Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy											Date: February 2020	
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 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**Cost To Complete**	**Total Cost**
Total Program Element	16.803	5.177	3.440	4.664	-	4.664	6.607	6.651	6.714	6.819	Continuing	Continuing
0995: *Naval Facilities System*	11.598	4.001	2.240	2.215	-	2.215	2.146	2.176	2.215	2.256	Continuing	Continuing
3155: *Force Protection Ashore*	5.205	1.176	1.200	2.449	-	2.449	4.461	4.475	4.499	4.563	Continuing	Continuing

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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy					Date: February 2020
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 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**
Previous President's Budget	5.301	3.440	3.284	-	3.284
Current President's Budget	5.177	3.440	4.664	-	4.664
Total Adjustments	-0.124	0.000	1.380	-	1.380
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.124	0.000			
• Program Adjustments	0.000	0.000	1.301	-	1.301
• Rate/Misc Adjustments	0.000	0.000	0.079	-	0.079

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
0995: *Naval Facilities System*	11.598	4.001	2.240	2.215	-	2.215	2.146	2.176	2.215	2.256	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In accordance with the National Defense Strategy (NDS) of 2018, A Design for Maintaining Maritime Superiority 2.0 and the NAVFAC Strategic Design 2.0 Guidance, 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 and increasing resiliency. 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 that 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. The validated technologies will be 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:
Improved resilience of our installations (employing key technology focus areas defined in the NDS) will enable readiness and fleet lethality. An urgent requirement exists for early identification of strategies and solution recommendations for sea level rise at Naval Facilities, and especially nuclear capable waterfront facilities. Recent weather patterns have heightened anxiety levels on perceived huge risks to Navy waterfront facilities. The sub-project will provide analysis and solution recommendations for facilities affected by sea level rise. Approximately 75% of the Navy's waterfront facilities are over 45 years old, but they were designed for a service life of 25 years. 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, specific ship classes. Berthing flexibility is now limited by mooring and utility arrangements. This sub-project addresses new material design and retrofit methods, which extends the service life of existing waterfront facilities by an additional 15 years, or longer. 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 2021 Navy		Date: February 2020
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's 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 ensure their acceptance and implementation.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Waterfront facilities, repair, upgrade and service life extension:	2.831	0.769	0.944	0.000	0.944
Articles:	-	-	-	-	-
FY 2020 Plans: FY20 Plans to include: -Funding the development of methodologies for Field Carrier Landing Practice (FCLP) pavement repairs and material selection capable of withstanding repeated exposure to Joint Strike Fighter (JSF) F-35 Short Take-Off and Vertical Landing (STOVL) conditions. -Funding technologies that facilitate the assessment, repair and continued operation of Strategic Airlift (STRATLIFT) sorties. -Funding technologies to physically harden critical facility elements that enable fleet operations.					
FY 2021 Base Plans: -Continue the development of methodologies for Field Carrier Landing Practice (FCLP) pavement repairs and material selection capable of withstanding repeated exposure to Joint Strike Fighter (JSF) F-35 Short Take-Off and Vertical Landing (STOVL) conditions. -Continue funding technologies that facilitate the assessment, repair and continued operation of Strategic Airlift (STRATLIFT) sorties. -Continue funding technologies to physically harden critical facility elements that enable fleet operations and mitigate the effects of sea level rise.					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement: -Increase of 0.175 in FY21 budget due to expanding investments in Implementation of "Internet of things," SCADA, and cybersecurity initiatives that require 5G wireless broadband access at Naval facilities.					
Title: Sustainment, Restoration & Modernization:	1.170	1.471	1.271	0.000	1.271
Articles:	-	-	-	-	-
FY 2020 Plans: -Funding strategies and technologies to better maintain and modernize Navy undersea facility infrastructure, focusing on harvesting, distribution and supply of subsea power and communications.					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
-Funding technologies that will significantly reduce the sustainment cost of installations. This includes technologies that mitigate corrosion, facilitate inspection and assessment, increase longevity and reduce the cost of construction and reduce the cost of maintenance by developing systems that are more reliable and maintainable by the user. ***FY 2021 Base Plans:*** -Continue funding strategies and technologies to better maintain and modernize Navy undersea facility infrastructure, focusing on harvesting, distribution and supply of subsea power and communications. -Continue funding technologies that will significantly reduce the sustainment cost of installations. This includes technologies that mitigate corrosion, facilitate inspection and assessment, increase longevity while reducing the cost of construction, and reducing the cost of maintenance by developing systems that are more reliable and maintainable by the user. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** -Decrease of 0.2 in FY21 budget due to decreasing efforts for corrosion prevention					
Accomplishments/Planned Programs Subtotals	4.001	2.240	2.215	0.000	2.215

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: Facilities support for the National Defense Strategy of 2018, Acquisition Category Programs, to address TOC and resiliency 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 influence shore facilities.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy		Date: February 2020
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 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 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	4.296	2.831	Oct 2018	0.769	Jan 2020	0.944	Oct 2020	-		0.944	Continuing	Continuing	Continuing
Sustainment, Restoration and Modernization	Various	NAVFAC EXWC : Pt Hueneme, CA	7.302	1.170	Oct 2018	1.471	Jan 2020	1.271	Oct 2020	-		1.271	Continuing	Continuing	Continuing
		Subtotal	11.598	4.001		2.240		2.215		-		2.215	Continuing	Continuing	N/A

Remarks

-Sustainment, Restoration and Modernization: ($1.247 FY19-$1.471 in FY20): Increase of 224K in FY20 budget due to expanding investment in Implementation of "Internet of things," SCADA, and cybersecurity initiatives that require 5G wireless broadband access.

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	11.598	4.001		2.240		2.215		-		2.215	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 0995 / *Naval Facilities System*

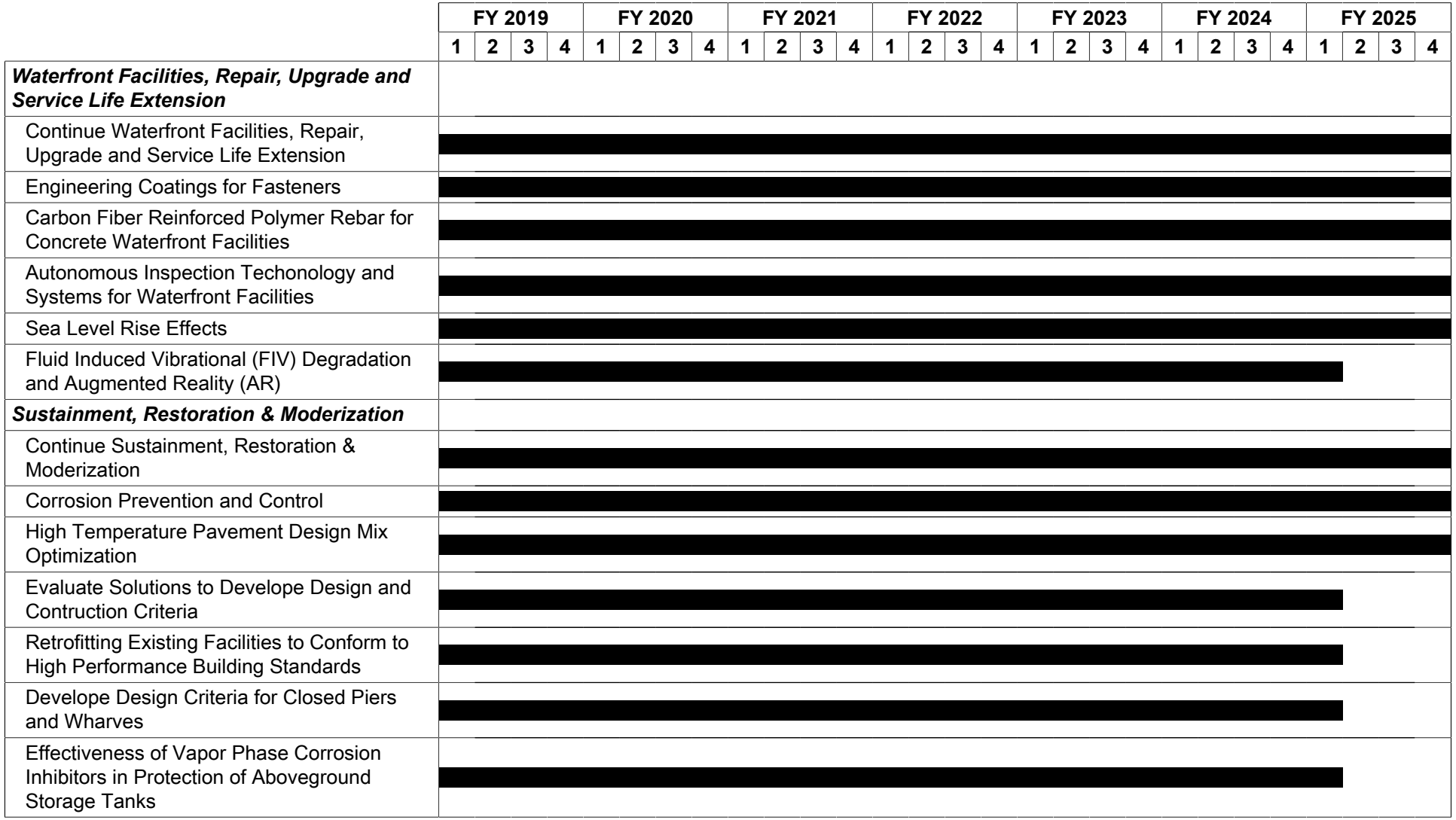

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 0995 / *Naval Facilities System*

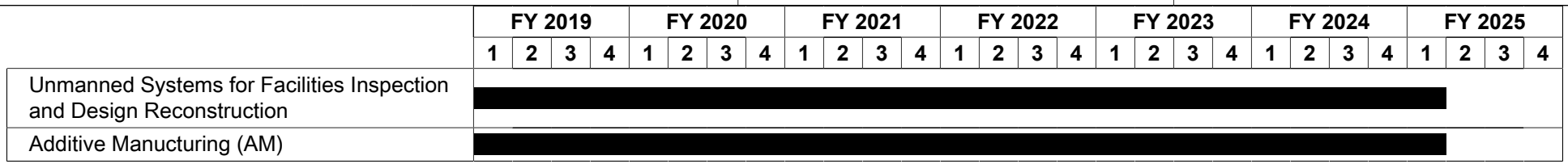

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 0995 / *Naval Facilities System*

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	2019	4	2025
Engineering Coatings for Fasteners	1	2019	4	2025
Carbon Fiber Reinforced Polymer Rebar for Concrete Waterfront Facilities	1	2019	4	2025
Autonomous Inspection Techonology and Systems for Waterfront Facilities	1	2019	4	2025
Sea Level Rise Effects	1	2019	4	2025
Fluid Induced Vibrational (FIV) Degradation and Augmented Reality (AR)	1	2019	1	2025
Sustainment, Restoration & Moderization				
Continue Sustainment, Restoration & Moderization	1	2019	4	2025
Corrosion Prevention and Control	1	2019	4	2025
High Temperature Pavement Design Mix Optimization	1	2019	4	2025
Evaluate Solutions to Develope Design and Contruction Criteria	1	2019	1	2025
Retrofitting Existing Facilities to Conform to High Performance Building Standards	1	2019	1	2025
Develope Design Criteria for Closed Piers and Wharves	1	2019	1	2025
Effectiveness of Vapor Phase Corrosion Inhibitors in Protection of Aboveground Storage Tanks	1	2019	1	2025
Unmanned Systems for Facilities Inspection and Design Reconstruction	1	2019	1	2025
Additive Manucturing (AM)	1	2019	1	2025

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
3155: *Force Protection Ashore*	5.205	1.176	1.200	2.449	-	2.449	4.461	4.475	4.499	4.563	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.

Project 4038:Cyber Vulnerability Assessments of Critical Infrastructure
The Cyber Vulnerability Assessments and Evaluations program funds cyber vulnerability assessments of critical shore infrastructure as directed by Section 1650 of the FY17 National Defense Authorization Act (NDAA). Funding will be used for assessments of prioritized critical shore infrastructure. Sec. 1650 of the FY17 NDAA directs the Secretary of Defense to submit a plan for assessing the cyber vulnerability of critical defense infrastructure and begin assessment of this infrastructure during a preliminary pilot program that will assess no fewer than two installations by December, 31 2019. Funded vulnerability assessments will end by calendar year 2020 and will build upon existing mission assurance, blue team, and red team capabilities. As instructed by the Congressional language, the assessments will utilize DoE and DoD national laboratory partnerships. Assessments will end with the submission of a final report to Congress. Strategies and procedures for mitigating the risk of cyber vulnerabilities should be identified during the course of evaluation vulnerability

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Force Protection Ashore	1.176	1.200	2.449	0.000	2.449
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
FY 2020 Plans: FY 2020 Base Plans: - Continue Counter Unmanned Aerial Systems (CsUAS) - Used to detect, assess and classify airborne threat for the defense against full scale and man deployable UAV, Drones, R/C platforms. Emphasis on spoof and kill-on-kill technologies. [450K] - Initiate Access Control Point (ACP) Video Analytics - Using Video Analytics to Detect, Assess and Classify Vehicles or Personnel attempting to enter or leave an ACP. Emphasis on foot traffic, small footprint vehicles (Scooter, Bicycle), wrong-way detection. [250K] - Initiate Waterside Intelligent Video Security System (WSIVDS) - 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)) for the protection of personnel and High Value Units (HVU). [$500K]					
FY 2021 Base Plans: FY 2021 Base Plans (Project 3155 ATFP): -Continue Waterside Intelligent Video Security System (WSIVDS) - 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)) for the protection of personnel and High Value Units (HVU). [$300K] -Initiate the Integrated Multi-sensor Perimeter Awareness with Intelligent LiDAR (IMPAIL) System of Systems (SoS) will leverage advancements and ubiquity in autonomous vehicle obstacle detection / avoidance sensors (LiDAR), fusing with Installations' existing electronic security systems to enhance unauthorized access situational awareness, detection, threat classification, and tracking in 3-Dimensions.[$250K] -Initiate Multimodal Automated Vehicle Barrier (MAVB)- Integrate Active Vehicle Barriers (AVB's) using a PLC and Sensor alarms into an enterprise Physical Security Information Manager (PSIM) architecture able to be monitored at the Sensor Assessment Cells (SAC) and develop multimode active vehicle interface to further reduce unauthorized access by reducing likely avenues of approach.[450K] -Initiate Modeling and Simulation of Requirements (M/S - REQ) Modeling and Simulation of system requirements using SysML modeling software. Changes in requirements will be tracked via the model to ascertain how a system requirements change affects the enterprise systems architecture[$155K] FY21 BASE PLAN PROJECT 4038: -Participate in Joint Testing and Training exercises for ICS/SCADA Assessments -Conduct Red Team review of deployed FRCS Architecture and (CSPE) Control Systems Platform Enclave					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
-Continue a common environment to TRL-6 to monitor and configure SDN flow controllers -Develop implementation guides for future FRCS SDN deployments -Continue Fleet Level Experimentation Exercise (FLEX) participation and integration in to Control systems Test Bed -Continue Modeling and Simulation (SCEPTRE) deployment into CSTB -Cyber Protection and Response Capability (CPRC) [.500] -Continue More Situational Awareness (MOSAICS) Industrial Control systems [.800] ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Increase of 1.249 is to continue Cyber Protection Response Capabilities(Project 4038) and to continue providing Situational awareness of Control Systems					
Accomplishments/Planned Programs Subtotals	1.176	1.200	2.449	0.000	2.449

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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy		Date: February 2020
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 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 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	0.907	0.330	Nov 2018	0.450	Feb 2020	0.000		-		0.000	0.000	1.687	-
Access Control Point (ACP)	Various	SPAWAR : San Diego, CA	0.000	0.000		0.250	Feb 2020	0.000		-		0.000	0.000	0.250	-
Waterside Intelligent Video Security System (WSIVDS)	Various	SPAWAR : San Diego, CA	0.000	0.000		0.500	Feb 2020	0.300	Dec 2020	-		0.300	0.000	0.800	-
Command and Control Capability Development: Virtual Field Support	WR	SPAWAR : San Diego, CA	0.677	0.220	Nov 2018	0.000		0.000		-		0.000	0.000	0.897	-
Integrated Multi-sensor Perimeter Awareness with Intelligent LiDAR (IMPAIL) System	Various	NIWC-PAC : San Diego, CA	0.000	0.000		0.000		0.244	Dec 2020	-		0.244	0.000	0.244	-
Waterside Protection: Boat Barriers	C/CPFF	CTTSO : CTTSO	0.677	0.322	Nov 2018	0.000		0.000		-		0.000	0.000	0.999	-
Multimodal Automated Vehicle Barrier (MAVB	Various	NIWC-PAC : San Diego, CA	0.000	0.000		0.000		0.450	Dec 2020	-		0.450	0.000	0.450	-
Sensor Assessment Cell (SAC) Capability Development	Various	SPAWAR : San Diego, CA	0.000	0.304	Nov 2018	0.000		0.000		-		0.000	0.000	0.304	-
Modeling and Simulation of Requirements (M/S ? REQ)	Various	NIWC-LANT : Charleston,SC	0.000	0.000		0.000		0.155	Dec 2020	-		0.155	0.000	0.155	-
Cyber Protection and Response Capability	WR	EXWC : Pt. Hueneme, CA	0.000	0.000		0.000		0.500	Aug 2021	-		0.500	0.000	0.500	-
More Situational Awareness (MOSAICS)	C/CPFF	SANDIA National Labs : SANDIA National Labs	0.000	0.000		0.000		0.800	Aug 2021	-		0.800	0.000	0.800	-
Installation Protection Capability Development	Various	NSWC : Dahlgren, VA	0.597	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
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 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
- Integrated Physical Security and Access Control Automation: Spiral Development															
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
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	5.205	1.176		1.200		2.449		-		2.449	Continuing	Continuing	N/A

Remarks

-Installation Protection: Airborne Threat: ($0.330 FY19-$0.450 in FY20): Increase due to increase in scope of testing to include kinetic solutions for airborne threats. Testing kinetic solutions is at a higher cost.

- Access Control Point (ACP): ($0.00 FY19-$0.250 in FY20): Increase due to new start in pilot program to design/test smart active barriers at an ACP.

- Waterside Intelligent Video Security System (WSIVDS): ($0.00 FY19-$0.500 in FY20): Increase due to new Start in pilot program to design/test new technologies for the detection of swimmers and UUAV's.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
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 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project 4038: -Cyber Protection and Response Capability $.500 FY21 -More Situational Awareness $.800 FY21															

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5.205	1.176		1.200		2.449		-		2.449	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3155 / *Force Protection Ashore*

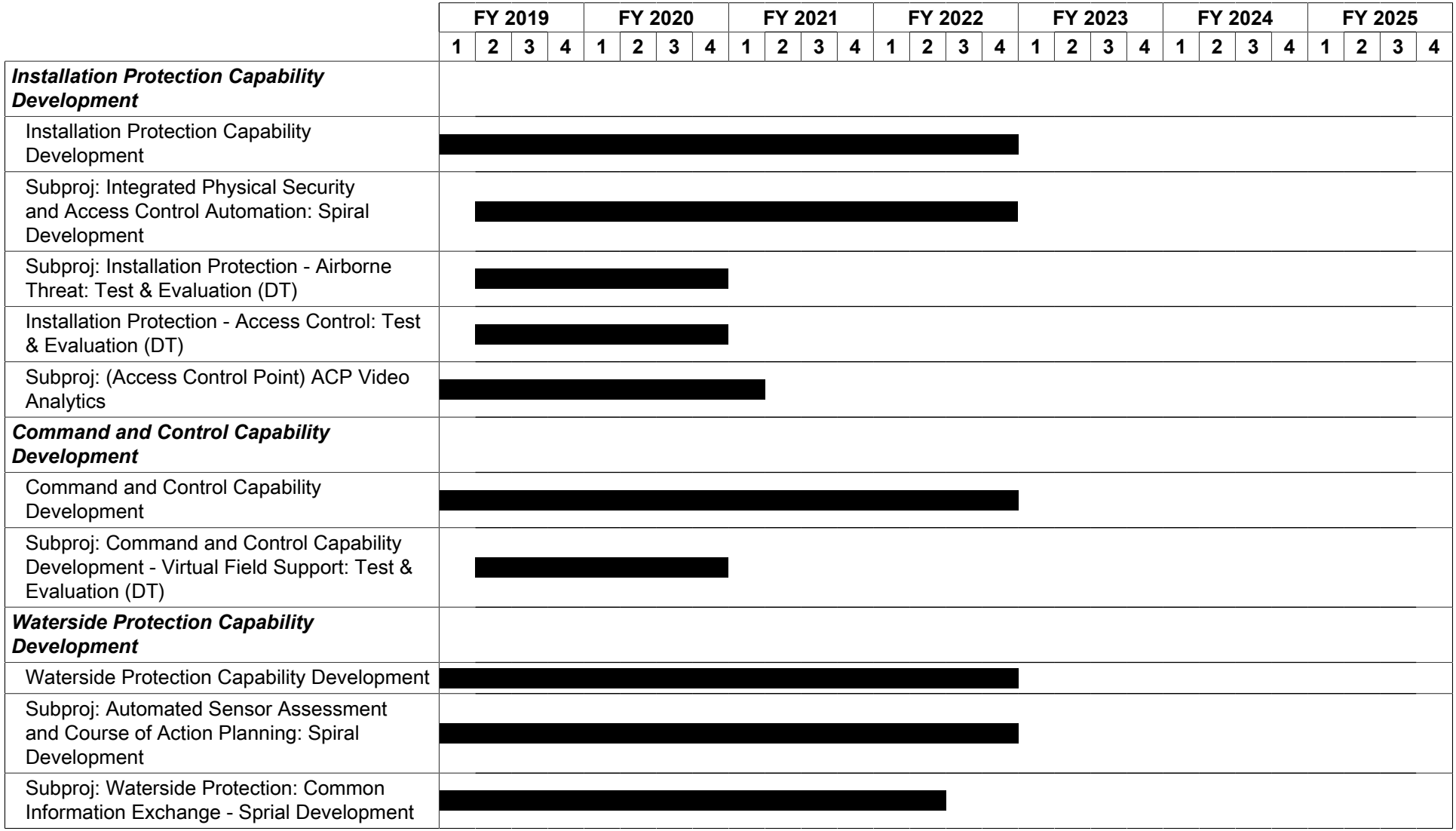

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3155 / *Force Protection Ashore*

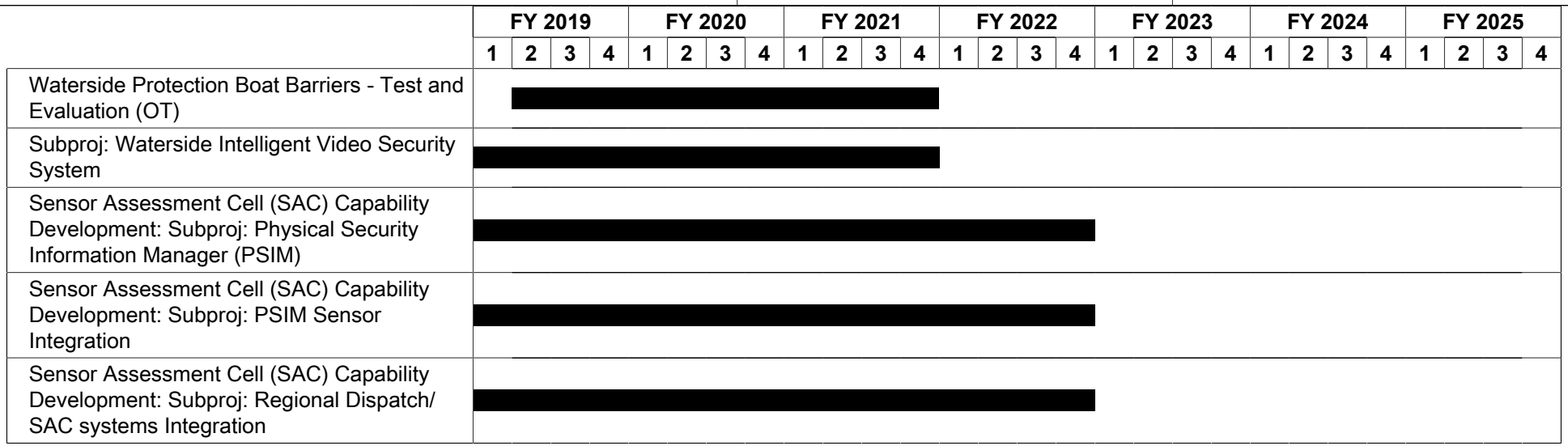

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3155 / *Force Protection Ashore*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Installation Protection Capability Development				
Installation Protection Capability Development	1	2019	4	2022
Subproj: Integrated Physical Security and Access Control Automation: Spiral Development	2	2019	4	2022
Subproj: Installation Protection - Airborne Threat: Test & Evaluation (DT)	2	2019	4	2020
Installation Protection - Access Control: Test & Evaluation (DT)	2	2019	4	2020
Subproj: (Access Control Point) ACP Video Analytics	1	2019	1	2021
Command and Control Capability Development				
Command and Control Capability Development	1	2019	4	2022
Subproj: Command and Control Capability Development - Virtual Field Support: Test & Evaluation (DT)	2	2019	4	2020
Waterside Protection Capability Development				
Waterside Protection Capability Development	1	2019	4	2022
Subproj: Automated Sensor Assessment and Course of Action Planning: Spiral Development	1	2019	4	2022
Subproj: Waterside Protection: Common Information Exchange - Sprial Development	1	2019	2	2022
Waterside Protection Boat Barriers - Test and Evaluation (OT)	2	2019	4	2021
Subproj: Waterside Intelligent Video Security System	1	2019	4	2021
Sensor Assessment Cell (SAC) Capability Development: Subproj: Physical Security Information Manager (PSIM)	1	2019	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