Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy												Date: February 2018
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 0604707N *I SEW Architecture/Eng Support*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	264.184	20.104	42.851	7.230	-	7.230	8.160	9.024	9.220	9.407	Continuing	Continuing
0798: *Allied/Coalition Interoperability and Information Dominance (ACIID)*	32.608	0.943	1.096	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	34.647
2144: *Space & Elec Warfare Engineering*	209.167	12.879	33.716	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	255.762
2147: *ISR Architecture*	0.000	1.482	1.587	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.069
2356: *Maritime Concept Generation & Development*	22.409	4.800	6.452	7.230	-	7.230	8.160	9.024	9.220	9.407	Continuing	Continuing

Note

Beginning in FY19, Allied/Coalition Interoperability and Information Dominance (ACIID) (now called Allied/Coalition Maritime Environment (ACME)) Project 0798, Space & Electronic Warfare (SEW) Engineering Project 2144, and Intelligence, Surveillance, and Reconnaissance (ISR) Architecture Project 2147 were realigned from PE 0604707N SEW Architecture/ENG Support to PE 0606355N Warfare Innovation Management.

A. Mission Description and Budget Item Justification

The CGCD project (2356) focuses on the generation, development and validation of warfighting concepts, Concept of Operations (CONOPS) and doctrine in order to eliminate war fighting gaps. Naval Warfare Development Command (NWDC) also manages the Fleet Experimentation program (formerly Sea Trial). In FY2019 the project will execute a number of new experimentations in the areas of Electromagnetic Maneuver Warfare (EMW), Mine Warfare, Naval Integrated Fires, and Unmanned systems and conduct experiments (war simulations, Modeling & Simulation (M&S), at-sea events) to develop emerging Naval concepts.

The ACIID project (0798), now called ACME, promotes interoperability with allied and coalition forces by facilitating maritime interoperability in both processes and communication systems, including emerging capabilities, to counter growing high-end asymmetric threats.

The SEW Engineering project (2144) is a systems engineering non-acquisition program to develop, test, implement Technical Authority (TA) products, and validate Naval Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR), Business Information Technology (IT), and Space System architectures to support naval, Joint and Coalition missions across normal, contested, and degraded cyber/operational environments. The objective of this project is carried out by multiple tasks that ensure development and delivery of naval Information Warfare (IW) capabilities that are well-integrated, interoperable, secure, and resilient to meet validated warfighting requirements.

The Intelligence, Surveillance, and Reconnaissance (ISR) Architecture project (2147) is intended to guide system of systems capability development and promote interoperability across Navy ISR programs, as well as interoperability and alignment with Department of Defense (DoD)-wide enterprise initiatives including Joint

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy	Date: February 2018
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 0604707N / *SEW Architecture/Eng Support*

Information Environment (JIE) and Intelligence Community (IC) Information Technology Environment (ITE). This effort to develop integrated ISR architectures will also help instill systems engineering discipline and standardization across the Navy ISR Enterprise and provide a means by which to assess ISR Program of Record (PoR) progress in conforming to a single Navy architecture.

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	23.971	42.851	32.518	-	32.518
Current President's Budget	20.104	42.851	7.230	-	7.230
Total Adjustments	-3.867	0.000	-25.288	-	-25.288
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.504	0.000			
• Program Adjustments	0.000	0.000	-25.189	-	-25.189
• Rate/Misc Adjustments	0.000	0.000	-0.099	-	-0.099
• Congressional General Reductions Adjustments	-0.043	-	-	-	-
• Congressional Directed Reductions Adjustments	-3.320	-	-	-	-

Change Summary Explanation

The FY 2019 funding request for project 2144 Space and Elec Warfare Engineering was reduced by $2.222 million to account for the availability of prior year execution balances. This updated control is now reflected in under Program Element 0606355N WARFARE INNOVATION MANAGEMENT.
$4.165 millions of FY19 funding was transferred from project 2144 Space and Elec Warfare Engineering for Risk management Framework.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604707N / *SEW Architecture/Eng Support*	Project (Number/Name) 0798 / *Allied/Coalition Interoperability and Information Dominance (ACIID)*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
0798: *Allied/Coalition Interoperability and Information Dominance (ACIID)*	32.608	0.943	1.096	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	34.647
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Project title changed as follows: Allied/Coalition Maritime Environment (ACME) (Previously called Allied/Coalition Interoperability and Information Dominance (ACIID) in FY17 and prior.)

A. Mission Description and Budget Item Justification

The ACME program advances Information Warfare (IW) (to include Command, Control, Communications, Computers; Intelligence, Surveillance and Reconnaissance (C4ISR); Electronic Warfare (EW); and Cyber Warfare), interoperability with Australia, Canada, New Zealand, United Kingdom, United States (AUSCANNZUKUS), North Atlantic Treaty Organization (NATO), and other Allied and Coalition partners. The program determines maritime operational gaps with our allies, identifies Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) solutions with the potential to fill those gaps, and assesses these solutions and associated concepts of operation in laboratory and at-sea environments. The ACME program includes integration and testing in support of joint and Allied war fighting capabilities, including interoperability testing of IW equipment. Allied and joint interoperability is critical for future maritime operations, especially as the United States Navy (USN) expands Internet Protocol (IP) networking throughout the fleet via Consolidated Afloat Networks and Enterprise Services (CANES), Next Generation Networks (NGEN), Mission Partner Environment/ Future Mission Networking (MPE/FMN), the U.S. Battlefield Information Collection and Exploitation System - eXtended (BICES-X), and with the Joint Information Environment (JIE).

Currently, IP connectivity with AUSCANNZUKUS and other Allied/Coalition forces is limited, requiring extensive backhaul through ashore infrastructure. Higher bandwidth solutions suitable for use over tactical networks require development and assessment for emerging coalition and joint interoperability requirements, such as Maritime Domain Awareness (MDA), Network Operations Without Shore (NOWS), Satellite Communications (SATCOM) Denied, Degraded, Intermittent and Low-bandwidth (DDIL) operations, and to counter Anti-Access Area Denial (A2/AD) threats. Increases in data throughput are required for the effective exchange of rich IW data sets and services via Service Oriented Architectures (SOA) within the limitations of High Frequency (HF), Ultra-High Frequency (UHF), and other portions of the radio frequency spectrum, coupled with appropriate Information Assurance and Computer Network Defense (IA/CND) mechanisms. Development and assessment of potential solutions will integrate improved IP capabilities with the Advanced Digital Network Systems (ADNS) and existing international standards (e.g. Allied Communications Publication 200, NATO Standardization Agreements 5066 and 4691). The continued development and refinement of advanced tactical networking technologies and protocols, to include Low Probability of Intercept (LPI), Low Probability of Detection (LPD), and Anti-Jam (AJ) capabilities as well as Automatic Link Establishment (ALE) standards, will provide for a significant improvement in secure data sharing within, and between, coalition maritime elements.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Advanced Relay Capabilities	0.943	1.096	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 0798 / *Allied/Coalition Interoperability and Information Dominance (ACIID)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Articles:	-	-	-	-	-
FY 2018 Plans: - Develop and refine advanced tactical networking and communication capabilities that facilitate Denied, Degraded, Intermittent and Low-bandwidth (DDIL) operations, including polar environments, which counter Anti-Access Area Denial (A2/AD) threats and promote Allied interoperability and task group-centric operations. Solutions will address higher bandwidth, Low Probability of Intercept (LPI)/Low Probability of Detection (LPD)/ Anti-Jam (AJ) technologies across the Radio Frequency (RF) and Optical spectrum and include airborne capabilities. - Continue to develop and assess secure and interoperable technologies and capabilities supporting DDIL operations, to include multibearer routing, distributed applications and services for Mission Partner Environment/ Future Mission Networking (MPE/FMN), the use of cross-domain and data labeling solutions in maritime tactical networking environments and advanced Information Assurance and Computer Network Defense (IA/CND) solutions. The overarching goal is to maximize interoperability and network and application efficiency using multiple, dissimilar bearers and integrate these advanced solutions into an Allied/Coalition networking capability capable of DDIL operations, countering A2/AD threats and integrating with MPE/FMN architectures. - Continue to assess the U.S. Battlefield Information Collection and Exploitation System - extended (BICES-X) technologies and associated interoperability issues in DDIL environments. - Continue to increase Allied Information Warfare (IW) interoperability with other joint and maritime multi-national forums, such as the Combined Communications Electronic Board (CCEB), Multinational Maritime Information-system Interoperability Steering Group (M2I2), MPE/FMN and Joint Information Environment (JIE) forums. - Continue to assess and validate individual technologies, integrated solutions, and associated Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF) through experimentation, trials and demonstrations with Australia, Canada, New Zealand, United Kingdom, United States (AUSCANNZUKUS) and other Allied/Coalition partners during operational venues such as Rim of the Pacific (RIMPAC) or Joint Warrior.					
FY 2019 Base Plans: FY19 Allied/Coalition Maritime Environment (ACME) funding resides under PE 0606355N Warfare Innovation Management.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 0798 / *Allied/Coalition Interoperability and Information Dominance (ACIID)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Beginning in FY19, the ACME funding profile transferred from PE 0604707N SEW ARCHITECTURE/ENG SUPPORT to PE 0606355N Warfare Innovation Management.					
Accomplishments/Planned Programs Subtotals	0.943	1.096	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Allied/Coalition Maritime Environment (ACME) is a non-acquisition program that promotes United States Navy interoperability with allied and coalition forces to achieve the Chief of Naval Operations (CNO) vision by facilitating maritime interoperability in both processes and communications systems, including emerging capabilities, to counter growing high-end asymmetric threats, and is a key enabler of the force multiplying benefits achieved through cooperation among the Australia, Canada, New Zealand, United Kingdom, United States (AUSCANNZUKUS), North Atlantic Treaty Organization (NATO), and other partner nations. Activities include acquiring intellectual capital in emerging technical areas through contracts providing technical engineering expertise and surge capacity for emerging tasks.

E. Performance Metrics

Advanced Relay Capabilities: The ACME program will employ laboratory testing and at-sea demonstrations to assess specific technologies, operational concepts, and integrated Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF) solutions pertaining to Denied, Degraded, Intermittent and Low-bandwidth (DDIL) operational environments, Network Operations Without Shore (NOWS), Maritime Domain Awareness (MDA), Mission Partner Environment/ Future Mission Networking (MPE/FMN), Joint Information Environment (JIE), and other aspects of Information Warfare (IW). These assessments will report on identified capability gaps, link capability gaps to technology/DOTMLPF gaps, identify technologies and DOTMLPF solutions considered ready for deployment, transition to a program of record to enhance Fleet war fighting capability, and enhance Allied interoperability.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 0798 / *Allied/Coalition Interoperability and Information Dominance (ACIID)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Advanced Relay Capabilities	C/CPFF	SAIC : McLean, VA	0.000	0.110	Jan 2017	0.126	Jan 2018	0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	0.000	0.110		0.126		0.000		-		0.000	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Advanced Relay Capabilities	Various	Various : Various	31.131	0.117	Jan 2017	0.135	Jan 2018	0.000		-		0.000	Continuing	Continuing	Continuing
Advanced Relay Capabilities	WR	SSC PAC : San Diego	0.000	0.716	Jan 2017	0.835	Jan 2018	0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	31.131	0.833		0.970		0.000		-		0.000	Continuing	Continuing	N/A

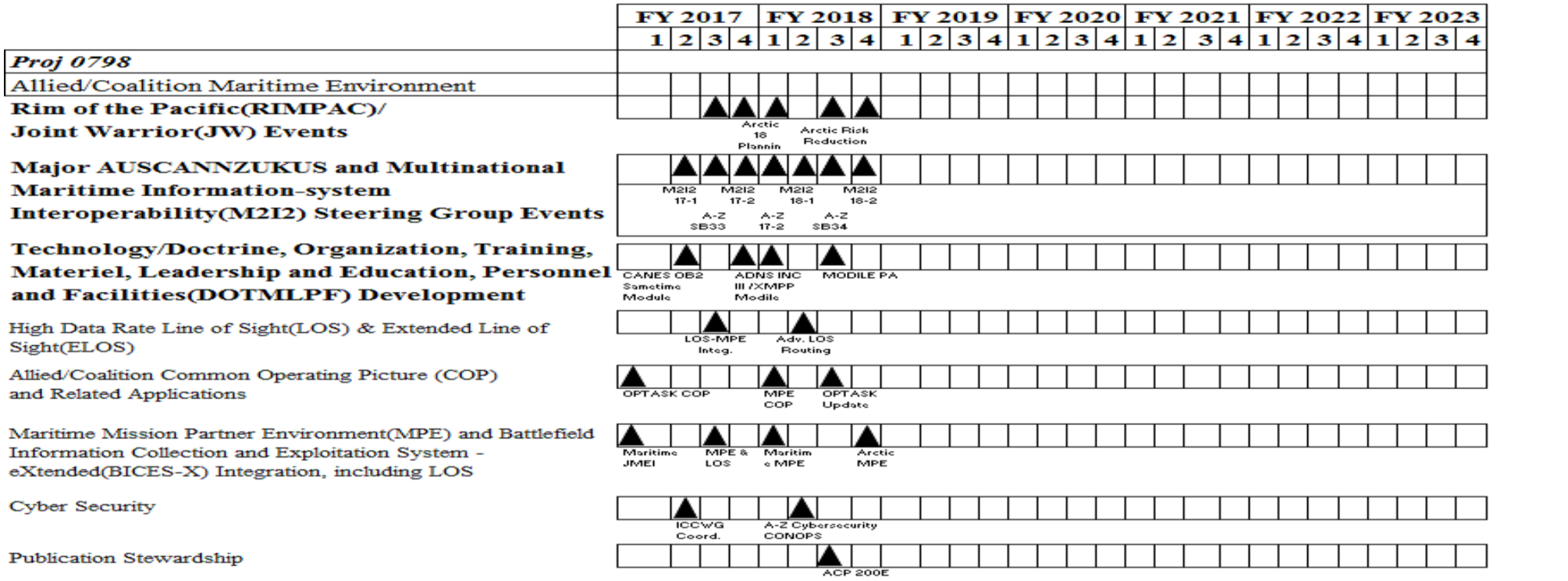
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Services	Various	Various : Various	1.477	0.000		0.000		0.000		-		0.000	0.000	1.477	-
		Subtotal	1.477	0.000		0.000		0.000		-		0.000	0.000	1.477	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	32.608	0.943		1.096		0.000		-		0.000	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 0798 / *Allied/Coalition Interoperability and Information Dominance (ACIID)*



NOTE: Beginning in FY19, the ACME funding profile transferred from PE 0604707N to PE 0606355N.

Legend	
HF: High Frequency	OPTASK: Operational Tasking
RF: Radio Frequency	JMEI: Joining, Membership and Exiting Instructions
ADNS: Automated Digital Network System	CSfC: Commercial Solutions for Classified
WBHF: Wide Band High Frequency	ICCWG: International Computer Network Defense Coordination Working Group
NVIS: Near Vertical Inidence Skywave	ACP: Allied Communications Publication
FSO: Free Space Optics	CONOPS: Concept of Operations
IdAM: Identity and Access Management	CANES: Consolidated Afloat Networks and Enterprise Services
FMV: Full Motion View	LPI/LPD: Low Probability of Intercept/Low Probability of Detection
SOPs: Standard Operating Procedures	

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 0798 / *Allied/Coalition Interoperability and Information Dominance (ACIID)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0798				
Allied/Coalition Maritime Environment (ACME): RIMPAC/Joint Warrior Event Quarterly FY17-FY18	3	2017	1	2018
Allied/Coalition Maritime Environment (ACME): RIMPAC/Joint Warrior Event Quarterly FY18-FY19	3	2018	4	2018
Allied/Coalition Maritime Environment (ACME): AUSCANNZUKUS M212 Quarterly Events	2	2017	4	2018
Allied/Coalition Maritime Environment (ACME): MODILE Events	1	2017	4	2018
Allied/Coalition Maritime Environment (ACME): High Data Rate LOS & ELOS	1	2017	4	2018
Allied/Coalition Maritime Environment (ACME): Allied/Coalition COP and Related Applications	1	2017	4	2018
Allied/Coalition Maritime Environment (ACME): Maritime MPE and BICES-X Events	1	2017	4	2018
Allied/Coalition Maritime Environment (ACME): Cyber Security Events	1	2017	4	2018
Allied/Coalition Maritime Environment (ACME): Publication Stewardship Bi-Annual Events	1	2017	4	2018

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604707N / *SEW Architecture/Eng Support*	Project (Number/Name) 2144 / *Space & Elec Warfare Engineering*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
2144: *Space & Elec Warfare Engineering*	209.167	12.879	33.716	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	255.762
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

To support Navy objectives in advancing Information Warfare (IW) capabilities, the Space and Electronic Warfare (SEW) Engineering project provides five main functions:

(1) Develop the architectures, specifications and standards, tools, and processes to support a single integrated Navy plan for cybersecurity. These engineering artifacts provide Navy specific guidance to drive common and consistent implementation of security controls across current and future Navy Programs of Record/projects. This eliminates redundancies and inefficiencies characteristic of previous stove-pipe development efforts in which each system addressed security individually. These efforts enable a standardized approach to move out faster to improve the Navy's cyber resiliency.

(2) Provide the cybersecurity vulnerability and functional test capability which supports cybersecurity test requirements and the Command, Control, Communications, Computers, Intelligence (C4I) components of USS Secure. USS Secure is a cyber assessment program within the Navy. This System of Systems (SoS) (Afloat, Aloft, C4I & Shore) capability in a test laboratory environment provides a rapidly re-configurable capability that integrates maritime hardware systems into a virtual platform. This platform level SoS provides cybersecurity research, development, test and evaluation, and training, not otherwise possible. This combination of Systems Commands (SYSCOM) laboratories, cyber ranges, and Red Teams simulating Navy platforms in operational maritime environments is critical for effectively evaluating cyber threats against specified mission threads.

(3) Define an integrated Enterprise Architecture to support design, development and delivery of integrated Navy Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR), Business Information Technology (IT), and Space System capabilities. This architecture reflects current (as-is) and future (target) end states to support technical analyses, program planning, and enterprise-level investment decisions across IW capabilities. Perform mission based system of systems analysis to ensure integration and interoperability, and validate end-to-end warfighting capabilities to quickly address emerging threats.

(4) Provides engineering tools and processes to drive rigorous Systems Engineering discipline across the acquisition lifecycle to support rapid development and delivery of secure and interoperable C4ISR, Business IT, and Space Systems capabilities that meet Fleet requirements. Conduct Systems Engineering Technical Reviews (SETRs) to provide independent, objective assessments of technical maturity and compliance with applicable architectures, specifications and standards across IW capabilities.

(5) The Coalition Warrior Interoperability eXploration, eXperimentation, eXamination, eXercise (CWIX) provides a means to demonstrate and evaluate the interoperability of United States (US), North Atlantic Treaty Organization (NATO), and coalition information sharing systems.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2144 / *Space & Elec Warfare Engineering*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Cybersecurity Architecture, Specifications and Standards	8.459	8.460	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2018 Plans: - Continue to develop the architectures, specifications, and standards that provide the technical foundation of a single, integrated Navy plan for cybersecurity in accordance with changes in the threat environment, advances in technology, and evolving Department of Defense (DoD) guidance. - Enforce implementation guidance for Navy Information Assurance (IA) (cybersecurity) standards to ensure inclusion in design requirements and development and production contracts that touch or influence cybersecurity designs for Navy networks. - Assess Navy Programs of Record (PoR) plans for implementation of cybersecurity controls, assess compliance to determine cyber risk with IA Technical Authority (TA) cybersecurity architectures and standards, and perform risk assessments that articulate systems' ability to effectively support operational missions in various cyber conditions. - Continue DFIANT work across Naval Systems Commands (SYSCOMs) to develop domain-specific implementations of the Defense-in-Depth Functional Implementation Architecture (DFIA) by defining control points, IA and logical attributes, controlling parameters, and inheritable security controls to establish a layered approach to cybersecurity. - Define enterprise-level engineering requirements to support effective implementation and integration of Navy Cybersecurity Situational Awareness (NCSA) tools to enable command and control of Navy networks under all cyber conditions. - Continue to assess Acquisition Category (ACAT) programs compliance with Information Technology (IT),IA, and TA architectures, specifications and standards.					
FY 2019 Base Plans: FY19 Cybersecurity Architecture, Specifications and Standards funding resides under PE 0606355N WARFARE INNOVATION MANAGEMENT.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2144 / *Space & Elec Warfare Engineering*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Beginning in FY19, the Cybersecurity Architecture, Specifications and Standards funding profile transferred from PE 0604707N SEW ARCHITECTURE/ENG SUPPORT to PE 0606355N WARFARE INNOVATION MANAGEMENT.					
Title: Cybersecurity Vulnerability & Functional Test Capability	0.000	21.311	0.000	0.000	0.000
Articles:	-	2	-	-	-
FY 2018 Plans: - Initial planning and procurement to establish cybersecurity test capabilities and the Command, Control, Communications, Computers, Intelligence (C4I) components of the USS Secure, a cross-SYSCOM distributed Cyber test capability in support of cybersecurity testing. Procure two (2) laboratory assets, one (1) force-level and one (1) unit-level, to establish Command, Control, Communications, Computers, Intelligence (C4I) suites for testing the System of Systems (SoS) cyber capabilities in an end-to-end environment. - Perform Non-Recurring Engineering (NRE) and testing to evaluate the compliance efforts of Programs of Record (PoRs) with the Department of Defense (DoD) and the Department of Navy (DoN) cybersecurity Test and Evaluation (T&E) policies, directives and requirements. - Design the capability to test operationally representative C4I baselines including force level platforms, unit level platforms, and associated shore services and transport capabilities. - Develop and mature connectivity (including assessment and authorization) strategies to combine Systems Command (SYSCOM) laboratories, cyber ranges, and Red Teams to develop more accurate simulations of Navy platforms in operational maritime environments allowing for critical, effective, and expeditious evaluation of cyber threats against specified mission threads.					
FY 2019 Base Plans: FY19 Cybersecurity Vulnerability & Functional Test Capability funding resides under PE 0606355N WARAFE INNOVATION MANAGEMENT.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: Beginning in FY19, the Cybersecurity Vulnerability & Functional Test Capability funding profile transferred from PE 0604707N SEW ARCHITECTURE/ENG SUPPORT to PE 0606355N WARAFE INNOVATION MANAGEMENT.					
Title: Enterprise Architecture	0.845	0.716	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2144 / *Space & Elec Warfare Engineering*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Articles:	-	-	-	-	-
FY 2018 Plans: - Continue development of an overarching Space and Naval Warfare Systems Command (SPAWAR) Enterprise Architecture with associated specifications, standards and profiles to support effective engineering, design, development, acquisition, and delivery of Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR), Business Information Technology (IT), and Space System capabilities. - Continue to develop the Architecture Data Repository as the single, authoritative source of validated engineering artifacts with associated technical performance attributes. - Continue development of Model Based System Engineering (MBSE) capabilities, processes and tools to support complex SoS technical performance gap analysis and trade recommendations by identifying capability gaps and overlaps, interoperability issues, and cybersecurity risks between Navy SoS capabilities. - Continue to refine the Integration and Interoperability (I&I) Capability framework to support development of mission threads in order to perform System of Systems (SoS) analyses of how well systems operate together across the Naval enterprise to deliver validated warfighting capabilities. - Continue to evolve Assured Command and Control (C2), Battlespace Awareness, and Integrated Fires (IF) Integrated Capabilities Technical Baselines (ICTBs) to ensure Information Warfare (IW) capabilities align to mission-specific kill chains to reduce interoperability seams across the supporting SoS. - Ensure alignment of ICTBs development to emerging Digital Warfare Office (DWO) objectives for increased interoperability and information sharing across weapons, sensors, and shooters.					
FY 2019 Base Plans: FY19 Enterprise Architecture funding resides under PE 0606355N WARFARE INNOVATION MANAGEMENT.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: Beginning in FY19, the Enterprise Architecture funding profile transferred from PE 0604707N SEW ARCHITECTURE/ENG SUPPORT to PE 0606355N WARFARE INNOVATION MANAGEMENT.					
Title: SYSCOM Systems Engineering	2.592	2.197	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2018 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2144 / *Space & Elec Warfare Engineering*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Perform Systems Engineering Technical Reviews (SETRs) of acquisition programs ensuring compliance with statutory and regulatory directives, as well as applicable Information Technology (IT) and Information Assurance (IA) Technical Authority (TA) architectures, specifications, standards and profiles. - Develop inputs and perform technical reviews of formal acquisition and engineering documentation to ensure the application of sound systems engineering analysis and design principles to system planning requirements, design, testing, and supportability. Provide independent technical analyses to support Milestone Decisions. - Continue to conduct Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) certifications through design and testing analysis, ensuring C4ISR delivery to the platform (shore, surface ship, submarine) is validated to meet the operational need and is interoperable with platform, force level, and joint/allied/coalition forces. - Assess opportunities to leverage existing processes to define a more holistic cyber certification that moves toward assessments of groups of platforms (i.e., Carrier Strike Groups) and the overall cyber risk to performing operational missions. - Continue to perform engineering evaluations, assessments of compliance with authoritative architectures and technical standards, and provide expertise to address technical issues in the following domains: C2; Intelligence, Surveillance, & Reconnaissance/Information Operations (ISR/IO); Space Systems, Business Information Technology (IT); and Communications & Networks. - Continue maturation of the Space and Naval Warfare Systems Command (SPAWAR) Engineering Competency Development Model (CDM) framework by defining CDM roles for IT Engineers, Cybersecurity Engineers and Software Systems Engineers. - Develop and pilot a Competency Assessment Process and establish IT requirements for an integrated talent management dashboard. ***FY 2019 Base Plans:*** FY19 SYSCOM Systems Engineering funding resides under PE 0606355N WARFARE INNOVATION MANAGEMENT. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Beginning in FY19, the SYSCOM Systems Engineering funding profile transferred from PE 0604707N SEW ARCHITECTURE/ENG SUPPORT to PE 0606355N WARFARE INNOVATION MANAGEMENT.					
Title: Coalition Warrior Interoperability eXploration, eXperimentation, eXamination, eXercise (CWIX)	0.983	1.032	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2144 / *Space & Elec Warfare Engineering*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Articles:	-	-	-	-	-
FY 2018 Plans: -Continue to develop interoperability and information sharing through coalition engagement, technology, demonstrations, and assessments leading to improvements of Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems within the Navy and in conjunction with Joint Services and Coalition efforts. -Continue to pursue and utilize greater Pacific Command (PACOM) and Southern Command (SOUTHCOM) Partner Nation engagement by fostering a connected, distributed experimentation environment suitable for expanded experimentation in those areas to include innovative enhancements such as Commercial Solutions for Classified (CSFC). -Continue to enhance interoperability across North Atlantic Treaty Organization (NATO) and affiliated Coalition Partners by participating in the planning and execution of CWIX. -Continue to assess Coalition Interoperability assurance, validation, and verification as related to the engineering and execution of the Mission Partner Environment (MPE) via the Coalition Interoperability Assurance Validation (CIAV) infrastructure.					
FY 2019 Base Plans: FY19 CWIX funding resides under PE 0606355N WARFARE INNOVATION MANAGEMENT.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: Beginning in FY19, the CWIX funding profile transferred from PE 0604707N SEW ARCHITECTURE/ENG SUPPORT to PE 0606355N WARFARE INNOVATION MANAGEMENT.					
Accomplishments/Planned Programs Subtotals	12.879	33.716	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Space and Electronic Warfare (SEW) Engineering is a non-acquisition program that develops, tests, implements technical authority, and validates naval Navy Command, Control, Communications, Computers, Intelligence,

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2144 / *Space & Elec Warfare Engineering*

Surveillance, and Reconnaissance (C4ISR); provides integrated Architecture products and supports C4ISR systems engineering processes and standards. Activities include acquiring intellectual capital in emerging technical areas through contracts providing technical engineering expertise and surge capacity for emerging tasks.

E. Performance Metrics

The SEW engineering program will employ rigorous and consistent system engineering practices in an evolving value model to support development and deployment of shipboard, undersea, and land based capabilities based on mission and performance requirements, integrated enterprise architectures, model-validated solutions, and sustainment and supportability needs for the Command and Control (C2), Intelligence, Networks, Communications, Space, and Business Information Technology (IT) domains.

Coalition Warrior Interoperability eXploration, eXperimentation, eXamination, eXercise (CWIX) Performance Metrics: Three key metrics: (1) Interoperability and compliance with Naval (Navy and Marine Corps), joint, coalition and other non-governmental organization architectures, systems and equipment; (2) Compliance with Defense Information Services Agency (DISA), National Security Agency (NSA), and other joint and coalition information assurance and security standards; and (3) warfighter utility assessment across the joint and coalition spectrum. Specific metrics validate performance of individual technologies participating in CWIX as well as in other venues as appropriate.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2144 / *Space & Elec Warfare Engineering*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Cybersecurity Architecture, Specifications and Standards	Various	Various : Various	8.667	0.000		0.000		0.000		-		0.000	0.000	8.667	-
Cybersecurity Architecture, Specifications and Standards	C/CPFF	AUSGAR : San Diego, CA	4.503	1.164	Mar 2017	1.164	Mar 2018	0.000		-		0.000	0.000	6.831	-
Cybersecurity Architecture, Specifications and Standards	WR	SSC LANT : Charleston, SC	2.876	1.269	Feb 2017	1.270	Feb 2018	0.000		-		0.000	0.000	5.415	-
Cybersecurity Architecture, Specifications and Standards	WR	SSC PAC : San Diego, CA	7.413	3.089	Feb 2017	3.090	Feb 2018	0.000		-		0.000	0.000	13.592	-
Cybersecurity Architecture, Specifications and Standards	C/CPFF	BAH : McLean, VA	4.694	2.937	Jul 2017	2.936	Jul 2018	0.000		-		0.000	0.000	10.567	-
Cybersecurity Vulnerability & Functional Test Capability.	C/CPFF	SSC PAC : San Diego, CA	0.000	0.000		2.880	Jun 2018	0.000		-		0.000	0.000	2.880	-
Cybersecurity Vulnerability & Functional Test Capability	WR	SSC PAC : San Diego, CA	0.000	0.000		7.110	Mar 2018	0.000		-		0.000	0.000	7.110	-
Cybersecurity Vulnerability & Functional Test Capability	WR	SSC LANT : Charleston, SC	0.000	0.000		4.421	Mar 2018	0.000		-		0.000	0.000	4.421	-
Cybersecurity Vulnerability & Functional Test Capability	C/CPFF	Various : Various	0.000	0.000		6.900	Mar 2018	0.000		-		0.000	0.000	6.900	-
		Subtotal	28.153	8.459		29.771		0.000		-		0.000	0.000	66.383	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604707N / *SEW Architecture/Eng Support*	Project (Number/Name) 2144 / *Space & Elec Warfare Engineering*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SEW Development Support/Systems Engineering	Various	Various : Various	78.537	0.000		0.000		0.000		-		0.000	0.000	78.537	-
SEW/C4I Technology Integration	Various	Various : Various	12.985	0.000		0.000		0.000		-		0.000	0.000	12.985	-
MDA Prototype SE Support	Various	Various : Various	17.376	0.000		0.000		0.000		-		0.000	0.000	17.376	-
Enterprise Architecture	Various	Various : Various	3.630	0.000		0.000		0.000		-		0.000	0.000	3.630	-
Enterprise Architecture	C/CPFF	AUSGAR : San Diego, CA	1.740	0.380	Mar 2017	0.322	Mar 2018	0.000		-		0.000	0.000	2.442	-
Enterprise Architecture	WR	SSC LANT : Charleston, SC	0.994	0.127	Feb 2017	0.107	Feb 2018	0.000		-		0.000	0.000	1.228	-
Enterprise Architecture	WR	SSC PAC : San Diego, CA	2.427	0.338	Feb 2017	0.287	Feb 2018	0.000		-		0.000	0.000	3.052	-
SYSCOM Systems Engineering	C/CPFF	AUSGAR : San Diego, CA	3.115	1.530	Mar 2017	1.297	Mar 2018	0.000		-		0.000	0.000	5.942	-
SYSCOM Systems Engineering	WR	SSC PAC : San Diego, CA	5.487	0.752	Feb 2017	0.638	Feb 2018	0.000		-		0.000	0.000	6.877	-
SYSCOM Systems Engineering	C/CPFF	SAIC : McLean, VA	0.630	0.310	Aug 2017	0.262	Jan 2018	0.000		-		0.000	0.000	1.202	-
		Subtotal	126.921	3.437		2.913		0.000		-		0.000	0.000	133.271	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SEW Eng/CWIX/JRAE	Various	Various : Various	48.685	0.000		0.000		0.000		-		0.000	0.000	48.685	-
SEW Eng/CWIX	MIPR	Defense Information Systems Agency : Arlington, VA	0.599	0.110	Apr 2017	0.115	Apr 2018	0.000		-		0.000	0.000	0.824	-
SEW Eng/CWIX	WR	SSC PAC : San Diego, CA	3.977	0.549	Dec 2016	0.576	Dec 2017	0.000		-		0.000	0.000	5.102	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2144 / *Space & Elec Warfare Engineering*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SEW Eng/CWIX	C/CPFF	SAIC : McLean, VA	0.498	0.213	Aug 2017	0.223	Jan 2018	0.000		-		0.000	0.000	0.934	-
SEW Eng/CWIX	C/CPFF	AUSGAR : San Diego, CA	0.263	0.111	Mar 2017	0.118	Mar 2018	0.000		-		0.000	0.000	0.492	-
		Subtotal	54.022	0.983		1.032		0.000		-		0.000	0.000	56.037	N/A

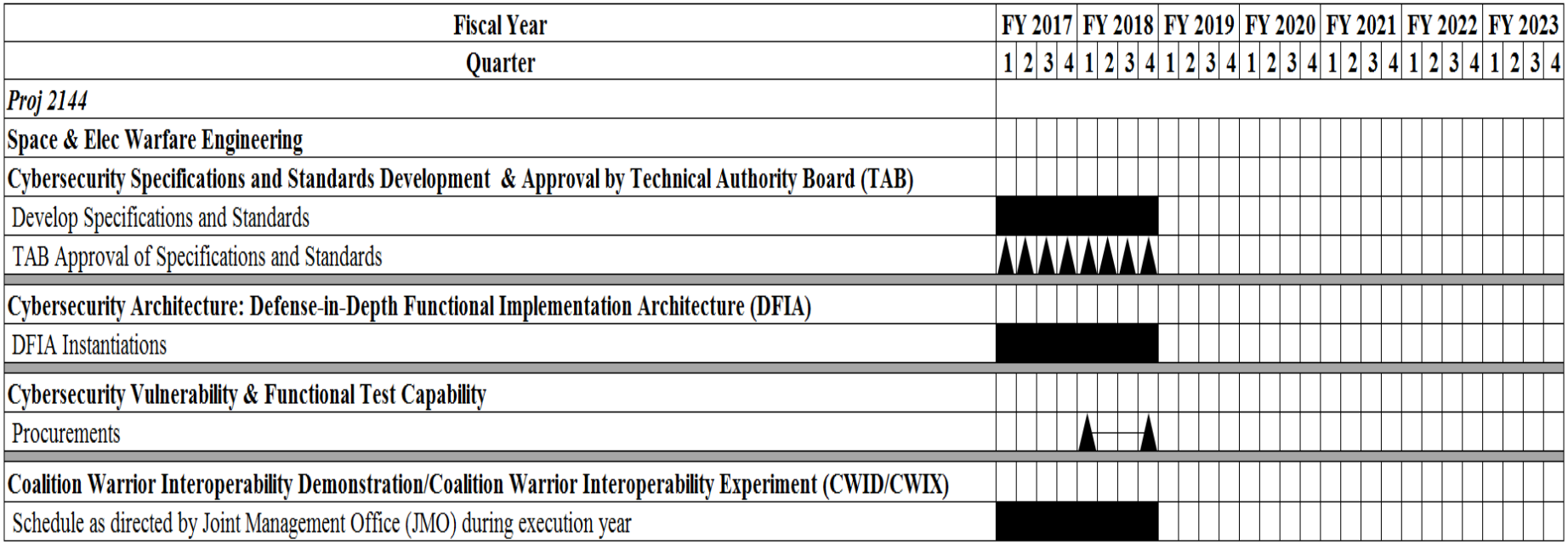
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ACQ Workforce Fund	Various	Various : Various	0.071	0.000		0.000		0.000		-		0.000	0.000	0.071	-
		Subtotal	0.071	0.000		0.000		0.000		-		0.000	0.000	0.071	N/A

	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	209.167	12.879		33.716		0.000		-		0.000	0.000	255.762	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2144 / *Space & Elec Warfare Engineering*



Notes:

-Beginning in FY19, Space and Electronic Warfare (SEW) Engineering project (2144) resides under PE 0606355N.

-Based on changes in the threat environment and advances in technology, the development of cybersecurity architectures, specifications, and standards is a continuous process.

-The cross-Systems Command (SYSCOM) TAB occurs approximately once per quarter to review and endorse cybersecurity architectures, specifications, and standards that are applicable to all Navy Programs.

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2144 / *Space & Elec Warfare Engineering*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2144				
Cybersecurity Specifications and Standards: Development	1	2017	4	2018
Cybersecurity Specifications and Standards: Technical Authority Board (TAB) Approval	1	2017	4	2018
Cybersecurity Architecture: Defense-in-Depth Functional Implementation Architecture (DFIA) Instantiations	1	2017	4	2018
Cybersecurity Vulnerability & Functional Test Capability: FY18 Procurement	1	2018	4	2018
Coalition Warrior Interoperability Demonstration/Coalition Warrior Interoperability Experiment (CWID/CWIX): Schedule as directed by the JMO during execution year	1	2017	4	2018

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604707N / *SEW Architecture/Eng Support*	Project (Number/Name) 2147 / *ISR Architecture*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
2147: *ISR Architecture*	0.000	1.482	1.587	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.069
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Integrated architectures provide a technical framework for assessing capability gaps and performance of individual systems and System of Systems (SoS) and their ability to effectively provide the desired effects to support warfighting missions. They also serve as a means to influence and drive Programs of Record (PoR) toward a common, more efficient state that promotes interoperability and security.

The Naval Intelligence, Surveillance, and Reconnaissance (ISR) Reference Architecture project is intended to guide system of systems capability development and promote interoperability across Navy ISR programs, as well as interoperability and alignment with Department of Defense (DoD)-wide enterprise initiatives including Joint Information Environment and Intelligence Community Information Technology Environment and Space & Naval Warfare Systems Command-wide Enterprise Architecture policies. This effort to develop integrated ISR architectures will also help instill systems engineering discipline and standardization across the Navy ISR Enterprise and provide a means by which to assess ISR PoR progress in conforming to a single Navy architecture. These efforts will help reduce Information Technology/ISR infrastructure complexity and variances, making it easier to manage, operate and defend our ISR capabilities, and help inform investment decisions across the Navy's ISR enterprise to support Assured Command and Control, Battlespace Awareness and Integrated Fires.

This effort will encompass the documentation and analysis of current ISR enterprise architectures to inform and guide requirements for target architecture development and performance requirements to support full use and incorporation of ISR capabilities to advance Navy operations afloat. The associated studies will produce both technical and non-technical implementation guidance across the Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities spectrum.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Intelligence, Surveillance, and Reconnaissance (ISR) Architecture	1.482	1.587	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2018 Plans: -Continue to analyze the current ISR capabilities of afloat, ashore, joint, and national systems within mission contexts to demonstrate gaps and overlaps in Information Warfare capabilities and document in engineering artifacts and architectures. Perform trade space analysis and develop and quantify solutions using technical and operational performance parameters. -Continue to build on the documentation and analysis of the enterprise ISR capabilities to support System of Systems (SoS) engineering assessments to identify integration and interoperability gaps, trades, and solutions to support investment decision-making across the ISR portfolio.					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2147 / *ISR Architecture*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
-Continue to integrate the National, Joint, and Naval ISR architectures within mission contexts to identify functional capacities, materiel integration and interoperability gaps and overlaps, as well as any policy and doctrine impacts. -Continue to perform verification and validation (V&V) to ensure Intelligence, Surveillance, & Reconnaissance (ISR) architecture and analytic products accurately capture system performance specifications. -Continue to capture all architectural data in the Space and Naval Warfare Systems Command (SPAWAR) analysis tool suite to support rigorous engineering assessments and architecture excursions against solution alternatives. -Ensure alignment and interoperability between ISR Architectures and Joint Information Enterprise, Intelligence Community Information Technology Enterprise and SPAWAR Enterprise Architectures. ***FY 2019 Base Plans:*** FY19 ISR Architecture funding resides under PE 0606355N WARFARE INNOVATION MANAGEMENT. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Beginning in FY19, ISR Architecture funding profile transferred from PE 0604707N SEW ARCHITECTURE/ENG SUPPORT to PE 0606355N WARFARE INNOVATION MANAGEMENT.					
Accomplishments/Planned Programs Subtotals	1.482	1.587	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Naval ISR Architecture project is a non-acquisition program that provides integrated architecture products, engineering analysis of current and target/future capabilities to identify capability gaps and shortfalls, and provides solution recommendations. These combined efforts support the ability to articulate risks, and align/ prioritize investment decision recommendations within the ISR domain for the Navy.

E. Performance Metrics

The Naval (Navy and Marine Corps) ISR Reference Architecture effort will use consistent systems engineering practices to support development of integrated ISR enterprise architectures, and model-validated solution recommendations against quantified technical and operational performance parameters.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2147 / *ISR Architecture*

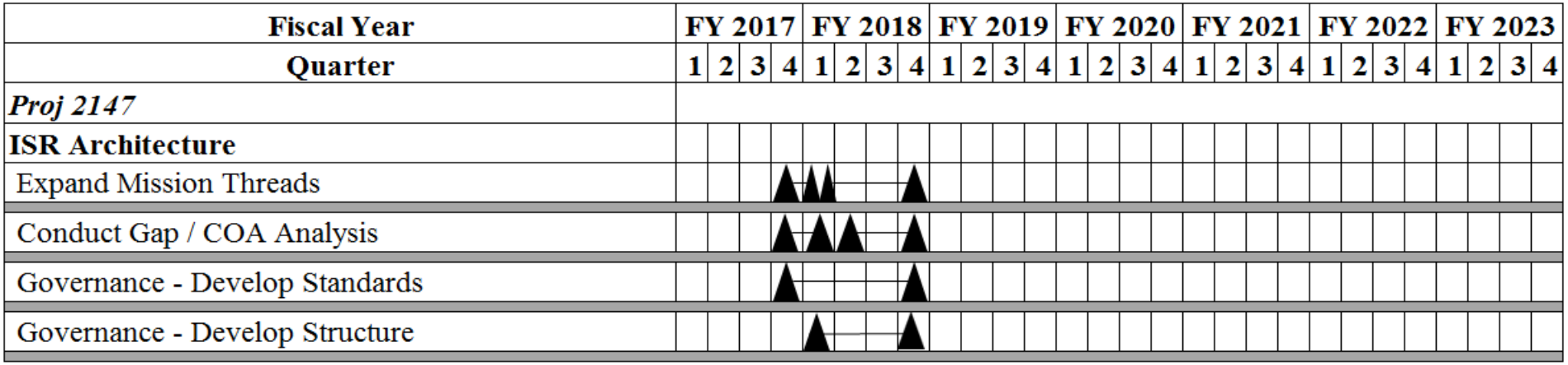
Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ISR Architecture	C/CPFF	METRON : Reston, VA	0.000	1.382	Jul 2017	1.480	Dec 2017	0.000		-		0.000	Continuing	Continuing	Continuing
ISR Architecture	WR	SSC PAC : San Diego, CA	0.000	0.100	Jul 2017	0.107	Dec 2017	0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	0.000	1.482		1.587		0.000		-		0.000	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	1.482		1.587		0.000		-		0.000	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2147 / *ISR Architecture*



Notes:

-Beginning in FY19, Intelligence, Surveillance, and Reconnaissance (ISR) Architecture project (2147) resides under PE 0606355N.

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2147 / *ISR Architecture*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2147				
ISR Architecture: Expand Mission Threads	4	2017	4	2018
ISR Architecture: FY17 Conduct Gap / COA Analysis	4	2017	1	2018
ISR Architecture: FY18 Conduct Gap / COA Analysis	2	2018	4	2018
ISR Architecture: Governance - Develop Standards	4	2017	4	2018
ISR Architecture: Governance - Develop Structure	1	2018	4	2018

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy											Date: February 2018	
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0604707N / *SEW Architecture/Eng Support*				Project (Number/Name) 2356 / *Maritime Concept Generation & Development*			
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
2356: *Maritime Concept Generation & Development*	22.409	4.800	6.452	7.230	-	7.230	8.160	9.024	9.220	9.407	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Maritime Concept Generation and Development (MCGD) funding provides naval warfare subject matter expertise, experiment planning expertise, Modeling and Simulation (M&S) support, and analysis expertise to enable execution of the planned experiment efforts (and the individual experiment initiatives contained within) in the areas of Electromagnetic Maneuver Warfare (EMW), Mine Warfare, Naval Integrated Fires, and Unmanned systems and conduct experiments (war simulations, M&S, at-sea events) to develop emerging Naval concepts.
Typical deliverables for each experimental effort include:
- Experiment control plan
- Data Collection and Analysis Plan (DCAP)
- Experiment Analysis Summary Reference Document
- Experiment Engineering Plan
- Final Experiment Report (with doctrine, organization, training, materiel, leadership and education, personnel and facilities (DOTMLPF) recommendations)
- New/refined doctrine/Tactics, Techniques and Procedures (TTP).

The Maritime Concept Generation and Concept Development project funds four main efforts:
(1) Provides critical concept development and experimentation manpower and warfighting subject matter expertise aligned with the Concept Generation/Concept Development (CG/CD) program. The priorities for the CG/CD program are to develop concept/concept of operations and explore near/far-term technological and non-technological solutions to war fighting gaps across all naval warfare areas. The associated experimentation efforts include planning, systems engineering and integration, modeling and simulation support, event execution, data collection, analysis, and assessment for a wide-range of experimentation efforts including the examination of prototypes, tactical development and evaluation, support for Science and Technology (S&T) innovation, and program of record system development; venues such as workshops, seminars, war games, limited objective experiments, limited technical experiments, and live at-sea events are used to execute these experimentation efforts.
(2) Provides naval warfare subject matter expertise, experiment planning expertise, and analysis expertise who plans, executes, and assesses experimentation for the fleets and warfighting development centers (WDC) at the operational and tactical levels. This includes a focus on WDC integration role, maritime command and control (C2), advanced cross-domain warfighting, and maritime operations centers (MOCS)/operational level of war (OLW) lines of operations. Seeks to solve fleet-identified warfighting gaps (referenced within the Integrated Prioritized Capability Lists (IPCL), Urgent Operational Needs Statements (UONS), Fleet Commander's Guidance, etc.). The experimentation and prototyping efforts support the "last tactical mile" of many Navy S&T programs by supporting those programs where the technology is mature enough, but requires evaluation on or by a "fleet asset" - ships, airplanes, submarines, and sailors.
(3) Provides modeling and simulation (M&S) support to Navy experimentation efforts. M&S is used to stimulate decision making during seminar-style and system war gaming experiments and provides the simulated operational environment and capabilities with high-fidelity models such as the Joint Semi-Automated Force (JSAF)

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

program. Additionally, where applicable, the Navy Simulation System (NSS) "Monte Carlo" model is also used to give high confidence solutions and outcomes to complex warfighting problems.
(4) Provides for focused, solution-driven tactics development and evaluation through experimentation. This effort is focused on developing near-term doctrine solutions to address specific fleet-identified tactical issues.

Maritime Concept Generation and Concept Development products include:
- Enabling concepts
- Concepts of operations (CONOPS)
- Final experiment reports (including findings, insights, and recommendations and DOTMLPF change recommendations and plans for action)
- Experiment Analysis Summary Reference Documents
- New/revised doctrinal and Tactics/Techniques/Procedures publications
- White papers (think pieces) intended to generate further discussion within Navy leadership

Specific products are listed in the Accomplishments/Plans section of this exhibit.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Maritime Concept Generation and Development	4.800	6.452	7.230	0.000	7.230
Articles:	-	-	-	-	-
FY 2018 Plans: FY 2018 experiment efforts through MCGD; Navy will provide experiment, analytical and naval mission subject matter expertise support throughout the planning and execution process; identify fleet warfighting deficiencies through experimentation; identify and capture innovative solutions for fleet experiments that address prioritized fleet warfighting gaps; and identify suitable events to support the execution of the following Experimentation Campaigns: ELECTROMAGNETIC MANEUVER WARFARE (EMW) EXPERIMENTATION Navy will conduct multiple events designed to synchronize and align experiment initiatives with EMW campaign tasks to provide solutions to EMW capability gaps and to ensure development of doctrine is synchronized with the introduction of new technology in order to provide the Fleet and Fleet trainers with required capabilities at the tactical and operational levels. RIMPAC 18 AT-SEA EXPERIMENT - This event will leverage the fleet assets and at-sea time associated with a major training exercise, Rim of the Pacific (RIMPAC) 2018. The effort will evaluate technology and/or Tactics, Techniques, Procedures (TTP) related initiatives to close warfighting gaps identified across multiple POM-19 Integrated Prioritized Capability Lists (IPCLs). SPECTRAL TSUNAMI 2018 SEMINAR WAR SIMULATION - This effort is comprised of stakeholders from across the Navy to define the baseline warfighting scenario and existing technical capabilities to form an					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Integrated Technical Capabilities Baseline (ITCB). The war simulation will identify areas of strengths and weaknesses, areas for improving operational effectiveness and hardware/software changes necessary to improve existing POR systems or suggest requirements for new capability. Following completion, the simulation output will be injected into the Naval Simulation System (NSS) for advanced modeling and simulation to quantify the tactical and operational impact of multiple proposed PoR and S&T solutions and innovative employment methods. The war simulation will build upon the results of the 2017 war simulation and the scope will be expanded to include select coalition capabilities. NETTED SENSORS AT-SEA EXPERIMENT - This continued effort at operationalizing the Fleet Tactical Grid will leverage STORMFORCE 2018, a National Security Agency (NSA)-sponsored Five Eyes tactical signals intelligence (SIGINT) interoperability-focused experiment to examine and enhance integration and interoperability of sensors, networks, data fusion, and analytic capabilities across national, theater, and organic platforms. STRIKE GROUP-ORGANIC, LONG ENDURANCE UNMANNED AERIAL VEHICLE (UAV) experiment - This experiment effort will examine the employment of long endurance UAVs organic to a Carrier or Expeditionary Strike Group - a capability that will provide unit level ships with the ability to transport Intelligence, Surveillance, and Reconnaissance (ISR) and strike payloads long distances from the host platform. BLUE EMITTER VULNERABILITY ASSESSMENT (BEVA) - This classified effort will be an in-depth examination of U.S. Navy system vulnerabilities. COUNTER-ISR WAR SIMULATION - This classified modeling and simulation supported war simulation will be an examination of the employment of emerging TTPs and technologies in support of Distributed Maritime Operations. OFFICE OF NAVAL RESEARCH (ONR) TECHNOLOGY INNOVATION GAMES (TIGS). This series of workshops executed in conjunction with ONR will give Fleet operators the opportunity to examine emerging capabilities and determine potential concepts of employment to effectively incorporate innovative capabilities into Fleet warfighting missions and tasks. Potential technology being examined include: High Power Joint Electromagnetic Non-Kinetic Strike (HIJENKS); Medium Displacement Unmanned Surface Vessel (MDUSV) Anti-Submarine Warfare (ASW) Concept of Employment; Unmanned Systems (UxS) Defensive Actions; and Forward Deployed Energy & Communications Outpost (FDECO). ASSURED COMMAND AND CONTROL (AC2) AT SEA EXPERIMENT - This effort will likely leverage the naval assets and at-sea time to conduct an extended evaluation of an emerging technology in support of EMW objectives. TECHNOLOGY/TTP EXPERIMENT - This experiment will refine TTP and technical requirements to employ a classified Navy Tactical Exploitation of National Capabilities (TENCAP) developed capability.					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
CYBER DEFENSE WAR SIMULATION AND/OR AT SEA EXPERIMENT - This classified effort will build upon prior year experiments to further examine US Navy vulnerabilities to adversary cyber threats. COUNTER-UNMANNED SYSTEMS EXPERIMENT SERIES - This effort will build upon the 2017 counter-UAV experiment by examining emerging TTPs and technologies to counter the proliferation of unmanned undersea, surface, and air vehicles. NAVAL FORCE INTEGRATION EXPERIMENTATION Naval Force Integration experimentation will examine integration and interoperability issues associated with coordinated USN-USMC operations. The primary goal is to reexamine Navy and Marine Corps organizational and command relationships in order to enable effective Naval operations across the maritime domain. LITTORAL OPERATIONS IN A CONTESTED ENVIRONMENT (LOCE) War Simulation - This simulation will focus on operational level objectives and examine how a Navy Commander task organizes to achieve sea control in complex, contested environments. F-35B BLOCK 3F FIRST DEPLOYMENT INITIATIVE War Simulation - This effort will employ a combination of vignettes augmented with an integrated limited virtual constructive environment. Scenarios will be planned, briefed and executed in a limited virtual, constructive environment. MINE WARFARE (MIW) EXPERIMENTATION Through workshops, war simulation and at-sea events, the FY 18 efforts will continue to examine TTP and Command and Control (C2) construct for our future Mine Counter-Measures (MCM) force as new programs of record and unmanned systems come on line, and legacy systems begin to decommission. MCM WAR SIMULATION AND/OR AT SEA EXPERIMENT - This effort will examine current and planned Navy MCM equipment (manned and unmanned) and evaluate concepts of employment with an overall goal of developing a product that merges overall Navy requirements. MCM EXPERIMENT - In support of C6F, this experiment will look at MCM C2 and capability to execute requirements. OPERATIONAL LEVEL OF WAR/TACTICAL LEVEL OF WAR (OLW/TLW) INTEGRATION EXPERIMENTATION Another CUSFF/CPF designated focus area for experimentation in 2018, OLW/TLW Integration experiments will examine current and emerging tactics, techniques, and procedures (TTPs) and current and emerging technologies with a goal of identifying innovative solutions that will support the capstone naval concept of a Fleet Design based on integration, distribution, and maneuver. NAVAL INTEGRATED FIRES ELEMENT (NIFE) War Simulation - This effort will examine and refine a draft NIFE Tactical Memorandum (TACMEMO) to facilitate transition of TTP to formal doctrine and development					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
of training requirements at the operational level of war (OLW) and tactical level of war (TLW) in support of enhanced maritime targeting capabilities. SPACE WAR SIMULATION - This effort will build upon the findings and recommendations of the 2017 war simulation in order to further explore the optimization of space-based capabilities in support of the maritime environment. EMERGING CONCEPTS WAR SIMULATION(S) - This effort will employ multiple seminar war simulations to examine emerging concepts such as Fleet Design, Distributed Maritime Operations, and multiple feeder concepts.					
FY 2019 Base Plans: FY 2019 experiment efforts through MCGD; Navy will continue to provide experiment, analytical and naval mission subject matter expertise support throughout the planning and execution process; identify fleet warfighting deficiencies through experimentation; identify and capture innovative solutions for fleet experiments that address prioritized fleet warfighting gaps; and identify suitable events to support the execution of the following Experimentation Campaigns: FLEET DESIGN EXPERIMENTS In keeping with the CNO's Design for Maintaining Maritime Superiority, the emerging concept "Fleet Design" has been developed. Continuing the development of the supporting doctrine, Tactics, Techniques & Procedures (TTP), Command and control (C2) as well as the integration and interoperability required between weapon systems and decision makers requires a methodical experimental approach. FY 19 experiments (both at-sea and via war simulation) will strive to achieve the objectives as laid out in the accompanying action/ implementation plan. ELECTROMAGNETIC MANEUVER WARFARE (EMW) EXPERIMENTATION Navy will conduct multiple events designed to synchronize and align experiment initiatives with EMW tasks to provide solutions to EMW capability gaps and to ensure development of doctrine and TTP is synchronized with the introduction of new technology and provides the Fleet and Fleet trainers with required doctrine tools at the tactical and operational levels. EMW TECHNOLOGY War Simulation - This effort is comprised of stakeholders from across the Navy to define the baseline warfighting scenario and existing technical capabilities to form an Integrated Technical Capabilities Baseline (ITCB). The war simulation will identify areas of strengths and weaknesses, areas for improving operational effectiveness and hardware/software changes necessary to improve existing POR systems or suggest requirements for new capability. Following completion, the simulation output will be injected into the					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Naval Simulation System (NSS) for advanced modeling and simulation to quantify the tactical and operational impact of various proposed solutions and innovative employment methods. NETTED SENSORS At-Sea Experiment - This effort will examine and enhance the integration and interoperability of sensors, networks, data fusion, and analytic capabilities across national, theater, and organic platforms to explore the vision for a Fleet Tactical Grid. EMW At Sea Experiment - This effort will examine emerging EMW-related technologies with the most potential, as identified during the EMW technology series of war games, in an at-sea environment in order to inform future investment decisions and to support the rapid introduction of potentially game-changing capabilities. OFFICE OF NAVAL RESEARCH (ONR) TECHNOLOGY INNOVATION GAMES (TIGS). This series of workshops executed in conjunction with ONR will give Fleet operators the opportunity to examine emerging capabilities and determine potential concepts of employment to effectively incorporate innovative capabilities into Fleet warfighting missions and tasks. NAVAL FORCE INTEGRATION EXPERIMENTATION Naval Force Integration experiments (workshops, war simulations, and at-sea events) will examine integration and interoperability issues associated with coordinated USN-USMC operations. The primary goal of the campaign is to reexamine Navy and Marine Corps organizational and command relationships in order to enable effective Naval operations across the maritime domain. MINE WARFARE (MIW) EXPERIMENTATION Through workshops, war simulation and at-sea events, the FY 19 efforts will continue to examine TTP and C2 construct for our future MCM force as new programs of record and unmanned systems come on line, and legacy systems begin to decommission. OPERATIONAL LEVEL OF WAR/TACTICAL LEVEL OF WAR (OLW/TLW) INTEGRATION EXPERIMENTATION OLW/TLW Integration experiments (workshops, war simulation and at-sea events) will examine current and emerging tactics, techniques, and procedures (TTPs) and current and emerging technologies with a goal of identifying innovative solutions that will support the capstone naval concept of a Fleet Design based on integration, distribution, and maneuver. EMERGING CONCEPTS WAR SIMULATION(S) - This effort will employ multiple seminar war simulations to examine emerging concepts such as Fleet Design, Distributed Maritime Operations, and multiple feeder concepts. FOR FY 19 CONCEPT GENERATION/CONCEPT DEVELOPMENT Continue CG/CD development efforts that carry-over from FY 2018:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Navy will finish enabling concepts for Fleet Design. This includes development of the Distributed Maritime Operations concept (DMO). ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** The increase from FY18 to FY19 is due to the rapid development of resilient war fighting capabilities to ensure the Navy can operate confidently and fight decisively with our weapons and systems.					
Accomplishments/Planned Programs Subtotals	4.800	6.452	7.230	0.000	7.230

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This funding is used to acquire intellectual capital in emerging conceptual and technical areas through contracts providing expertise in concepts and experiment design, execution and analysis to mitigate fleet-identified current and future war fighting gaps.

E. Performance Metrics

Maritime Concept Generation and Development/Related Experimentation:
- Integrate emergent concepts and technologies, leading to rapid introduction of needed war fighting capabilities.
- Rapidly mature concepts, technologies, and doctrine.
- Develop near-term doctrine solutions to address specific fleet-identified tactical level / operation level issues
- Develop recommended Doctrine, Organization, Training, Materiel, Leadership, and Personnel (DOTMLP) changes required to introduce emergent technology and tactics.
- Refine concepts and identify key performance levels necessary for implementation.
- Demonstrate feasibility and discriminate among competing concepts and implementation alternatives.
- Identify potential military effectiveness and risk.
- Evaluate how much of the new capability and attendant force structure is needed.
- Identify how to operate the new force and combine it with the legacy force.
- Focus on near, mid and long term war fighting challenges to realize increased war fighting effectiveness.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Test and Evaluation	C/CPFF	Defense Technical Information Center : Ft Belvoir VA	10.271	2.442	Dec 2016	4.026	Dec 2017	4.148	Jan 2019	-		4.148	Continuing	Continuing	Continuing
System Test and Evaluation	Various	SPAWARSYSCEN : Charleston, SC	2.734	0.000	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
System Test and Evaluation	Various	ONR : Washington, DC	1.370	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
System Test and Evaluation	Various	NAVSEA : Washington, DC	1.334	0.000		0.000		0.000		-		0.000	0.000	1.334	-
System Test and Evaluation	WR	Naval Underwater Warfare Center : Newport RI	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	-
System Test and Evaluation	C/CPFF	NAVSUP : Norfolk VA	3.490	2.204	Dec 2016	2.426	Dec 2017	3.082	Dec 2018	-		3.082	0.000	11.202	-
Center for Naval Analysis	IA	Center for Naval Analysis : Norfolk, VA	0.000	0.154	Nov 2016	0.000		0.000		-		0.000	0.000	0.154	-
		Subtotal	19.699	4.800		6.452		7.230		-		7.230	Continuing	Continuing	N/A

Remarks

The vast majority of the contract costs are for contract labor; primarily on two large Multi-Award contracts, one through DTIC (Defense Services MAC) and one through Joint Staff J-7 MAC. Task orders on the DS MAC contract provide the majority of the Modeling & Simulation support for experimentation and some of the experiment planner support. Task orders on the JS J-7 MAC provide the majority of the experiment design, planner, and execution support.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	C/FFP	Navy Warfare Development Command : Norfolk, VA	2.710	0.000		0.000		0.000		-		0.000	0.000	2.710	-
		Subtotal	2.710	0.000		0.000		0.000		-		0.000	0.000	2.710	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604707N / *SEW Architecture/Eng Support*	Project (Number/Name) 2356 / *Maritime Concept Generation & Development*	

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	22.409	4.800		6.452		7.230		-		7.230	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

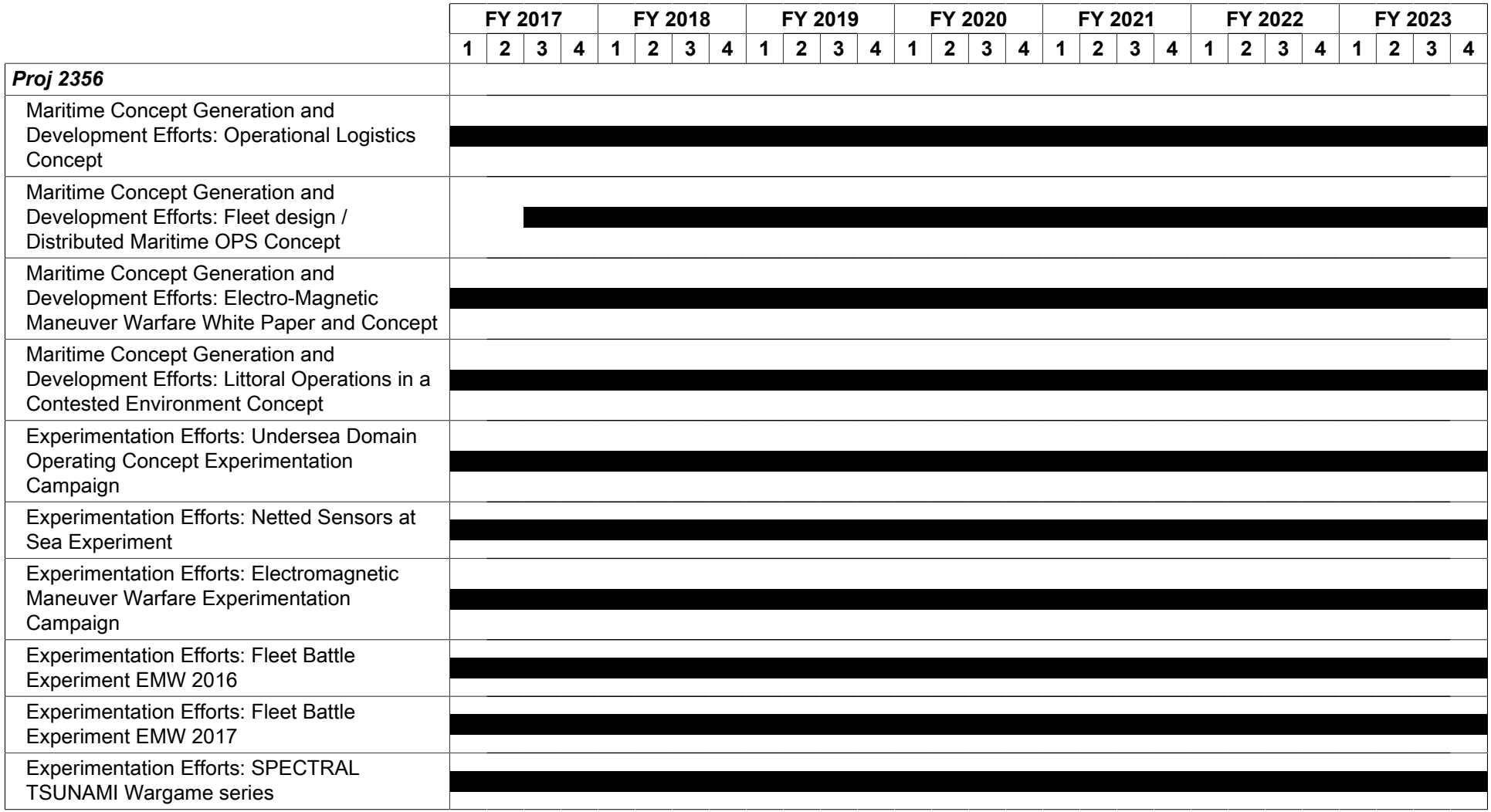

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

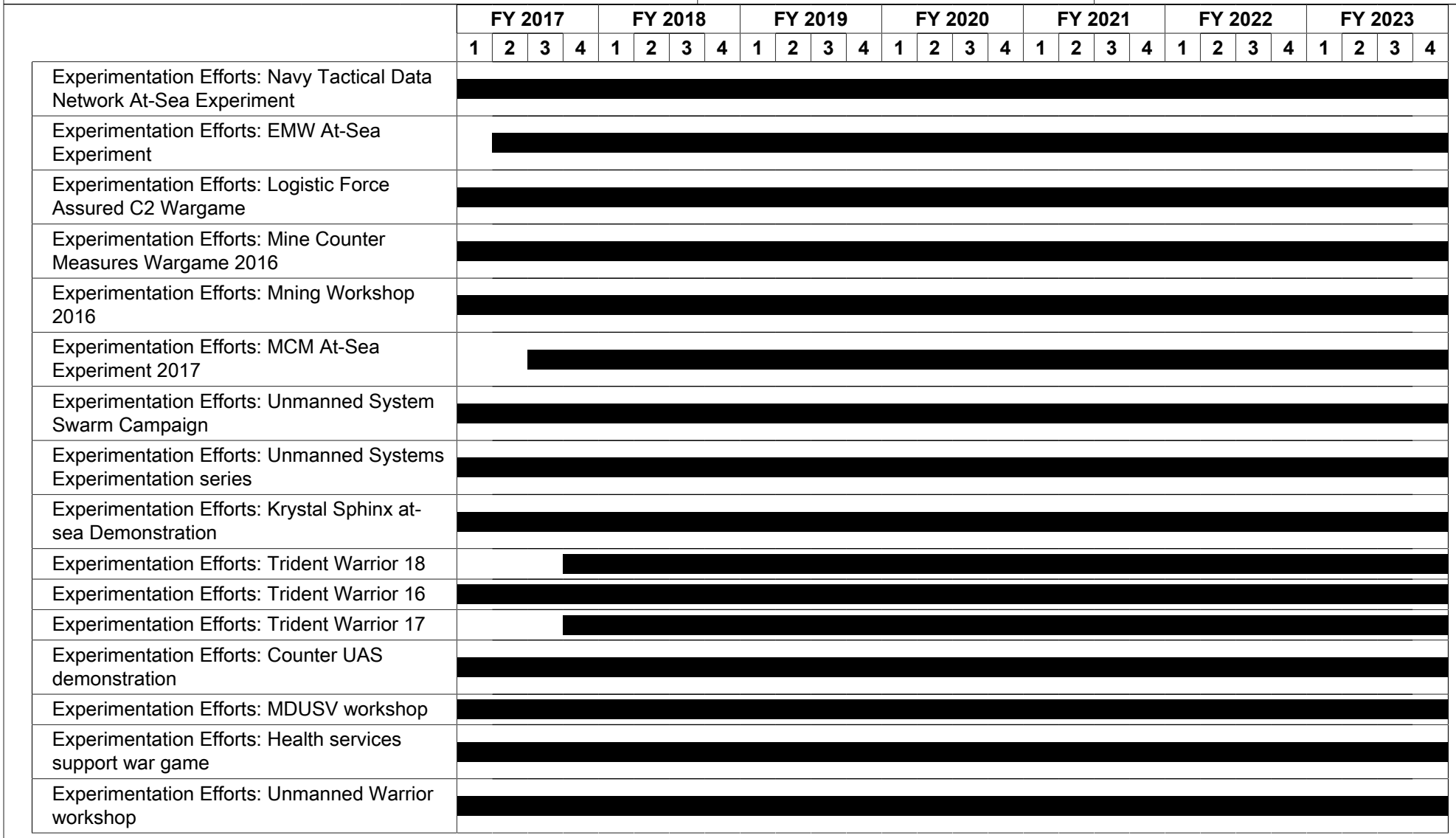

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

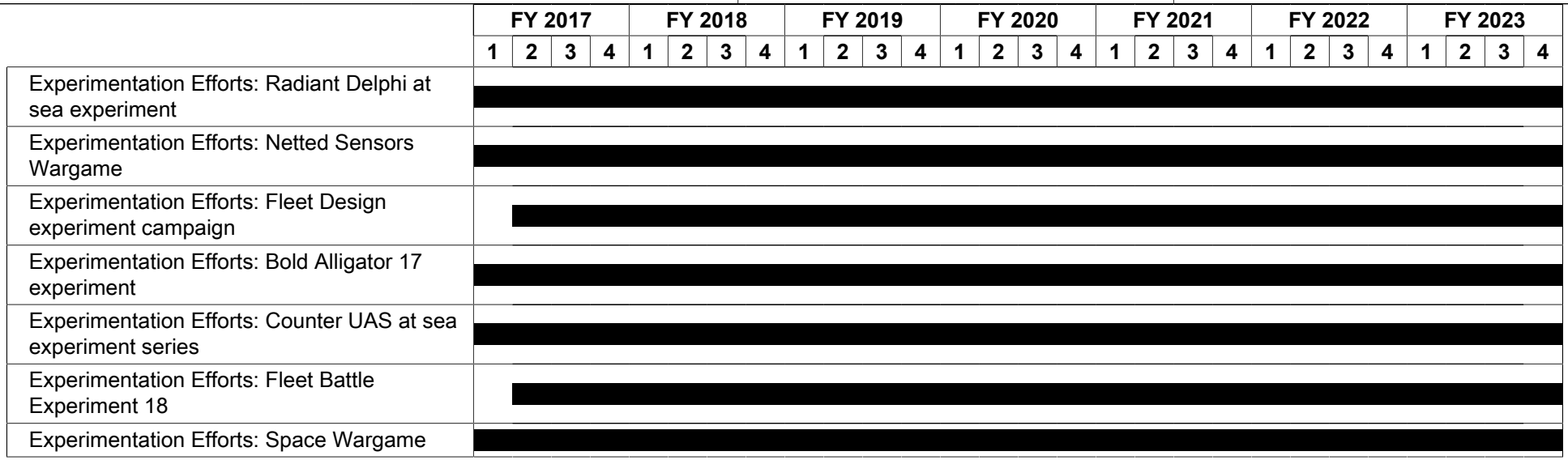

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2356				
Maritime Concept Generation and Development Efforts: Operational Logistics Concept	1	2017	4	2023
Maritime Concept Generation and Development Efforts: Fleet design / Distributed Maritime OPS Concept	3	2017	4	2023
Maritime Concept Generation and Development Efforts: Electro-Magnetic Maneuver Warfare White Paper and Concept	1	2017	4	2023
Maritime Concept Generation and Development Efforts: Littoral Operations in a Contested Environment Concept	1	2017	4	2023
Experimentation Efforts: Undersea Domain Operating Concept Experimentation Campaign	1	2017	4	2023
Experimentation Efforts: Netted Sensors at Sea Experiment	1	2017	4	2023
Experimentation Efforts: Electromagnetic Maneuver Warfare Experimentation Campaign	1	2017	4	2023
Experimentation Efforts: Fleet Battle Experiment EMW 2016	1	2017	4	2023
Experimentation Efforts: Fleet Battle Experiment EMW 2017	1	2017	4	2023
Experimentation Efforts: SPECTRAL TSUNAMI Wargame series	1	2017	4	2023
Experimentation Efforts: Navy Tactical Data Network At-Sea Experiment	1	2017	4	2023
Experimentation Efforts: EMW At-Sea Experiment	2	2017	4	2023
Experimentation Efforts: Logistic Force Assured C2 Wargame	1	2017	4	2023
Experimentation Efforts: Mine Counter Measures Wargame 2016	1	2017	4	2023
Experimentation Efforts: Mning Workshop 2016	1	2017	4	2023
Experimentation Efforts: MCM At-Sea Experiment 2017	3	2017	4	2023
Experimentation Efforts: Unmanned System Swarm Campaign	1	2017	4	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Experimentation Efforts: Unmanned Systems Experimentation series	1	2017	4	2023
Experimentation Efforts: Krystal Sphinx at-sea Demonstration	1	2017	4	2023
Experimentation Efforts: Trident Warrior 18	4	2017	4	2023
Experimentation Efforts: Trident Warrior 16	1	2017	4	2023
Experimentation Efforts: Trident Warrior 17	4	2017	4	2023
Experimentation Efforts: Counter UAS demonstration	1	2017	4	2023
Experimentation Efforts: MDUSV workshop	1	2017	4	2023
Experimentation Efforts: Health services support war game	1	2017	4	2023
Experimentation Efforts: Unmanned Warrior workshop	1	2017	4	2023
Experimentation Efforts: Radiant Delphi at sea experiment	1	2017	4	2023
Experimentation Efforts: Netted Sensors Wargame	1	2017	4	2023
Experimentation Efforts: Fleet Design experiment campaign	2	2017	4	2023
Experimentation Efforts: Bold Alligator 17 experiment	1	2017	4	2023
Experimentation Efforts: Counter UAS at sea experiment series	1	2017	4	2023
Experimentation Efforts: Fleet Battle Experiment 18	2	2017	4	2023
Experimentation Efforts: Space Wargame	1	2017	4	2023