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 0603725N *I Facilities Improvement*							
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	13.196	4.213	2.837	5.301	-	5.301	3.399	3.319	3.339	3.395	Continuing	Continuing
0995: *Naval Facilities System*	7.769	2.066	1.786	4.078	-	4.078	2.199	2.164	2.170	2.212	Continuing	Continuing
3155: *Force Protection Ashore*	2.944	1.230	1.051	1.223	-	1.223	1.200	1.155	1.169	1.183	Continuing	Continuing
3347: *Navy Expeditionary Energy Development*	2.483	0.917	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.400

A. Mission Description and Budget Item Justification

Mission Description and Budget Item Justification:

This program provides for capabilities to: a) overcome performance limitations and reduce the life cycle cost of shore facilities and, b) provide protection against terrorist attacks for shore installations and their operations. The program focuses on technical and operational issues of specific Navy interest, where there are no unbiased test validated Commercial Off the Shelf (COTS) solutions available, and where timely capabilities may not materialize without specific demonstration or validation by the Navy. Additionally, the program completes the development of technologies originating from Navy, DOD and other sources of Science and Technology programs, including the National Science Foundation (NSF), the National Institute of Standards and Technology (NIST) and Department of Energy (DOE). Validated technologies are implemented in the Navy's Military Construction (MILCON) and Facilities, Sustainment Restoration and Modernization (FSRM) program, and Antiterrorism and Force Protection (ATFP) Other Procurement, Navy (OP,N) program.

Project 0995 addresses the following Navy facilities requirements during FY 2014 through FY 2020: Advance Technology for Waterfront Facilities Repair and Enhancements, Facilities Technologies to Reduce the Cost of Facilities Sustainment, Restoration and Modernization for reducing the total ownership cost (TOC) of future and existing Facilities and addressing natural and catastrophic risk of critical Naval Waterfront Facilities.

Force Protection Ashore Project 3155 addresses selective topics in modeling, and material technologies to reduce the vulnerability of installations; and reduce the acquisition and operating costs of protective technologies. The demonstrations and validations provide the independent, technical and operational test data for the development of competitive performance specifications to acquire the required capabilities. The ATFP project is coordinated with other DOD programs.

Project 3347: The Development of advanced Environmental Control Unit (ECU) for expeditionary force camp shelters project is a transition of a DOE FY12-14 funded project and is a continuation in technology development, and was transitioned to NAVFAC starting FY 2015.

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 0603725N *I Facilities Improvement*		
B. Program Change Summary ($ in Millions)	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**
Previous President's Budget	5.458	2.837	4.024	-	4.024
Current President's Budget	4.213	2.837	5.301	-	5.301
Total Adjustments	-1.245	0.000	1.277	-	1.277
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.053	0.000			
• SBIR/STTR Transfer	-0.192	0.000			
• Program Adjustments	0.000	0.000	1.493	-	1.493
• Rate/Misc Adjustments	0.000	0.000	-0.216	-	-0.216

Change Summary Explanation

Increase from FY18 to FY19 is due to a $2M increase for Port Damage Repair Joint Capability Technology Demonstration.

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 0603725N / *Facilities Improvement*	Project (Number/Name) 0995 / *Naval Facilities System*	

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
0995: *Naval Facilities System*	7.769	2.066	1.786	4.078	-	4.078	2.199	2.164	2.170	2.212	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program provides the Navy with new engineering capabilities that are required to overcome specific performance limitations of Naval shore facilities while reducing the cost of sustaining the Naval shore infrastructure. The program focuses available RDT&E resources on satisfying facility requirements where the Navy is a major stakeholder or where there are no tested validated Commercial Off the Shelf (COTS) solutions available, and a timely solution will not emerge without a Navy sponsored demonstration and validation. The program completes the development and validation of facility technologies originating in Navy science and technology programs, plus a variety of other sources which includes the National Science Foundation (NSF) and the National Institute of Standards and Technology (NIST). This program introduces the idea of resilient facilities and infrastructure thru hardening, rapid assessment, and recovery. Validated technologies are implemented in the Navy's Military Construction (MILCON) and Facilities Sustainment Restoration and Modernization Programs (FSRM). The Duncan Hunter National Defense Authorization Act of 2009 laid down very specific guidelines for the correction of corrosion deficiencies in DoD shore facilities which is estimated to be $1.9B (DOD Annual Cost of Corrosion for the Department of Defense Facilities and Infrastructure July 2010).

Project 0995 addresses two Navy facilities requirements: 1) waterfront facilities repair, upgrade and service life extension; and, 2) validation testing/performance monitoring of critical facilities (such as dry docks, piers, runways, magazines, etc.), testing and evaluation of the performance of alternative materials, and surfacing concepts, and, methods and corrosion technologies to reduce the cost of Sustainment, Restoration and Modernization (SRM).

Waterfront facilities, repair, upgrade and service life extension:
An urgent requirement exists for early identification of strategies and solution recommendations for seismic risk at Naval Facilities, and especially nuclear capable waterfront facilities. Recent Pacific Rim earthquakes have heightened anxiety levels on perceived huge risks to Navy waterfront facilities in the region. The sub-project will provide analysis and solution recommendations for facilities impacted by seismic risk. Waterfront facilities repair and upgrade: About 75% of the Navy's waterfront facilities are over 45 years old. They were designed for a service life of 25 years which was to satisfy the mission requirements existing at that time. The over aged reinforced concrete requires costly and repetitive repairs. Besides providing more pier side ship maintenance and thus reduce dry dock costs, these piers must be strengthened to support concentrated crane loads up to 140 tons when piers were originally not designed for concentrated loads. Piers were previously designed to service one or possibly two particular ship classes. Berthing flexibility is now limited by mooring and utility arrangements. This sub-project addresses new material design methods, and retrofit methods which extends the service life of existing waterfront facilities by an additional 15 or more years. The project also addresses updating the mission based service, environmental, and protection loading requirements imposed by changes in platforms, operations and threats. Other initiatives include: leveraging Building Information Modeling (BIM) technology to provide for enhanced facilities management processes and waterfront utilities service enhancements using models to achieve flexible berthing arrangements consistent with current and future platform mooring configurations and hotel service requirements including Facilities and Infrastructure Integrated Product Support for Acquisition Category (ACAT) Programs.

Technologies to reduce the cost of Sustainment, Restoration and Modernization (SRM):

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 0603725N / *Facilities Improvement*	**Project (Number/Name)** 0995 / *Naval Facilities System*

Technologies to reduce the cost of SRM issues of high operational significance are addressed on a priority basis. The Navy portion of corrosion deficiencies at DoD shore facilities is estimated to be $433M (DOD Annual Cost of Corrosion for the Department of Defense Facilities and Infrastructure July 2010). This effort will demonstrate and validate the cost and reliability of advanced corrosion technologies in order to assure their acceptance and implementation in traditionally conservative public works and construction industries. These facility corrosion technologies will accelerate the validation commercialization, and wide-spread implementation required to reduce the cost of correcting, the deficiencies in the Navy SRM backlog. The sub-projects include the continuing effort to validate, test and conduct performance monitoring of enhanced facility designs and coatings for facilities and equipment.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Waterfront facilities, repair, upgrade and service life extension:	0.807	0.707	2.831	0.000	2.831
Articles:	-	-	-	-	-
FY 2018 Plans: FY18 Plans to include: - Facilities Hardening efforts which currently include the Fixed Facility Protection and High Altitude Electro Magnetic Pulse (HEMP) for Navy Ocean Cable Shore Facilities. Fixed Facility Protection is working to develop and validate facility structure to withstand high energy projectiles. The High Altitude Electro Magnetic Pulse project is working to develop and validate defensive facilities which will protect electronic equipment from being damaged by electromagnetic radiation bursts. Findings will transition into Unified Facilities Criteria (UFC) Project, in accordance with the DoD Instruction 4120.24. - Facilities Recovery efforts which currently include Internal Curing of High Performance Concrete, Durable Concrete Repairs and Ultra High Performance Concrete for Structural Repairs. These projects are working to develop and validate concrete options for rapid repair and additional facilities infrastructure resiliency. Findings will transition into Unified Facilities Criteria (UFC) Project, in accordance with the DoD Instruction 4120.24. - Facilities Rapid Assessment efforts currently include Floating Pier Hydrodynamic Evaluation, Pier Mooring Analysis, and an In-Situ Bollard Testing Device. These projects will develop and validate assessment techniques and build numerical models of structural joints subject to wave and tidal motions such as those found in dry docks, piers and wharves. These Use models will improve joint design through dynamic analysis and model refinement. Findings will transition into Unified Facilities Criteria (UFC) Project, in accordance with DoD Instruction 4120.24.					
FY 2019 Base Plans: - Expansion of Facilities Resiliency (Hardening, Rapid Assessment and Recovery) projects to further demonstrate and validate technologies. - Funding the Asia Pacific Stability Initiative (APSI), which is a one-time funded requirement to complete repair for the Port Damage Repair Joint Capability Technology Demonstration (PDR/JCTD). The primary purpose of the funding will be to execute the final operational utility assessment (OUA) through procurement of equipment, as well as development of an engineering performance specification for transition. The work will be done at					

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 0603725N / *Facilities Improvement*	**Project (Number/Name)** 0995 / *Naval Facilities System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
both Naval Facilities Engineering and Expeditionary Warfare Center (Port Hueneme, CA) and at the Army Engineering Research and Development Center (Vicksburg, MS). ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY19 increase will fund APSI initiative to complete repairs on the PDR/JCTD.					
Title: Sustainment, Restoration & Modernization: ***Articles:*** ***FY 2018 Plans:*** FY18 Plans to include: -Development, testing and validation will continue with unmanned assessment devices such as the Camera Sled and the Unmanned Aerial Vehicle (UAV) for Facilities Inspection and Design Reconstruction. The Camera Sled has potential safety and cost benefits for inspecting pier pilings that are deeper than 100 feet. The Unmanned Aerial Vehicle for Facilities Inspection also has potential safety benefits by providing imagery of areas that may be deemed dangerous. The unmanned system will provide the necessary data processing, sensors, automatic control and communications in order to initiate autonomous systems to support Facilities Inspection Programs to include Airfield Pavements, Petroleum Oil Lubricant (POL) Facilities, Tall Towers, Roofing, etc. The autonomous nature of this technology will significantly increase inspection and design efficiency via faster execution and lower labor costs. Augmented Reality (AR) systems are being tested and evaluated for design and assessment uses. -Expand analysis of Additive Manufacturing (AM) capabilities to include a Knowledge Database (KD) for facilities and infrastructure. The expansion will include both new and existing assets: Investigate existing and projected applications of Additive Manufacturing Knowledge Database (AMKD) to facilities and infrastructure. Define requirements for AMKD technology applications. Procure and evaluate Additive Manufacturing technology against requirements in developmental and operational tests. Findings will transition into unified facilities criteria. ***FY 2019 Base Plans:*** FY19 Plans to include: - Develop, test and validate new concepts new concepts and technologies in the areas of corrosion. This includes the continued demonstration of cost (Return on Investment / ROI) and reliability of advanced corrosion technologies to assure their acceptance and implementation by conservative Public Works and construction industries. Identify technologies and products for accelerated implementation to reduce costs and reduce	1.259 -	1.079 -	1.247 -	0.000 -	1.247 -

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 0603725N / *Facilities Improvement*	**Project (Number/Name)** 0995 / *Naval Facilities System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
deficiencies in the Navy SRM backlog. Findings will transition into Unified Facilities Criteria (UFC) Project, in accordance with DoD Instruction 4120.24. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No significant change from FY18 to FY19.					
Accomplishments/Planned Programs Subtotals	2.066	1.786	4.078	0.000	4.078

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Projects identified in this budget have been carefully selected to respond to both the facilities support for new Acquisition Category Programs, to address TOC considerations of an evolving and aging infrastructure, and to facilitate rational risk based decisions and solutions to protect and decrease risk levels for Department of the Navy-critical infrastructure and facilities. Each project has been assessed to ensure that it is addressing legitimate risks and requirements of the shore establishment. The results of these projects will be the development of design and construction criteria and or components that directly impact the shore facilities.

E. Performance Metrics

Quarterly Program Reviews are conducted with the major performers to include funds status discussion, schedule review, assessment of plan to actual to meet benchmarks at midyear and end-of-year for PY1 and CY, and review of accomplishments and issues to date.

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 0603725N / *Facilities Improvement*	**Project (Number/Name)** 0995 / *Naval Facilities System*

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
Waterfront Facilities, Repair, Upgrade and Services Life Extension	Various	NAVFAC EXWC : Pt Hueneme, CA	2.782	0.807	Oct 2016	0.707	Dec 2017	2.831	Oct 2018	-		2.831	Continuing	Continuing	Continuing
Sustainment, Restoration and Modernization	Various	NAVFAC EXWC : Pt Hueneme, CA	4.987	1.259	Oct 2016	1.079	Oct 2017	1.247	Oct 2018	-		1.247	Continuing	Continuing	Continuing
		Subtotal	7.769	2.066		1.786		4.078		-		4.078	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	7.769	2.066		1.786		4.078		-		4.078	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 0603725N / *Facilities Improvement*	**Project (Number/Name)** 0995 / *Naval Facilities System*

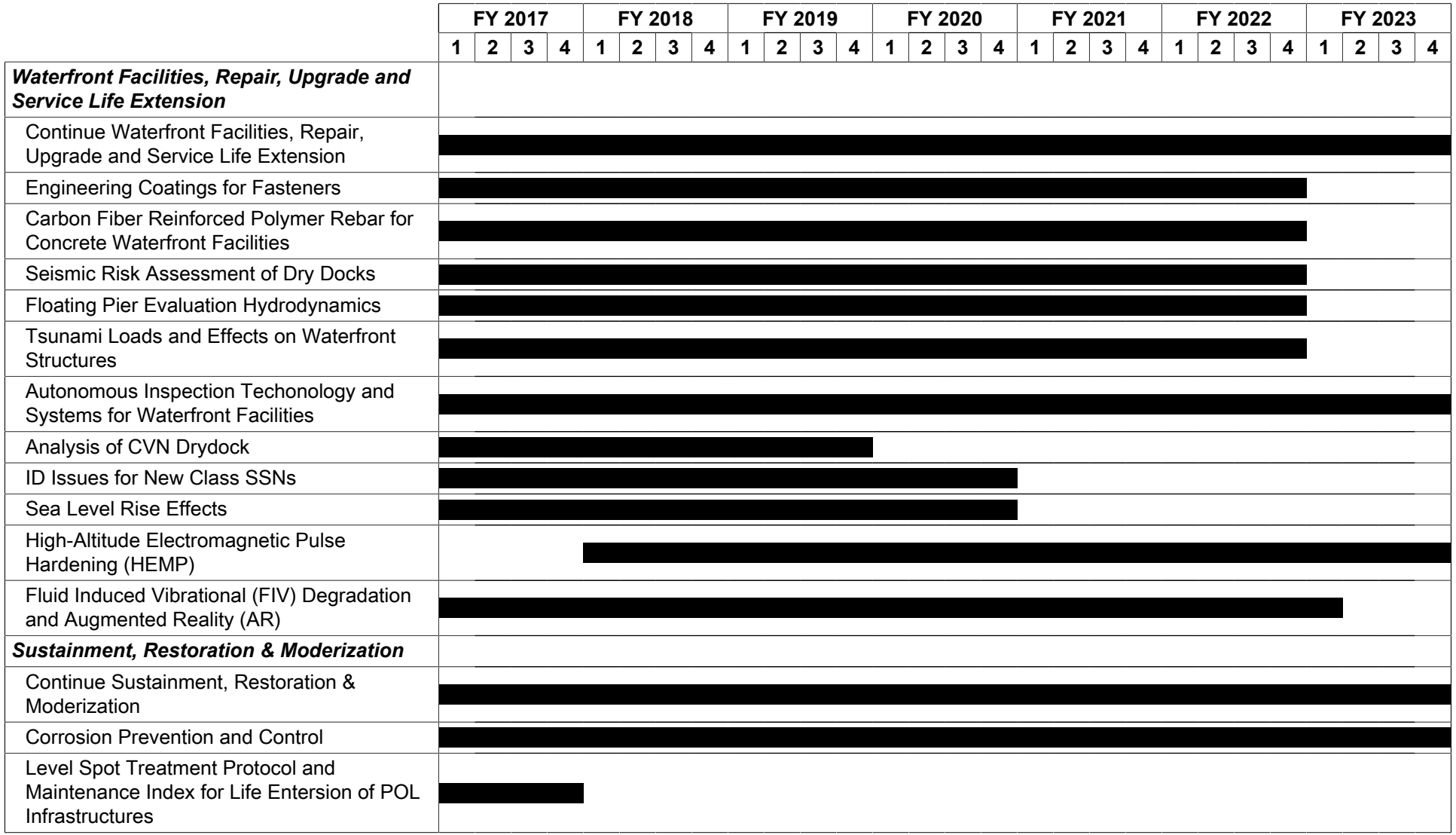

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 0995 / *Naval Facilities System*

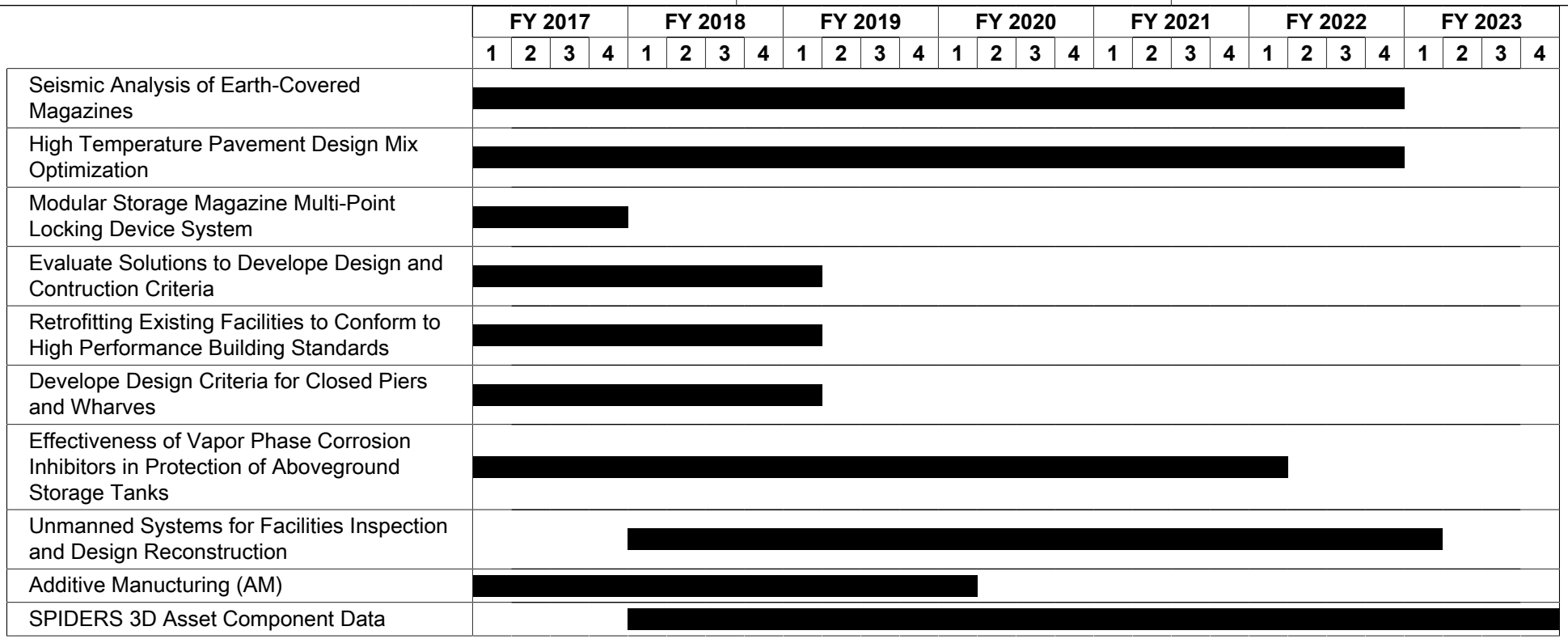

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 0995 / *Naval Facilities System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Waterfront Facilities, Repair, Upgrade and Service Life Extension				
Continue Waterfront Facilities, Repair, Upgrade and Service Life Extension	1	2017	4	2023
Engineering Coatings for Fasteners	1	2017	4	2022
Carbon Fiber Reinforced Polymer Rebar for Concrete Waterfront Facilities	1	2017	4	2022
Seismic Risk Assessment of Dry Docks	1	2017	4	2022
Floating Pier Evaluation Hydrodynamics	1	2017	4	2022
Tsunami Loads and Effects on Waterfront Structures	1	2017	4	2022
Autonomous Inspection Techonology and Systems for Waterfront Facilities	1	2017	4	2023
Analysis of CVN Drydock	1	2017	4	2019
ID Issues for New Class SSNs	1	2017	4	2020
Sea Level Rise Effects	1	2017	4	2020
High-Altitude Electromagnetic Pulse Hardening (HEMP)	1	2018	4	2023
Fluid Induced Vibrational (FIV) Degradation and Augmented Reality (AR)	1	2017	1	2023
Sustainment, Restoration & Moderization				
Continue Sustainment, Restoration & Moderization	1	2017	4	2023
Corrosion Prevention and Control	1	2017	4	2023
Level Spot Treatment Protocol and Maintenance Index for Life Entersion of POL Infrastructures	1	2017	4	2017
Seismic Analysis of Earth-Covered Magazines	1	2017	4	2022
High Temperature Pavement Design Mix Optimization	1	2017	4	2022
Modular Storage Magazine Multi-Point Locking Device System	1	2017	4	2017
Evaluate Solutions to Develope Design and Contruction Criteria	1	2017	1	2019
Retrofitting Existing Facilities to Conform to High Performance Building Standards	1	2017	1	2019

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 0603725N / *Facilities Improvement*	**Project (Number/Name)** 0995 / *Naval Facilities System*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Develope Design Criteria for Closed Piers and Wharves	1	2017	1	2019
Effectiveness of Vapor Phase Corrosion Inhibitors in Protection of Aboveground Storage Tanks	1	2017	1	2022
Unmanned Systems for Facilities Inspection and Design Reconstruction	1	2018	1	2023
Additive Manucturing (AM)	1	2017	1	2020
SPIDERS 3D Asset Component Data	1	2018	4	2023

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 0603725N / *Facilities Improvement*	Project (Number/Name) 3155 / *Force Protection Ashore*	

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
3155: *Force Protection Ashore*	2.944	1.230	1.051	1.223	-	1.223	1.200	1.155	1.169	1.183	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Protection of Navy installations against terrorist activities requires deployment of advanced technology for force protection capabilities. This antiterrorism and force protection (AT/FP) ashore project will develop, demonstrate and validate technologies for the following: access control and integrated perimeter security surveillance sensors and intelligent electronic security systems for automated intruder detection (Installation Protection); perimeter security; waterside protection against craft and swimmer intrusion; secure and efficient operations centers and emergency management centers including human and information support systems (Command and Control). Programs currently being evaluated are, standard-based enterprise physical security system integration and automation; Command, Control, and Communications (C3) capabilities for emergency operations; integrated and networked mass notification systems (MNS); Waterside intelligent video security systems; integrated over-the-water sensors and analytics for automated course of action planning; identifying and interdicting malevolent threats - watercraft, swimmers, divers, and unmanned underwater vessels (UUVs) to reduce injury and death to the warfighter and damage to high value units (HVUs)(Waterside Protection). Through demonstration and validation of risk modeling and simulation models, the potential of emerging technologies will be evaluated and installation security strategies that reduce manpower and other costs will be formulated. Multiple systems with sensors and cameras are being deployed on Navy installations to be used for threat assessment. These systems are not integrated and there is not a centralized location or system that all the data can be analyzed. The Sensor Assessment Cell (SAC) brings all these sensor feeds into one location and the Physical Security Information Management (PSIM) software provides an integrated picture so that an intelligent assessment can be made. Current AT/FP systems to be integrated include Automated Vehicle Gates (AVG), Regional Alarms/Local Alarms (AMAS), Navy Munition Command enclave (NMC), and Electronic Harbor Security System. These demonstrations and validations derive advanced technology from science and technology programs of government academia and industry. The technology evaluation and validation produces data for performance specifications used for competitive procurement. All work will be coordinated with other programs and through industry forums as appropriate.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Force Protection Ashore	1.230	1.051	1.223	0.000	1.223
Articles:	-	-	-	-	-
FY 2018 Plans: FY 2018 Base Plans: Funds will support continued and initiated projects from FY16 and FY17 as follow: - Continue Installation Protection Capability Development - Airborne Threat project to detect, assess and classify for the defense against full-scale and man-deployable airborne threats (e.g., UAV, drones, remote-control [R/C] platforms.-Testing of three Counter UAS systems at NAWC China Lake. Test plan and test report deliverables- [$379K] - Developmental Test & Evaluation (DT); NAWCAD/ONR.					

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 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3155 / *Force Protection Ashore*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Continue Command and Control Capability Development Virtual Field Support project to improve efficiency, effectiveness and reliability of the recovery of operational availability during critical system failures (corrective maintenance) and specialized routine maintenance (preventative maintenance).Developers to integrate alarm aggregator into virtual host and interface with Computer Aided Dispatch CAD system and Physical Information Security Manager PSIM. Deliverables include software source code, binaries, and software manuals. - [$262K] - Developmental Test & Evaluation (DT);SSC PAC: San Diego, CA. - Continue Waterside Protection - Boat Barriers project to access performance, environmental, and operational impact and added benefits of next generation boat barriers using bidirectional technology. - Pilot to deploy Next Gen Water Barrier at Norfolk Naval Station between pier 10 and 10a. NSWC Panama City. Deliverables include deployment of barrier, test plan and test reports.[$410K] - Developmental Test & Evaluation (OT); CTTSO.					
FY 2019 Base Plans: FY 2019 Base Plans: - Continue Installation Protection Capability Development - Airborne Threat project to detect, assess and classify for the defense against full-scale and man-deployable airborne threats (e.g., UAV, drones, remote-control [R/C] platforms).Emphasis on mobile Counter UAS systems and direct control of UAS system. Testing at NAWC China Lake. Test plan and test report deliverables-[$330K] - Developmental Test & Evaluation (DT); NAWCAD/ONR. - Continue Command and Control Capability Development Virtual Field Support project to improve efficiency, effectiveness and reliability of the recovery of operational availability during critical system failures (corrective maintenance) and specialized routine maintenance (preventative maintenance). Integrate system interfaces in a virtual environment to include CUAS and EHSS. Deliverables include software source code, binaries, and software manuals - [$220K] - Developmental Test & Evaluation (DT); SSC Atlantic. - Continue Waterside Protection - Boat Barriers project to access performance, environmental, and operational impact and added benefits of next generation boat barriers using bidirectional technology. Independent Testing of boat barriers by John Hopkins APL. Deliverables include testing of boat barrier, test plan and test reports [$369K] - Developmental Test & Evaluation (OT). - Sensor Assessment Cell (SAC) Project to develop, test and integrate a system of AT/FP sensors/camera's and provide an integrated picture to trained operators, who will assess information provided to them via a Physical Security Information System(PSIM) and determine if the event captured should trigger a dispatch of first responders. Test and develop CONOPS for regionally monitoring all alarms and sensors at a central location					

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 0603725N / *Facilities Improvement*	Project (Number/Name) 3155 / *Force Protection Ashore*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
and interfacing with ENERMS directly. Deliverables include SAC testing at the SW region RDC, test plan and test report. [$304K]. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No significant change from FY18 to FY19.					
Accomplishments/Planned Programs Subtotals	1.230	1.051	1.223	0.000	1.223

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Demonstration and validation is conducted for maximum transfer and interaction with industry such as to influence the industry COTS with the results of this demonstration and prototype validation. Acquisition is based on performance specifications enabled by this project.

E. Performance Metrics

Quarterly program reviews to include funds status, schedule review and assessment of plan to actual.

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 0603725N / *Facilities Improvement*	Project (Number/Name) 3155 / *Force Protection Ashore*	

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
Command and Control Capability Development: Government Engineering Support	Various	SPAWAR : San Diego, CA	0.499	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Installation Protection: Airborne Threat	WR	NAWCAD/ONR : Pax River, MD	0.000	0.538	Feb 2017	0.379	Feb 2018	0.330	Nov 2018	-		0.330	0.000	1.247	-
Command and Control Capability Development: Virtual Field Support	WR	SPAWAR : San Diego, CA	0.000	0.425	Feb 2017	0.262	Feb 2018	0.220	Nov 2018	-		0.220	0.000	0.907	-
Waterside Protection: Boat Barriers	C/CPFF	CTTSO : CTTSO	0.000	0.267	Feb 2017	0.410	Feb 2018	0.369	Nov 2018	-		0.369	0.000	1.046	-
Sensor Assessment Cell (SAC) Capability Development	Various	SPAWAR : San Diego, CA	0.000	0.000		0.000		0.304	Nov 2018	-		0.304	0.000	0.304	-
Installation Protection Capability Development - Integrated Physical Security and Access Control Automation: Spiral Development	Various	NSWC : Dahlgren, VA	0.597	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Installation Protection Capability Development -Integrated Physical Security and Access Control Automation:Test & Evaluation (DT)	Various	NSWC : Dahlgren, VA	0.449	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Installation Protection Capability Development - Integrated Physical Security and Access Control Automation:Test & Evaluation (OT)	Various	SPAWAR : San Diego, CA	0.332	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Water Protection - Common Information Exchange Spiral Development	WR	SSC-PAC : SSC-PAC	0.244	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3155 / *Force Protection Ashore*

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
Installation Protection - Versatile Access Control Spiral Development	WR	NSWC : Dahlgren, VA	0.339	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Waterside Protection - Boat Barrier Electronic Infrastructure - Spiral Development	WR	SSC-PAC : SSC-PAC	0.484	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	2.944	1.230		1.051		1.223		-		1.223	Continuing	Continuing	N/A

Remarks

As a result of FY16 decrease in funding levels the Installation Protection Capability Development - Incident Management System (IMS) - Spiral Development project is now rescheduled for FY17 and FY18 restoral funds.Installation Protection: Access Control Automation

	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	2.944	1.230		1.051		1.223		-		1.223	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 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3155 / *Force Protection Ashore*

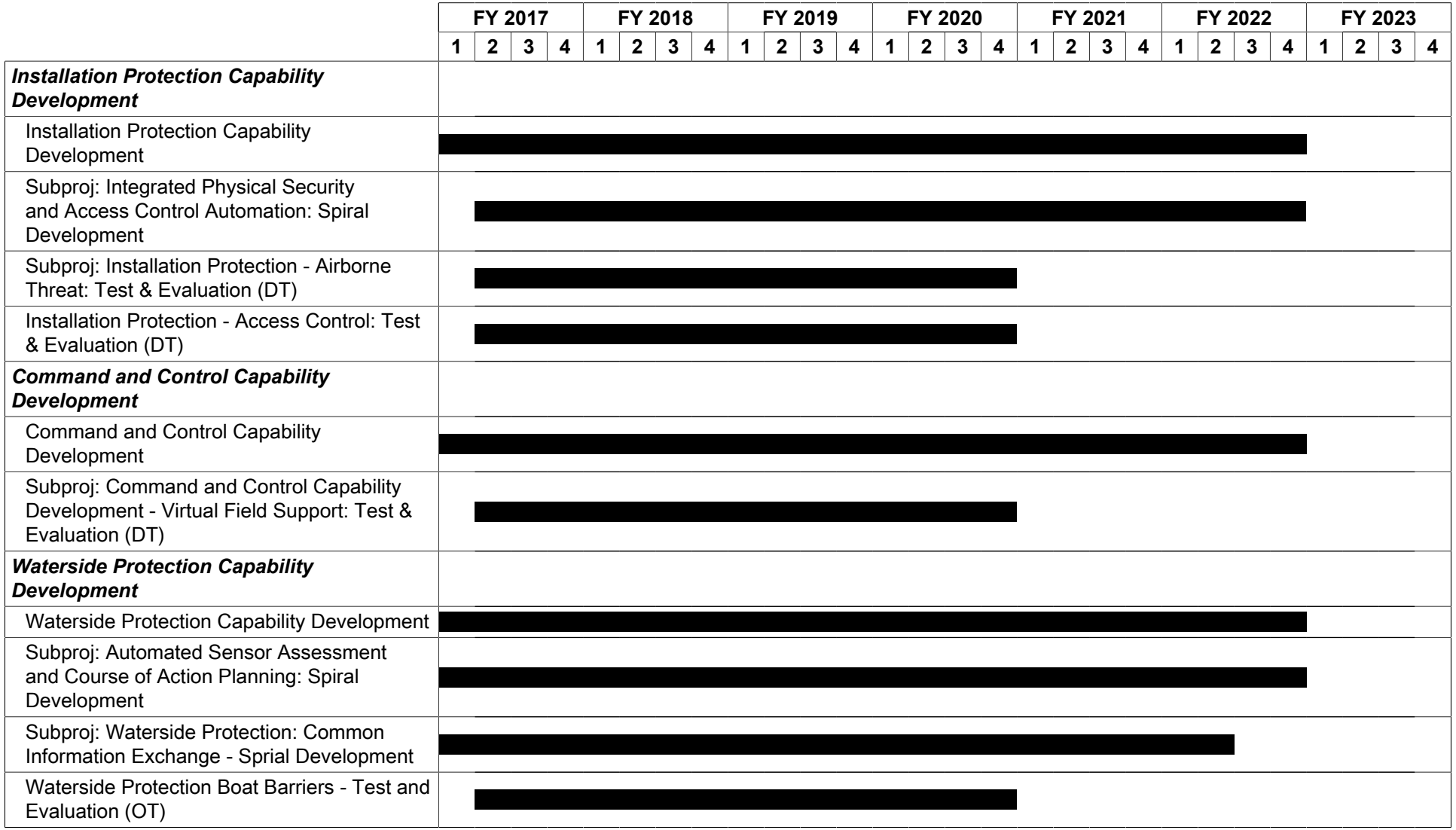

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3155 / *Force Protection Ashore*

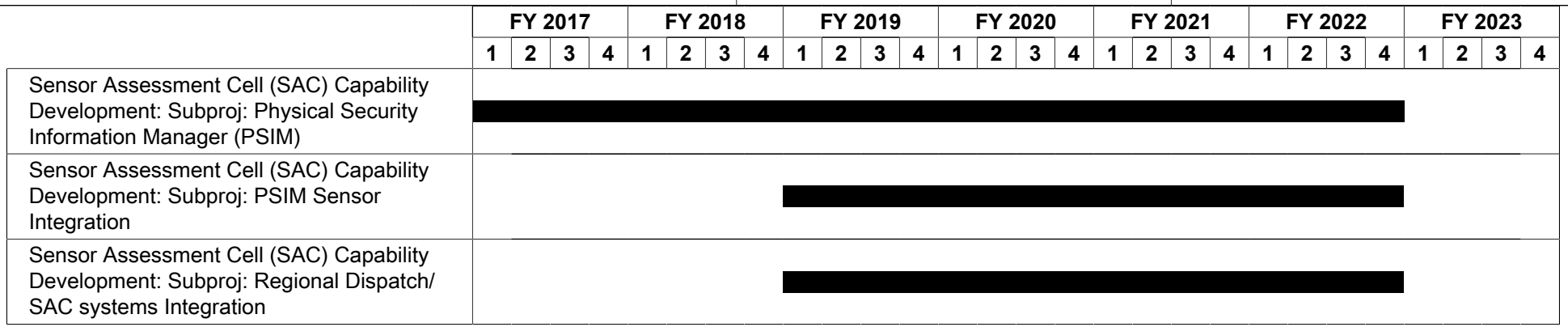

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3155 / *Force Protection Ashore*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Installation Protection Capability Development				
Installation Protection Capability Development	1	2017	4	2022
Subproj: Integrated Physical Security and Access Control Automation: Spiral Development	2	2017	4	2022
Subproj: Installation Protection - Airborne Threat: Test & Evaluation (DT)	2	2017	4	2020
Installation Protection - Access Control: Test & Evaluation (DT)	2	2017	4	2020
Command and Control Capability Development				
Command and Control Capability Development	1	2017	4	2022
Subproj: Command and Control Capability Development - Virtual Field Support: Test & Evaluation (DT)	2	2017	4	2020
Waterside Protection Capability Development				
Waterside Protection Capability Development	1	2017	4	2022
Subproj: Automated Sensor Assessment and Course of Action Planning: Spiral Development	1	2017	4	2022
Subproj: Waterside Protection: Common Information Exchange - Sprial Development	1	2017	2	2022
Waterside Protection Boat Barriers - Test and Evaluation (OT)	2	2017	4	2020
Sensor Assessment Cell (SAC) Capability Development: Subproj: Physical Security Information Manager (PSIM)	1	2017	4	2022
Sensor Assessment Cell (SAC) Capability Development: Subproj: PSIM Sensor Integration	1	2019	4	2022
Sensor Assessment Cell (SAC) Capability Development: Subproj: Regional Dispatch/ SAC systems Integration	1	2019	4	2022

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 0603725N / *Facilities Improvement*	Project (Number/Name) 3347 / *Navy Expeditionary Energy 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
3347: *Navy Expeditionary Energy Development*	2.483	0.917	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.400
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Development of advanced Environmental Control Unit (ECU) for expeditionary force camp shelters will reduce the heating and air-conditioning (HVAC) fuel consumption by 50% and also will reduce fuel transport convoys, and attendant manpower casualties and handling labor.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Expeditionary Environmental Control Unit (EECU)	0.917	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2018 Plans: N/A					
FY 2019 Base Plans: N/A					
FY 2019 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.917	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Development of this technology will continue in partnership with the Advanced Research Projects Agency-Energy (ARPA-E). The Navy is positioned to transition the technology into a procurement program once technologies are operationally test and accepted. Additionally, the Navy is pursuing methods to transition the program to the DoD Program Manager for Mobile Electric Power so that all of DoD can benefit from this latest generation, energy saving technology.

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 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3347 / *Navy Expeditionary Energy Development*

E. Performance Metrics

Quarterly Program Reviews will be conducted with the major performer to include cost, schedule, and performance risks for milestone achievement associated with the full scale prototypes

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 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3347 / *Navy Expeditionary Energy Development*

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
Expeditionary Environmental Control Unit (EECU)	Various	EXWC : Port Hueneme, CA	2.483	0.917	Jan 2017	0.000		0.000		-		0.000	0.000	3.400	Continuing
		Subtotal	2.483	0.917		0.000		0.000		-		0.000	0.000	3.400	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	2.483	0.917		0.000		0.000		-		0.000	0.000	3.400	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 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3347 / *Navy Expeditionary Energy Development*

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Proj 3347																												
Expeditionary Environmental Control Unit (ECU)																												

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 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3347 / *Navy Expeditionary Energy Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3347				
Expeditionary Environmental Control Unit (ECU)	1	2017	1	2017