Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
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 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	180.150	10.446	14.590	36.891	-	36.891	47.662	46.089	32.878	11.239	Continuing	Continuing
2196: *Design, Tools, Plans and Concepts*	1.907	0.440	0.432	23.309	-	23.309	38.149	36.886	23.051	0.921	Continuing	Continuing
3161: *NAVSEA Tech Authority*	172.650	10.006	9.947	13.582	-	13.582	9.513	9.203	9.827	10.318	Continuing	Continuing
3376: *Strategic Sealift*	5.593	0.000	4.211	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.804

A. Mission Description and Budget Item Justification

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, and improved engineering prototypes and solutions for ships that may become part of the shipbuilding plan.

Project 2196 - This project supports the next step in the development of a transformed naval force by accomplishing Pre Milestone A (especially pre-concept) decision efforts for all potential surface ships, specifically future surface combatants and unmanned surface vehicles supporting the Future Surface Combatant (FSC) Analysis of Alternatives (AoA). These efforts are the required first step in the definition and integration of total ship systems, including combat systems, weapons systems and Hull, Mechanical and Electrical (HM&E) systems. This project funds concept development engineering, mission effectiveness analysis, and other analyses for formulation of future surface ship force structure along with development of the tools to accomplish these efforts. Efforts include 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.

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 Platform Design and Certification Tools, Ship Systems Engineering/Modular Ship Systems Development, Alternative Hull, Mechanical & Electrical Systems Engineering, Mission Capability, Affordability and Sustainment Engineering and Cybersecurity. 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 continue to directly support interoperability testing and certification requirements for deploying battle groups, development and certification of Operator Guidance tools for surface combatants (CG 47, DDG 51, DDG 1000), flexible and modular warship analyses, and development of specifications and processes to reduce platform production costs.

Tasks within this project include R&D efforts focused on increasing sustainment technologies for aluminum combatants, tools to execute the CG 47 Cracking Task Force recommendations, 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 funded under NDSF BA 04 Project 3116 Strategic Sealift Research and Development. FY2018 and out-year efforts are funded under National Defense Sealift Fund (NDSF) BA 04 Project 3116 Strategic Sealift Research and Development.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	10.459	14.590	17.274	-	17.274
Current President's Budget	10.446	14.590	36.891	-	36.891
Total Adjustments	-0.013	0.000	19.617	-	19.617
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.013	0.000			
• Program Adjustments	0.000	0.000	19.460	-	19.460
• Rate/Misc Adjustments	0.000	0.000	0.157	-	0.157

Change Summary Explanation

FY 2018 increased by $19.617 million net for program changes, specifically:
$+15.385 million for Future Surface Combatant development;
$+7.500 million for DDG Flt III ECP;
$+3.000 million cybersecurity vulnerability and resolution test capability;
and $-6.425 million appropriation transfer to NDSF (National Defense Sealift Fund).

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy											Date: May 2017	
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 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
2196: *Design, Tools, Plans and Concepts*	1.907	0.440	0.432	23.309	-	23.309	38.149	36.886	23.051	0.921	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, and other analyses for formulation of future surface ship force structure along with development of the tools 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 the 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. These efforts are fundamental to the Navy's formulation of the future fleet requirements.

These efforts supports and maintains naval ship design and engineering capabilities in the design phase of developing concept design tools, criteria and methods.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Ship Concepts and Mission Need Analysis	0.440	0.432	0.452	0.000	0.452
Articles:	-	-	-	-	-
Description: Develop ship concepts and perform analysis for potential ships and Force Architecture 10-30 years out in shipbuilding plan. ***FY 2016 Accomplishments:*** Improved tools that relate ship costs to ship capabilities. Explored concepts of surface ships that can deploy swarms of unmanned autonomous systems, and react to such swarms deployed by the enemy. Analyzed the impact of distributed high energy storage systems on ship design. ***FY 2017 Plans:*** Participate in force architecture and war-gaming efforts to improve the understanding of performance and mobility of future surface combatants. ***FY 2018 Base Plans:*** Initiate study into an Engineering Change Proposal for the Destroyer Payload Module (DPM) to combat emerging threats as defined in the Defense Planning Guidance. ***FY 2018 OCO Plans:*** N/A					
Title: Future Surface Combatant Studies	0.000	0.000	22.857	0.000	22.857
Articles:	-	-	-	-	-
Description: This effort will lay the analytic foundation for the development of the Future Surface Combatant (FSC) post Capabilities Based Assessment. Ships produced from this effort will fill critical gaps in the fleet in the 2030 timeframe created by the decommisioning 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 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Conduct ship design and unmanned vehicle studies to support analytic foundation for the development of a Future Surface Combatant post Capabilities Based Assessment (CBA). Develop FSCs and associated unmanned surface vehicles including mission payloads, sensors and handling systems. Define technical requirements for: modular unmanned system mission payloads, common control systems, launch & recovery (L&R) system concepts Develop technical requirements and standards for unmanned system autonomous operations, define host ship technical requirements and interface standards ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.440	0.432	23.309	0.000	23.309

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTEN/0204202N: *DDG-1000*	101.724	45.642	140.500	-	140.500	120.412	15.966	0.000	0.000	0.000	1,759.234
• RDTEN/0603512N: *Carrier Systems Development*	8.213	7.605	9.296	-	9.296	5.918	5.778	5.904	6.024	Continuing	Continuing
• RDTEN/0603564N: *Ship Preliminary Design/Feasibility*	3.213	15.805	12.012	-	12.012	18.990	17.976	10.842	10.132	Continuing	Continuing
• RDTEN/0604567N: *Ship Contract Design/Live Fire T&E*	38.060	63.311	67.166	-	67.166	69.618	53.390	55.474	56.550	Continuing	Continuing
• RDTEN/0603582N: *Combat System Integration*	32.020	26.530	24.674	-	24.674	26.110	25.672	25.360	25.707	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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: FY 2018 Navy			Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	C/CPFF	Various Contractors : Various	0.584	0.000		0.000		0.715	Feb 2018	-		0.715	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : Various	0.906	0.000		0.000		1.375	Feb 2018	-		1.375	Continuing	Continuing	Continuing
Engineering Development	C/CPFF	Various Contractors : Various	0.171	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering Development	WR	NSWC CD : Carderock, MD	0.197	0.440	May 2016	0.432	Jan 2017	8.000	May 2018	-		8.000	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	C/CPFF	Systems Planning and Alalysis Inc : NAVSEA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Test & Evaluation / Systems Engineering	C/CPFF	Various Contracts : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Systems Engineering	WR	NSWC DD : Dahlgren, VA	0.000	0.000		0.000		5.500	Nov 2017	-		5.500	0.000	5.500	-
Systems Engineering	WR	NSWC PL : Philadelphia, PA	0.000	0.000		0.000		3.125	Nov 2017	-		3.125	0.000	3.125	-
Systems Engineering	WR	SPAWAR : San Diego, CA	0.000	0.000		0.000		1.375	Nov 2017	-		1.375	0.000	1.375	-
Systems Engineering	WR	JHU APL : Baltimore, MD	0.000	0.000		0.000		3.219	Feb 2018	-		3.219	0.000	3.219	-
		Subtotal	1.907	0.440		0.432		23.309		-		23.309	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1.907	0.440		0.432		23.309		-		23.309	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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*

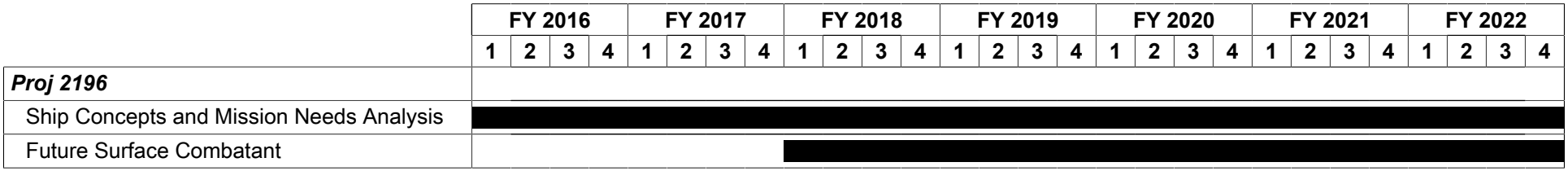

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 2196 / *Design, Tools, Plans and Concepts*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2196				
Ship Concepts and Mission Needs Analysis	1	2016	4	2022
Future Surface Combatant	1	2018	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3161: *NAVSEA Tech Authority*	172.650	10.006	9.947	13.582	-	13.582	9.513	9.203	9.827	10.318	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

All CPSD Pillars have been rebaselined to align with the decreased budget.

A. Mission Description and Budget Item Justification

This project has been established to support NAVSEA Technical Authority through coordinated, collaborative, cross-platform systems development in advanced capabilities across business lines through development of processes, procedures, and tools necessary to develop future surface ship force structures; advanced surface ship and unmanned surface vehicle concepts; interoperability; and development of systems level engineering criteria and options to support the current fleet, future pre-acquisition and advanced concepts mission needs analysis, SCN, and R&D planning. The objective is 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 (Government or commercial) 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.

All CPSD Pillars have been rebaselined to align with the decreased budget and are comprised of 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: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Platform Concept Advanced Development (CPSD 1.0)	0.410	0.159	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: This effort directly supports the Navy's ability to understand risk and associated cost of surface and expeditionary warfare assets; Unmanned Surface Vehicle (USV) design and analysis. ***FY 2016 Accomplishments:*** Provided guidance to initial adopters of radically new manufacturing technology. ***FY 2017 Plans:*** Support the execution of cross platform aspects and specification development for Unmanned Vehicles (UXV's) modular future surface combatants. Support innovation by examining capabilities that may be mixed and matched to various platforms, depending on the mission with regard to payloads. ***FY 2018 Base Plans:*** N/A. ***FY 2018 OCO Plans:*** N/A.					
Title: Platform Design and Certification Tools/Engineering and Tech Data Exchange (CPSD 2.0)	0.431	0.244	1.313	0.000	1.313
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 2016 Accomplishments:*** Validated the use of modeling and simulation to test hardware to big and powerful to safely test by conventional physical methods. ***FY 2017 Plans:*** Develop preliminary specification and design requirements for the use of new materials and material configurations on surface combatants. Develop an analytical tool for surface ship Operator Guidance in representative sea states. Simulate ship motions in prototypical environmental conditions sufficient to develop a broad spectrum of operating conditions likely to be seen by current and planned surface combatants. ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
*Note - Increase from FY17 to FY18 ($1.069M) is required to develop additional analytical capabilities (i.e. tools to simulate various sea states and ship motions when operating in those sea states as comparable to the various hull form platforms). Additionally, preliminary design specifications must be developed to establish material selection criteria. Support the development of validation tools to certify the safety and mission capability of platform concepts. This effort advances platform design methods, design validation tools, manpower tools and tools to aid in rapid total platform definition. ***FY 2018 OCO Plans:*** N/A.					
Title: Ship Systems Engineering /Modular Ship Systems Development (CPSD 3.0)	1.138	1.742	2.093	0.000	2.093
Articles:	-	-	-	-	-
Description: This effort supports Ship system development with a focus on technology transition, modularity and ship system technology integration to support ongoing ship modernization. ***FY 2016 Accomplishments:*** Performed root cause analysis of aluminum plate cracking. Performed Sea Trials for Insulation Seam Tape tasking that replaces costly current processes using hazardous materials. Completed Electromagnetic Probability of Effect Tool (EMPAT), Adhesively Bonded Pins and specific Additive Manufactured characterization testing which will transition to be developed into a specification document. ***FY 2017 Plans:*** Continue R&D of methods to rapidly quantify the effects of corrosion on steel structure (stiffeners and plates). Analyze the logistical and engineering aspects of the application of 3D modeling and printing technology in metals and powders. Continue assessment, verification and validation of repair and technology solutions for aluminum cracking. ***FY 2018 Base Plans:*** Continue to analyze the logistical and engineering aspects of the application of 3D modeling and printing technology in metals and powders. Continue assessment of technology solutions for aluminum cracking. ***FY 2018 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A.					
Title: High Speed Ships and Craft Engineering (CPSD 5.0) ***Articles:*** ***Description:*** This effort supports the development of concepts for future high speed ships that promise improved mission effectiveness in mobility, survivability and warfare mission areas. ***FY 2016 Accomplishments:*** Developed analytical tools for the generation of surface ship Operator Guidance products. Completed Validation, Verification & Accreditation (VV&A) of the simulation tool for characterizing ship motions in environments not within ability to test. Simulated runs of ship motions in prescribed environmental conditions required to develop the surface ship Operator Guidance. Supported the integration of the Operator Guidance capability on the ship and associated training guidance for the ship's crew. Supported the survivability of testing and analysis. ***FY 2017 Plans:*** Complete the accreditation of the TEMPEST software tool to support the Surface Ship Operator Guidance. ***FY 2018 Base Plans:*** N/A. ***FY 2018 OCO Plans:*** N/A.	2.723 -	0.204 -	0.000 -	0.000 -	0.000 -
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 2016 Accomplishments:*** N/A. ***FY 2017 Plans:***	0.000 -	0.158 -	0.500 -	0.000 -	0.500 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Develop energy harvesting technology for mobility and primary mission systems. Continue to investigate concepts supporting Forward Deployed Energy (FDE) techniques for refueling unmanned vehicles. Develop preliminary requirements for surface combatant weapon and HM&E module interfaces. ***FY 2018 Base Plans:*** Investigate trimaran ship component model data to support the Project Agreement with Japan. ***FY 2018 OCO Plans:*** N/A.					
Title: Embedded Interoperability (I/O) Engineering (CPSD 8.0)	0.304	0.084	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: This effort establishes and executes a dedicated process for evaluating the interoperability performance of warfare systems early in the acquisition cycle, prior to certification. Embedded I/O ensures that fewer mission critical system failures degrade the ultimately fielded war fighting capability. Focus on emerging Open Architecture warfare systems, including LCS Class. ***FY 2016 Accomplishments:*** Explored methods of further reducing costs of achieving certified interoperable systems. Researched ways to standardize and reduce the number of surface electro-optic and infrared systems and their interfaces. Further improved the generation of strike group interoperability and the generation of Capabilities and Limitations documents. Investigated and promoted interoperability between Electro Optic and Infrared (EO/IR) Systems in fleet. ***FY 2017 Plans:*** Continue to explore methods of further reducing costs of achieving certified interoperable systems. Continue exploring ways to standardize and reduce the number of surface electro-optic and infrared systems and their interfaces. ***FY 2018 Base Plans:*** N/A. ***FY 2018 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A.					
Title: Mission Capability Systems Engineering (CPSD 9.0) ***Articles:*** ***Description:*** This effort supports the development of force-level systems engineering criteria and guiance 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 2016 Accomplishments:*** N/A. ***FY 2017 Plans:*** Study concepts of modularity and open architecture in combat systems and propose parallel concepts for hull, mechanical, and electrical systems.Develop towed array performance assessment tool linking array element operational status and mission profile. ***FY 2018 Base Plans:*** *Note - Increase from FY17 to FY18 ($0.962M) is required to fund the development of an overarching open architecture concept that couples hull, mechanical and electrical (HM&E) systems to develop a "system of systems". The concept of open architecture must be implemented in the design of the future surface fleet to ensure cross platform and multi-mission capability. The concept of modularity will allow the Navy to have greater flexibility which decreases program costs (do more with less). Validate required mission performance against fully functional and degraded array conditions. ***FY 2018 OCO Plans:*** N/A.	0.000 -	0.538 -	1.500 -	0.000 -	1.500 -
Title: Cybersecurity (CPSD 13.0) ***Articles:*** ***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).	5.000 -	4.818 -	8.176 -	0.000 -	8.176 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Researched and developed various cross-platform cybersecurity solutions including but not limited to: situational awareness tools, boundary defense capabilities, cyber security optimized network design, and operational indifference to malicious intent. Researched new techniques or methodologies to ensure secure network traffic (authenticated and encrypted) for Navy Control Systems (NCS). Conducted test and evaluation of cybersecurity technologies in shipboard operational environment. Continued development of specifications and standards for Cybersecurity of NCS. ***FY 2017 Plans:*** 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 spiral development and test and evaluation of cybersecurity technologies in shipboard environment. Expand capability beyond Destroyer Fleet to Carriers. Continue development of specifications and standards for Cybersecurity of NCS. ***FY 2018 Base Plans:*** *Note - Increase from FY17 to FY18 ($3.358M) is required to develop, implement, and operate a whole ship system of systems cyber test bed (USS SECURE). There is urgent need to secure Navy control systems and there is also insufficient production ready applications available that meet Navy requirements. In order to have a common cybersecurity solution adopted, it is essential that the tools and testing capabilities be available quickly. The additional funds will significantly accelerate development of deployable capabilities. 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 spiral development and test and evaluation of cybersecurity technologies in shipboard environment. Continue to mature capability for Destroyer Fleet and Carriers and expand capability to Amphibious Fleet. Continue development of specifications and standards for Cybersecurity of NCS. ***FY 2018 OCO Plans:*** N/A.					
Title: Future Surface Combatant Studies (CPSD 14.0)	0.000	2.000	0.000	0.000	0.000
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: This effort will lay the analytic foundation for the development of the Future Surface Combatant (FSC) post Capabilities Based Assessment. Ships produced from this effort will fill critical gaps in the fleet in the 2030 timeframe created by the decommisioning 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 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Development of pre-milestone A activities (especially pre-concept) in support of all future surface combatants and unmanned surface vehicles, specifically the FSC Analysis of Alternatives (AoA). ***FY 2018 Base Plans:*** The FSC studies project moves to PU 2196 in FY18. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	10.006	9.947	13.582	0.000	13.582

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTEN/0204202N: *DDG-1000*	101.724	45.642	140.500	-	140.500	120.412	15.966	0.000	0.000	0.000	1,759.234
• RDTEN/0603512N: *Carrier Systems Development*	8.213	7.605	9.296	-	9.296	5.918	5.778	5.904	6.024	Continuing	Continuing
• RDTEN/0603564N: *Ship Preliminary Design/ Feasibility Studies*	3.213	15.805	12.012	-	12.012	18.990	17.976	10.842	10.132	Continuing	Continuing
• RDTEN/0604567N: *Ship Contract Design/Live Fire T&E*	38.060	63.311	67.166	-	67.166	69.618	53.390	55.474	56.550	Continuing	Continuing
• RDTEN/0603582N: *Combat System Integration*	32.020	26.530	24.674	-	24.674	26.110	25.672	25.360	25.707	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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.

E. Performance Metrics

Quarterly Program Reviews

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	C/CPFF	Various Contractors : Various	18.436	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC, NUWC, CDSA : Various	62.829	0.000		0.000		0.000		-		0.000	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	0.000	0.200	May 2016	0.200	May 2017	0.200	May 2018	-		0.200	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC CD : Carderock, MD	0.000	0.800	Dec 2015	1.650	Dec 2016	1.000	Dec 2017	-		1.000	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC PL : Philadelphia, PA	0.000	0.874	May 2016	0.874	May 2017	0.872	May 2018	-		0.872	Continuing	Continuing	Continuing
Systems Engineering	WR	NRL : Washington, D.C.	0.000	0.046	Aug 2016	0.046	Aug 2017	0.046	Aug 2018	-		0.046	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	ALION : Wahington, D.C.	0.000	0.120	May 2016	0.120	May 2017	0.120	May 2018	-		0.120	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	CSC : Washington, D.C.	0.000	0.300	Jul 2016	0.300	Jul 2017	0.300	Jul 2018	-		0.300	Continuing	Continuing	Continuing
Systems Engineering	MIPR	Army Research Lab : Aberdeen Proving Ground, MD	0.000	0.075	Jul 2016	0.075	Jul 2017	0.075	Jul 2018	-		0.075	Continuing	Continuing	Continuing
Engineering Development	WR	NUWC Newport : Newport, RI	0.000	0.132	Dec 2015	0.132	Dec 2016	0.382	Dec 2017	-		0.382	Continuing	Continuing	Continuing
Engineering Development	WR	NUWC Keyport : Keyport, WA	0.000	0.150	Nov 2015	0.150	Nov 2016	0.150	Nov 2017	-		0.150	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Development	WR	NSWC Crane : Crane, IN	0.000	0.169	Dec 2015	0.169	Dec 2016	0.169	Dec 2017	-		0.169	Continuing	Continuing	Continuing
Engineering Development	WR	NSWC DD : Dahlgren, VA	0.000	0.425	May 2016	0.425	May 2017	0.800	May 2018	-		0.800	Continuing	Continuing	Continuing
Engineering Development	WR	NSWC CD : Carderock, MD	0.000	1.324	Dec 2015	0.265	Dec 2016	1.775	Dec 2017	-		1.775	Continuing	Continuing	Continuing
Engineering Development	WR	NSWC PD : Philadelphia, PA	0.000	0.244	Nov 2015	0.244	Nov 2016	0.294	Nov 2017	-		0.294	Continuing	Continuing	Continuing
Engineering Development	C/CPFF	CSC : Washington, D.C.	0.000	0.100	Jul 2016	0.100	Jul 2017	0.100	Jul 2018	-		0.100	Continuing	Continuing	Continuing
Engineering Development	C/CPFF	JHU APL : Baltimore, MD	0.000	0.200	May 2016	0.200	May 2017	0.200	May 2018	-		0.200	Continuing	Continuing	Continuing
Demonstration & Evaluation	WR	NUWC Keyport : Keyport, WA	0.000	0.050	Mar 2016	0.050	Mar 2017	0.050	Mar 2018	-		0.050	Continuing	Continuing	Continuing
Demonstration & Evaluation	WR	NSWC CD : Carderock, MD	0.000	0.250	Dec 2015	0.250	Dec 2016	0.250	Dec 2017	-		0.250	Continuing	Continuing	Continuing
Demonstration & Evaluation	WR	NSWC PD : Philadelphia, PA	0.000	0.125	Dec 2015	0.125	Dec 2016	0.125	Dec 2017	-		0.125	Continuing	Continuing	Continuing
Cybersecurity Technologies	C/CPFF	JHU/APL : Baltimore, MD	0.000	1.585	May 2016	1.585	May 2017	3.791	May 2018	-		3.791	Continuing	Continuing	Continuing
Cybersecurity Technologies	C/CPFF	MITRE : McLean, VA	0.000	0.304	Oct 2015	0.304	Oct 2016	0.500	Oct 2017	-		0.500	Continuing	Continuing	Continuing
Cybersecurity Technologies	MIPR	PNNL DOE : Richland, WA	0.000	0.300	Jul 2016	0.300	Jul 2017	0.300	Jul 2018	-		0.300	Continuing	Continuing	Continuing
Engineering Development	WR	PHD NSWC : Port Hueneme, CA	0.000	0.030	May 2016	0.030	May 2017	0.030	May 2018	-		0.030	Continuing	Continuing	Continuing
		Subtotal	171.855	7.803		7.594		11.529		-		11.529	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NUWC Newport : Newport, RI	0.000	0.100	Dec 2015	0.100	Dec 2016	0.100	Dec 2017	-		0.100	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC DD : Dahlgren, VA	0.000	0.100	Mar 2016	0.100	Mar 2017	0.100	Mar 2018	-		0.100	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC CD : Carderock, MD	0.000	0.250	Dec 2015	0.250	Dec 2016	0.250	Dec 2017	-		0.250	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC PD : Philadelphia, PA	0.000	0.125	Oct 2015	0.125	Oct 2016	0.175	Oct 2017	-		0.175	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	G2OPS : Virginia Beach, VA	0.000	0.250	Mar 2016	0.250	Mar 2017	0.250	Mar 2018	-		0.250	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	JHU/APL : Baltimore, MD	0.000	0.100	May 2016	0.100	May 2017	0.100	May 2018	-		0.100	Continuing	Continuing	Continuing
		Subtotal	0.000	0.925		0.925		0.975		-		0.975	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Planning & Execution	WR	NSWC DD : Dahlgren, VA	0.000	0.020	Dec 2015	0.020	Dec 2016	0.020	Dec 2017	-		0.020	Continuing	Continuing	Continuing
Test Planning & Execution	WR	NSWC CD : Carderock, MD	0.000	0.450	Dec 2015	0.250	Dec 2016	0.250	Dec 2017	-		0.250	Continuing	Continuing	Continuing
Test Planning & Execution	C/CPFF	JHU/APL : Baltimore, MD	0.000	0.100	May 2016	0.450	May 2017	0.100	May 2018	-		0.100	Continuing	Continuing	Continuing
		Subtotal	0.000	0.570		0.720		0.370		-		0.370	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PM/Travel	Allot	NAVSEA HQ : Washington, DC	0.650	0.050	May 2016	0.050	Dec 2016	0.050	Dec 2017	-		0.050	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	0.000	0.032	Dec 2015	0.032	Dec 2016	0.032	Dec 2017	-		0.032	Continuing	Continuing	Continuing
Program Mgmt Spt	WR	NSWC DD : Dahlgren, VA	0.000	0.100	Dec 2015	0.100	Dec 2016	0.100	Dec 2017	-		0.100	Continuing	Continuing	Continuing
Program Mgmt Spt	WR	NSWC CD : Carderock, MD	0.000	0.250	Nov 2015	0.250	Nov 2016	0.250	Nov 2017	-		0.250	Continuing	Continuing	Continuing
Program Mgmt Spt	C/CPFF	CSC : Washington, D.C.	0.000	0.105	Jul 2016	0.105	Jul 2017	0.105	Jul 2018	-		0.105	Continuing	Continuing	Continuing
Program Mgmt Spt	C/FFP	ARDEC : Picatinny Arsenal, NJ	0.000	0.100	Jun 2016	0.100	Jun 2017	0.100	Jun 2018	-		0.100	Continuing	Continuing	Continuing
Program Mgmt Spt	MIPR	PNNL DOE : Richland, WA	0.000	0.071	Jul 2016	0.071	Jul 2017	0.071	Jul 2018	-		0.071	Continuing	Continuing	Continuing
		Subtotal	0.795	0.708		0.708		0.708		-		0.708	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	172.650	10.006		9.947		13.582		-		13.582	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*

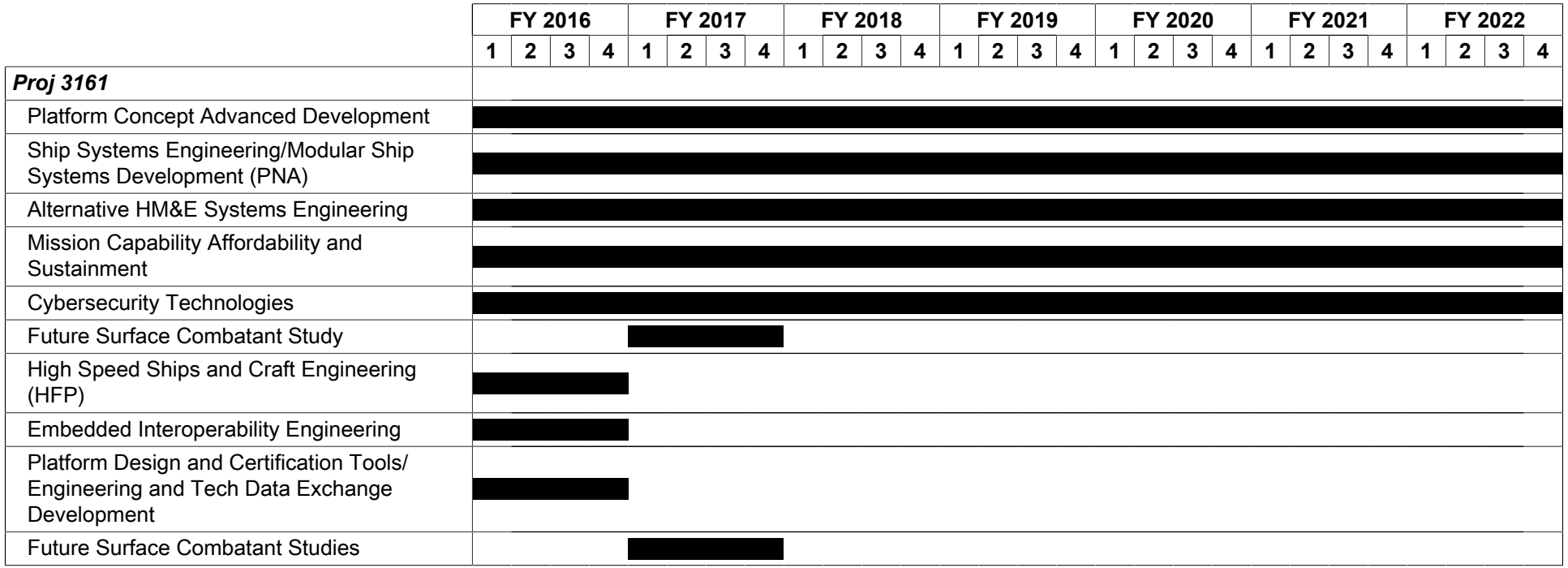

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3161 / *NAVSEA Tech Authority*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3161				
Platform Concept Advanced Development	1	2016	4	2022
Ship Systems Engineering/Modular Ship Systems Development (PNA)	1	2016	4	2022
Alternative HM&E Systems Engineering	1	2016	4	2022
Mission Capability Affordability and Sustainment	1	2016	4	2022
Cybersecurity Technologies	1	2016	4	2022
Future Surface Combatant Study	1	2017	4	2017
High Speed Ships and Craft Engineering (HFP)	1	2016	4	2016
Embedded Interoperability Engineering	1	2016	4	2016
Platform Design and Certification Tools/Engineering and Tech Data Exchange Development	1	2016	4	2016
Future Surface Combatant Studies	1	2017	4	2017

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3376: *Strategic Sealift*	5.593	0.000	4.211	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.804
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: FY 2016 and prior year (FY 14 and earlier) efforts were financed under the National Sealift Defense Fund (NDSF) BA 04, Project 3116 (Strategic Sealift Research and Development. FY 2017 efforts are financed under this program element. FY2018 and out-year funds are reinstated under the National Defense Sealift Fund (NDSF) BA 04, Project 3116 (Strategic Sealift Research and Development).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Shipboard Crane Systems/Shipboard Cargo Systems	0.000	1.311	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: FY17 - Continued investigation and demonstration of shipboard crane/cargo system improvements. Demonstrated weapons transfer feasibility.					
FY 2018 Base Plans: N/A					
FY 2018 OCO Plans: N/A					
Title: Sealift Concept Development	0.000	1.900	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** FY17 - Continued providing Advanced Planning, Sealift Research, and Technology development and program guidance. Conducted Sealift ship concept development and analysis. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Lighter/HSV Seabase to Shore Cargo Transfer ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** FY17 - Continued development and demonstration of at-sea vehicle transfer capability. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	0.000 -	1.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	0.000	4.211	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• NDSF/0900 (3116): *Strategic Sealift Research and Development*	5.502	0.000	6.425	-	6.425	6.354	6.025	6.151	6.276	0.000	90.062

Remarks

D. Acquisition Strategy

Not applicable for SEALIFT R&D efforts.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603563N / *Ship Concept Advanced Design*	**Project (Number/Name)** 3376 / *Strategic Sealift*

E. Performance Metrics

Annual Program Review.