250	Dec 2018	0.000		-		0.000	0.000	0.250	-
Cybersecurity Technologies	C/CPFF	Alion : Washington, D.C.	0.000	0.000		0.250	Dec 2018	0.000		-		0.000	0.000	0.250	-
		Subtotal	2.210	0.708		1.050		0.650		-		0.650	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	192.430	13.346		27.817		34.247		-		34.247	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*

Fiscal Year	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
CPSD A Ship Technology Improvements	**CPSD 2.0** **CPSD 5.0**				**CPSD A**																							
CPSD B Fleet Maintenance and Life Cycle Cost Reduction	**CPSD 8.0** **CPSD 9.0**				**CPSD B**																							
CPSD C Additive and Advanced Manufacturing Technology	**CPSD 3.0**				**CPSD C**																							
CPSD D Digital Framework Electromagnetic Environment and Development	**CPSD 6.0**				**CPSD D**																							
CPSD E Unmanned Systems	**CPSD 1.0**				**CPSD E**																							
CPSD F Cybersecurity	**CPSD 13.0**				**CPSD F**																							

Legend: CPSD Pillars FY18 & Prior | CPSD Pillars FY19+

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
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	2019	4	2024
CPSD B - Fleet Maintenance and Life Cycle Cost Reduction	1	2019	4	2024
CPSD C - Additive and Advanced Manufacturing Technology	1	2019	4	2024
CPSD D - Digital Framework/Electromagnetic Environment and Development	1	2019	4	2024
CPSD E - Unmanned Systems	1	2019	4	2024
CPSD F - Cybersecurity	1	2019	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
3376: *Strategic Sealift*	9.746	0.000	6.335	6.004	-	6.004	6.127	6.250	6.377	6.505	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.

Note: 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. FY2015, FY2017, and FY2019-FY2024 efforts are financed under this program element, RDT&E,N BA04, Project 3376 (Strategic Sealift).

FY2018 efforts are financed under RDT&E,N BA 04 Project 9999 (Congressional Adds)

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Shipboard Crane Systems/Shipboard Cargo Systems	0.000	3.800	2.550	0.000	2.550
Articles:	-	-	-	-	-
FY 2019 Plans: Continue investigation and demonstration of shipboard crane/cargo system improvements including weapons handling and transfer capabilities.					
FY 2020 Base Plans: Continue investigation and demonstration of shipboard crane/cargo system improvements including weapons handling and transfer capabilities.					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement: Decrease of 1.25M from FY 2019 to FY 2020 is due to completion of MPS Crane Modernization & Capability Enhancement project.					
Title: Sealift Concept Development	0.000	0.750	0.800	0.000	0.800

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Articles:	-	-	-	-	-
FY 2019 Plans: Continue providing Sealift Research and Technology development and program guidance. Conduct Sealift ship concept development and analysis. ***FY 2020 Base Plans:*** Continue providing Sealift Research and Technology development and program guidance. Conduct Sealift ship concept development and analysis. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of 0.05M from FY 2019 to FY 2020 is due to anticipated rate increases and labor required to support large scale demonstration planned for FY 2020.					
Title: Lighter/HSV Seabase to Shore Cargo Transfer	0.000	0.385	1.254	0.000	1.254
Articles:	-	-	-	-	-
FY 2019 Plans: Continue development and demonstration of at-sea vehicle transfer capability. ***FY 2020 Base Plans:*** Continue development and demonstration of at-sea vehicle transfer capability. FY 2020 plans continue to support the EPF V-22 Interface Project. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of 0.869M from FY 2019 to FY 2020 is to account for implementation of capabilities for EPF in development in FY 2018 and FY 2019.					
Title: Advanced Tools	0.000	1.400	1.400	0.000	1.400
Articles:	-	-	-	-	-
FY 2019 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Continue investigation and demonstration of individual and multi-ship motion measurement and prediction. ***FY 2020 Base Plans:*** Continue investigation and demonstration of individual and multi-ship motion measurement and prediction. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** No Increase/Decrease from FY 2019 to FY 2020.					
Accomplishments/Planned Programs Subtotals	0.000	6.335	6.004	0.000	6.004

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Not applicable for SEALIFT R&D efforts.

E. Performance Metrics

Annual Program Review.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Shipboard Crane Systems/ Shipboard Cargo Systems	WR	Various Contractors : Various	2.561	0.000		3.800	Jan 2019	2.550	Jan 2020	-		2.550	Continuing	Continuing	Continuing
Sealift Concept Development	WR	Various Contractors : Various	3.125	0.000		0.750	Jan 2019	0.800	Jan 2020	-		0.800	Continuing	Continuing	Continuing
Lighter/HSV Seabase to Shore Cargo Transfer	WR	Various Contractors : Various	4.060	0.000		0.385	Jan 2019	1.254	Jan 2020	-		1.254	Continuing	Continuing	Continuing
Advanced Tools	WR	Various : Various	0.000	0.000		1.400	Jan 2019	1.400	Jan 2020	-		1.400	Continuing	Continuing	Continuing
		Subtotal	9.746	0.000		6.335		6.004		-		6.004	Continuing	Continuing	N/A

Remarks

1. Prior Years column only includes FY2015 and FY2017 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 date of incremental funding execution.
3. FY18 amounts are in Congressional add RDTE PRJ 9999 at end of exhibit set.

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	9.746	0.000		6.335		6.004		-		6.004	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3376 / *Strategic Sealift*

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
1319/ 04	PE 0603563N, Ship Concept Advanced Design	3376 / Strategic Sealift

Note: FY2016 and prior years (FY14 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, FY 2019 and out-year funds are financed under this program element. FY 2018 efforts are financed under RDT&E N BA 04, Project 9999 (Congressional Adds).

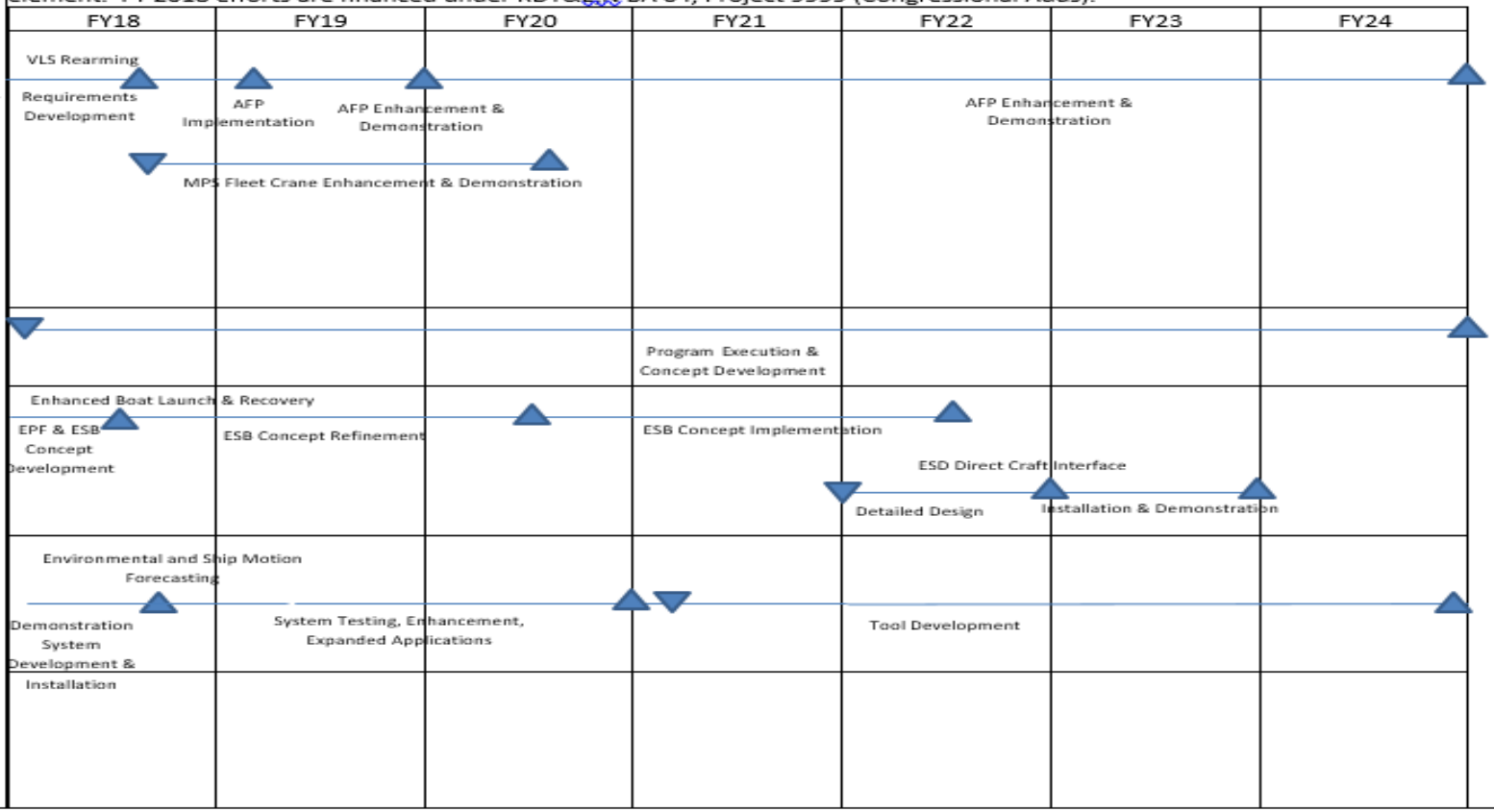


Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3376 / *Strategic Sealift*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3376				
Shipboard Crane Systems/Shipboard Cargo Systems	1	2018	4	2024
Sealift Concept Development	1	2018	4	2024
Lighter/HSV Seabase to Shore Cargo Transfer	1	2018	4	2023
Advanced Tools	1	2018	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
4037: *Common Hull Auxiliary Multi-Mission Platform (CHAMP)*	0.000	0.000	18.000	8.000	-	8.000	0.000	0.000	0.000	0.000	0.000	26.000
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 designs with a common hull to reduce life cycle costs, leverage tailored payloads, and stabilize the industrial base. Identified CHAMP missions include: Sealift, Aviation Intermediate Maintenance support, Medical Services, Command & Control, and Submarine Tending. FY 2019 funding supports Industry Studies to inform requirements definition, provide early industry engagement and follow-on assessment across CHAMP mission functionality.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: CHAMP Design and Total Ship Integration	0.000	18.000	8.000	0.000	8.000
Articles:	-	-	-	-	-
FY 2019 Plans: CHAMP Design and Total Ship Integration - Issued Industry Studies RFP, conducted source selection and award Industry Studies contracts. Industry Studies included trade studies and analysis on main machinery, reconfigurable system arrangements, and ship and reconfigurable system interfaces. Developed and initiated initial acquisition planning documents. Coordinated with NAVSEA, MSC, PEO Ships, CNO, ASN RD&A, OSD and Fleet.					
FY 2020 Base Plans: Continue Industry Studies and award Preliminary Design options. Preliminary Designs will allow for Shipbuilders to begin developing a baseline design, leading to quality contract and details designs. Continue development of Acquisition planning documents. Develop and continue to update the Top Level Requirements document, provide engineering oversight for Industry Studies and Preliminary Designs.					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement: Decrease of $10M from FY 2019 to FY 2020 reflects Industry Studies contracts awarded in FY 2019.					
Accomplishments/Planned Programs Subtotals	0.000	18.000	8.000	0.000	8.000

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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)*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Develop and issue Industry Studies RFP for award of multiple contracts in FY19 to participate in trade studies and analysis on main machinery, reconfigurable system arrangements, and ship and reconfigurable system interfaces. Based on the results of the tradeoffs, develop preliminary designs and inform Government requirements definition for future ship acquisition.

E. Performance Metrics

None.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Design Trade-off Tool & Design Studies	WR	NSWC : MD	0.000	0.000		1.000	Oct 2018	1.500	Oct 2019	-		1.500	0.000	2.500	-
Industry Studies / PDs	C/FFP	Various : Various	0.000	0.000		10.700	Jan 2019	4.500	Jan 2020	-		4.500	0.000	15.200	-
Engineering Support	Various	Various : Various	0.000	0.000		5.000	Oct 2018	1.500	Oct 2019	-		1.500	0.000	6.500	-
		Subtotal	0.000	0.000		16.700		7.500		-		7.500	0.000	24.200	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
RFP & Program Documentation Development	Various	Various : Various	0.000	0.000		1.300	Oct 2018	0.500	Oct 2019	-		0.500	0.000	1.800	-
		Subtotal	0.000	0.000		1.300		0.500		-		0.500	0.000	1.800	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		18.000		8.000		-		8.000	0.000	26.000	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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-4, RDT&E Schedule Profile: PB 2020 Navy		Date: February 2019
Appropriation/Budget Activity 1319/ 04	**R-1 Program Element (Number/Name)** PE 0603563N, Ship Concept Advanced Design	**Project (Number/Name)** 4037 / *Common Hull Auxiliary Multi-Mission Platform (CHAMP)*

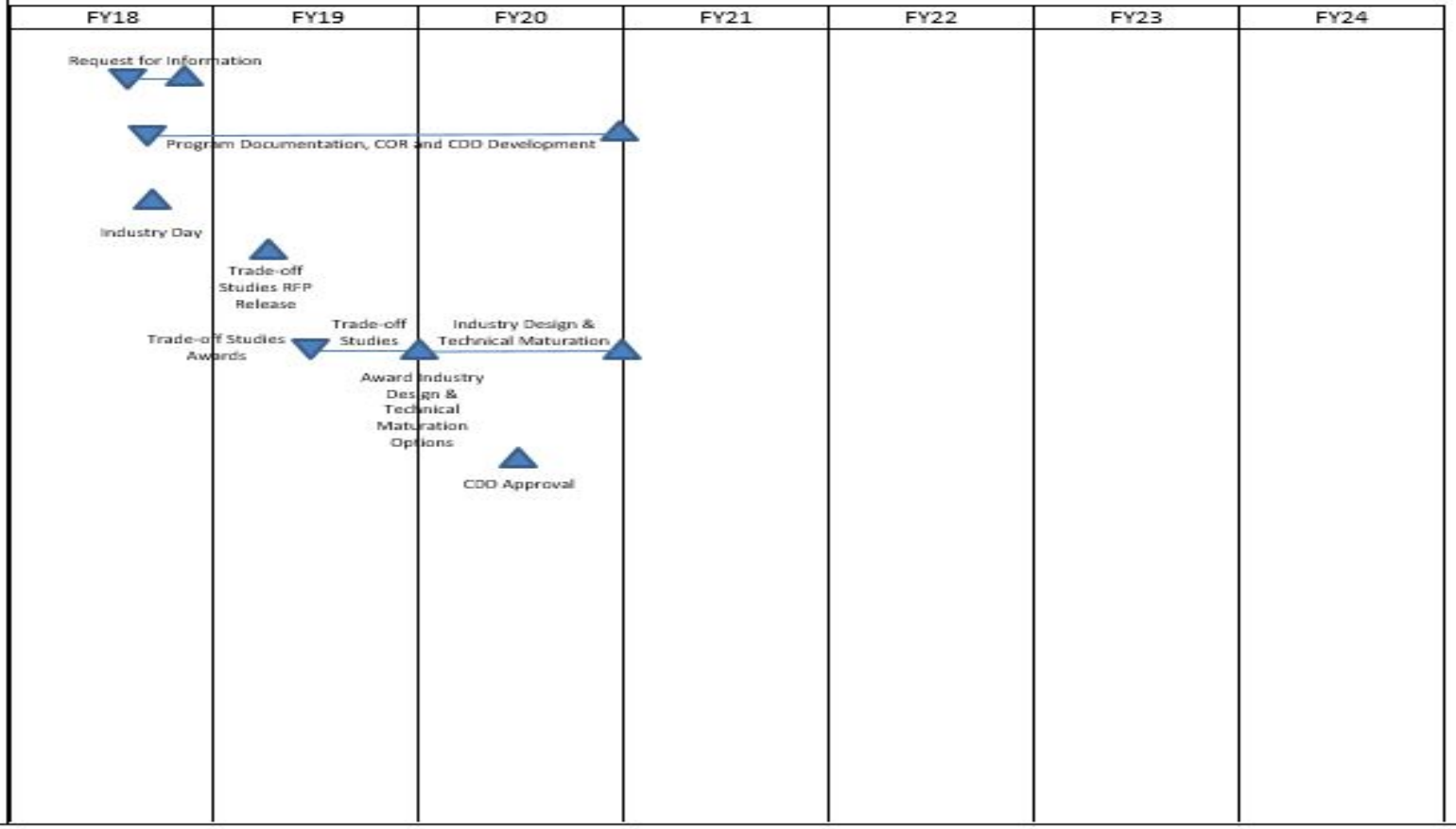


Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 4037 / *Common Hull Auxiliary Multi-Mission Platform (CHAMP)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 4037				
Request for Information	3	2018	4	2018
Program Documentation, COR & CDD Development	3	2018	4	2020
Industry Day	3	2018	3	2018
Trade-Off Studies RFP Release	2	2019	2	2019
Trade-off Studies	2	2019	4	2019
Industry Design & Technical Maturation	4	2019	4	2020
CDD Approval	3	2020	3	2020

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.000	6.201	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.201
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 9999 Congressional Adds - 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.

Note: FY2016 and FY2014 and prior year efforts were financed under the National Sealift Defense Fund (NDSF) BA 04, Project 3116 (Strategic Sealift Research and Development). FY2015, FY2017 and FY2019-FY2024 efforts are financed under RDT&E,N BA 04, Project 3376 (Strategic Sealift).

FY2018 efforts are being funded under RDT&E,N BA04, Project 9999 (Congressional Adds) due to transfer from NDSF to RDT&E,N.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019
Congressional Add: Strategic Sealift Research and Development	6.201	0.000
FY 2018 Accomplishments: Shipboard Crane Systems/Shipboard Cargo Systems: Continued investigation and demonstration of shipboard crane/cargo system improvements including weapons handling and transfer capabilities. $2.200M Sealift Concept Development: Continued providing Sealift Research and Technology development and program guidance. Conduct Sealift ship concept development and analysis. $1.700M Lighter/HSV Seabase to Shore Cargo Transfer: Continued development and demonstration of at-sea vehicle transfer capability. $1.411M Advanced Tools: Continued investigation and demonstration of individual and multi-ship motion measurement and prediction. $0.890M		
FY 2019 Plans: N/A		
Congressional Adds Subtotals	6.201	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 9999 / *Congressional Adds*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Not applicable for SEALIFT R&D efforts.

E. Performance Metrics

Annual Program Review.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 9999 / *Congressional Adds*

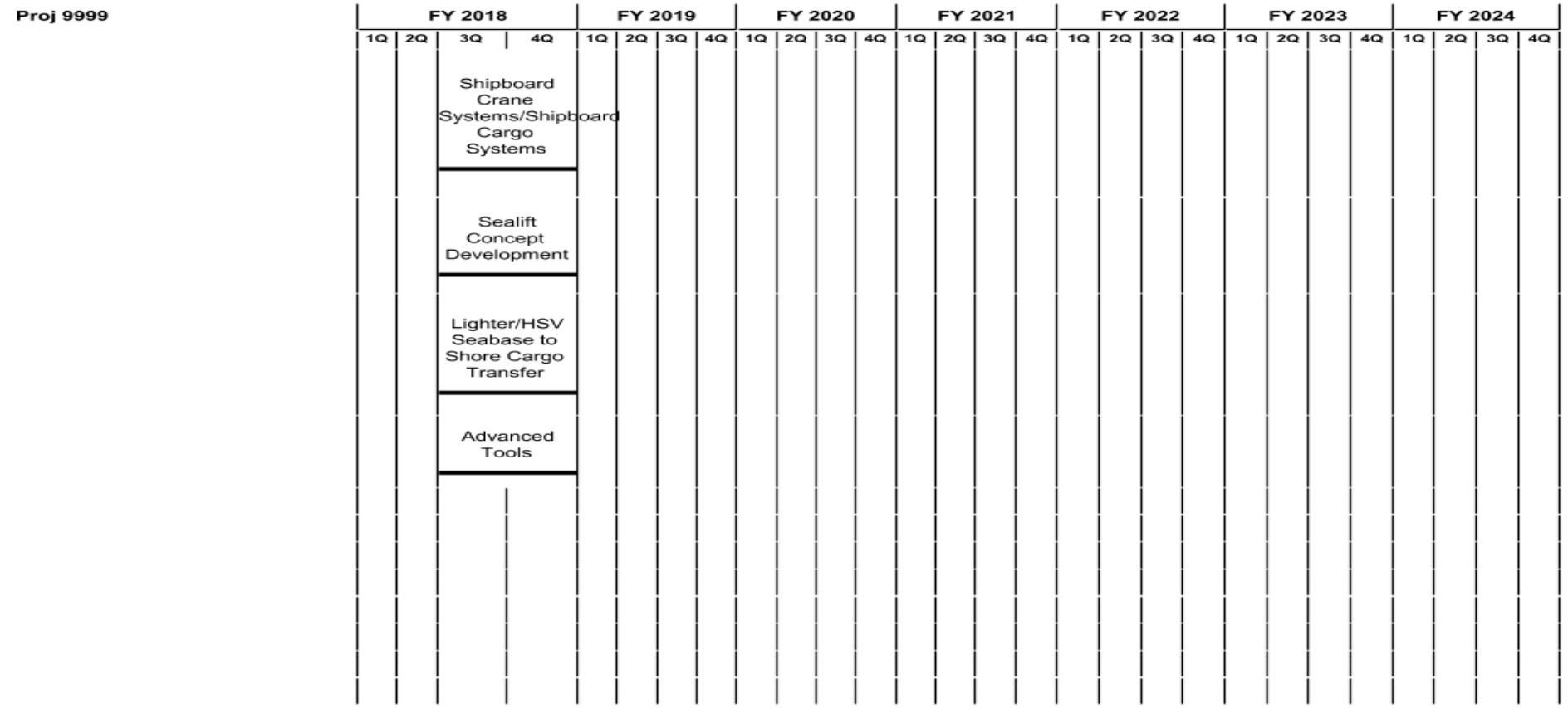
Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Shipboard Crane Systems/ Shipboard Cardo Systems	Various	Various : Various	0.000	2.200	Jun 2018	0.000		0.000		-		0.000	0.000	2.200	-
Sealift Concept Development	Various	Various : Various	0.000	1.700	Jun 2018	0.000		0.000		-		0.000	0.000	1.700	-
Lighter/HSV Seabase to Shore Cargo Transfer	Various	Various : Various	0.000	1.411	Jun 2018	0.000		0.000		-		0.000	0.000	1.411	-
Advanced Tools	Various	Various : Various	0.000	0.890	Jun 2018	0.000		0.000		-		0.000	0.000	0.890	-
		Subtotal	0.000	6.201		0.000		0.000		-		0.000	0.000	6.201	N/A

	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	6.201		0.000		0.000		-		0.000	0.000	6.201	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 9999 / *Congressional Adds*



2020PB - 0603563N - 9999

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
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				
Shipboard Crane Systems/Shipboard Cargo Systems	3	2018	4	2018
Sealift Concept Development	3	2018	4	2018
Lighter/HSV Seabase to Shore Cargo Transfer	3	2018	4	2018
Advanced Tools	3	2018	4	2018