Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy											Date: April 2022	
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 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Cost To Complete**	**Total Cost**
Total Program Element	25.139	4.527	6.327	5.664	-	5.664	7.587	7.369	7.036	7.166	Continuing	Continuing
0995: *Naval Facilities System*	17.604	1.656	2.140	1.993	-	1.993	2.371	2.371	2.334	2.380	Continuing	Continuing
3018: *Facilities Related Controls Systems (FRCS) Cybersecurity RDTE*	0.000	1.250	3.247	2.829	-	2.829	3.657	3.590	3.453	3.514	Continuing	Continuing
3155: *Force Protection Ashore*	7.535	1.104	0.940	0.842	-	0.842	1.559	1.408	1.249	1.272	Continuing	Continuing
3460: *Red Hill Secondary Containment Research*	0.000	0.517	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.517

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.

Naval Facilities System Project 0995 addresses 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.

Project 3018: Facilities Related Controls Systems (FRCS) Cybersecurity RDTE. 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy	Date: April 2022
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*

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.

The Red Hill Secondary Containment Research Project 3460 was created to provide fiscal clarity for a second containment research study due to environmental concerns for researching containment options at the Red Hill underground fuel storage site in Hawaii. The study was originally conducted within the Facilities, Sustainment Restoration and Modernization (FSRM) program which falls under PE 0603725N PRJ 0995.

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	4.645	6.327	0.000	-	0.000
Current President's Budget	4.527	6.327	5.664	-	5.664
Total Adjustments	-0.118	0.000	5.664	-	5.664
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.033	0.000			
• SBIR/STTR Transfer	-0.151	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000
• Adjustments to Budget Year	-	-	5.664	-	5.664

Change Summary Explanation

The FY 2023 funding request was reduced by $1.170 million to account for the availability of prior year execution balances.

FY 2023 funding increase reflects the fact that the FY 2022 President’s Budget request did not include out-year funding.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
0995: *Naval Facilities System*	17.604	1.656	2.140	1.993	-	1.993	2.371	2.371	2.334	2.380	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 2023 Navy		Date: April 2022
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Waterfront Facilities, Repair, Upgrade and Service Life Extension	0.944	1.271	1.128	0.000	1.128
Articles:	-	-	-	-	-
FY 2022 Plans: -Continue funding technologies, with the exception of Fluid Induced Vibration Degradation and AR. -Increase investment in autonomous inspection technologies for piers, pavements, and runways. ***FY 2023 Base Plans:*** -Continue funding technologies which includes the addition of investment in Climate Change Adaptation. -Decrease investment in autonomous inspection technologies for piers, pavements, and runways. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY23 $0.143M decrease reduces investment in autonomous inspection technologies for piers, pavements, and runways.					
Title: Sustainment, Restoration & Modernization	0.712	0.869	0.865	0.000	0.865
Articles:	-	-	-	-	-
FY 2022 Plans: -Continue funding technologies with the exception of Additive Manufacturing and Vapor Phase Corrosion Inhibitors. ***FY 2023 Base Plans:*** -Continue funding technologies which includes the addition of designing for Climate Change. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY23 $0.004M decrease is due to reduction in labor hours.					
Accomplishments/Planned Programs Subtotals	1.656	2.140	1.993	0.000	1.993

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 0995 / *Naval Facilities System*

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 2023 Navy		Date: April 2022
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 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 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	7.661	0.944	Dec 2020	1.271	Dec 2021	1.128	Jan 2023	-		1.128	Continuing	Continuing	Continuing
Sustainment, Restoration and Modernization	Various	NAVFAC EXWC : Pt Hueneme, CA	9.943	0.712	Dec 2020	0.869	Dec 2021	0.865	Jan 2023	-		0.865	Continuing	Continuing	Continuing
		Subtotal	17.604	1.656		2.140		1.993		-		1.993	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	17.604	1.656		2.140		1.993		-		1.993	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 0995 / *Naval Facilities System*

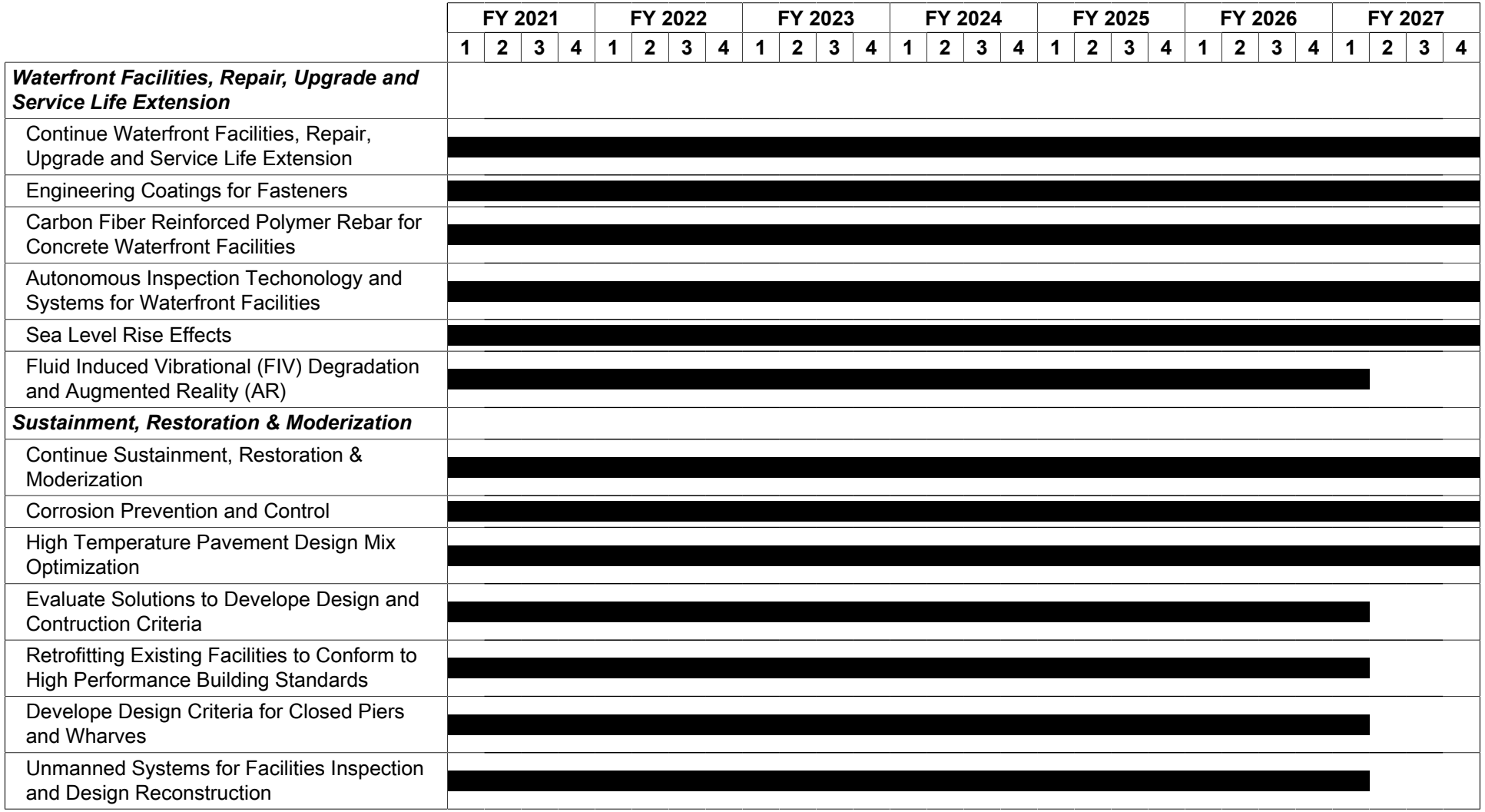

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 0995 / *Naval Facilities System*

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	2021	4	2027
Engineering Coatings for Fasteners	1	2021	4	2027
Carbon Fiber Reinforced Polymer Rebar for Concrete Waterfront Facilities	1	2021	4	2027
Autonomous Inspection Techonology and Systems for Waterfront Facilities	1	2021	4	2027
Sea Level Rise Effects	1	2021	4	2027
Fluid Induced Vibrational (FIV) Degradation and Augmented Reality (AR)	1	2021	1	2027
Sustainment, Restoration & Moderization				
Continue Sustainment, Restoration & Moderization	1	2021	4	2027
Corrosion Prevention and Control	1	2021	4	2027
High Temperature Pavement Design Mix Optimization	1	2021	4	2027
Evaluate Solutions to Develope Design and Contruction Criteria	1	2021	1	2027
Retrofitting Existing Facilities to Conform to High Performance Building Standards	1	2021	1	2027
Develope Design Criteria for Closed Piers and Wharves	1	2021	1	2027
Unmanned Systems for Facilities Inspection and Design Reconstruction	1	2021	1	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603725N / *Facilities Improvement*	Project (Number/Name) 3018 / *Facilities Related Controls Systems (FRCS) Cybersecurity RDTE*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
3018: *Facilities Related Controls Systems (FRCS) Cybersecurity RDTE*	0.000	1.250	3.247	2.829	-	2.829	3.657	3.590	3.453	3.514	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Cyber Protection and Response Capability	0.625	1.000	1.225	0.000	1.225
Articles:	-	-	-	-	-
FY 2022 Plans: -Continue to participate in Joint Testing and Training exercises for ICS/SCADA Assessments -Continue conducting Red Team review of deployed Facilities Related Controls Systems (FRCS) Architecture and Control Systems Platform Enclave (CSPE) -Continue a common environment to TRL-6 to monitor and configure SDN flow controllers -Continue development and 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 -Implement and test FRCS Standardized models into CSTB and analyze -Cyber Protection and Response Capability [$1.000]					
FY 2023 Base Plans: -Continue to develop and test ICS/SCADA assessment procedures					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3018 / *Facilities Related Controls Systems (FRCS) Cybersecurity RDTE*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
-Introduce additional Red Team and Blue team testing of Facilities Related Controls Systems (FRCS) Architecture and Control Systems Platform Enclave (CSPE) -Deploy SDN architecture in to RDTE environment -Test additional FRCS standardization models in RDTE environment -Test CPRC capabilities within emerging cyber vulnerabilities and signatures ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY23 $0.225M increase supports additional red and blue team testing of Facilities Related Controls Systems (FRCS) and Control Systems Platform Enclave (CSPE).					
Title: More Situational Awareness (MOSAICS)	0.625	0.947	1.324	0.000	1.324
Articles:	-	-	-	-	-
FY 2022 Plans: FY22 total control of $0.947 was realigned from project 3155 to new project 3018: -Continue support in Joint Testing and Training exercises for ICS/SCADA Assessments -Continue conduct of Red Team review of deployed FRCS Architecture and (CSPE) Control Systems Platform Enclave -Continue a common environment to TRL-6 to monitor and configure SDN flow controllers -Continue development and implementation guides for future FRCS SDN deployments -Continue Fleet Level Experimentation Exercise (FLEX) participation and integration in to Control systems Test Bed -Integrate FRCS Standard models (SCEPTRE) into CSTB -More Situational Awareness (MOSAICS) ***FY 2023 Base Plans:*** -Continue adding sites to MOSAICs monitoring footprint within the RDTE architecture. -Introduce cyber vulnerability test scenarios to develop signatures -Integrate SDN and MOSAICS into standard operating architecture -Test SCEPTRE and CSTB functionality					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3018 / *Facilities Related Controls Systems (FRCS) Cybersecurity RDTE*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
-Validate response capabilities within FLEX ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY23 $0.377M increase supports More Situational Awareness (MOSAICS) fielding plan of infrastructure sites.					
Title: Digital Twin Development ***Articles:*** ***FY 2022 Plans:*** FY22 total control of $1.300 was realigned from project 3155 to project 3018: - Continue support of Digital Twin Development in support of Cyber Protection and Response Capability, and demonstration and prototype validation project. ***FY 2023 Base Plans:*** -Continue development and management of Digital Twin capabilities. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY23 $1.020M decrease due to completion of supply and equipment procurement and reduction of allocated labor hours.	0.000 -	1.300 -	0.280 -	0.000 -	0.280 -
Accomplishments/Planned Programs Subtotals	1.250	3.247	2.829	0.000	2.829

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 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3018 / *Facilities Related Controls Systems (FRCS) Cybersecurity RDTE*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Cyber Protection and Response Capability	WR	EXWC : Pt. Hueneme, CA	0.000	0.625	Jun 2021	1.000	Feb 2022	1.225	Dec 2022	-		1.225	Continuing	Continuing	Continuing
More Situational Awareness (MOSAICS)	C/CPFF	SANDIA National Labs : SANDIA National Labs	0.000	0.625	Jun 2021	0.947	Feb 2022	1.324	Dec 2022	-		1.324	Continuing	Continuing	Continuing
Digital Twin Development	C/CPFF	GSA : GSA	0.000	0.000	Jun 2021	1.300	Feb 2022	0.280	Dec 2022	-		0.280	Continuing	Continuing	Continuing
		Subtotal	0.000	1.250		3.247		2.829		-		2.829	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	1.250		3.247		2.829		-		2.829	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3018 / *Facilities Related Controls Systems (FRCS) Cybersecurity RDTE*

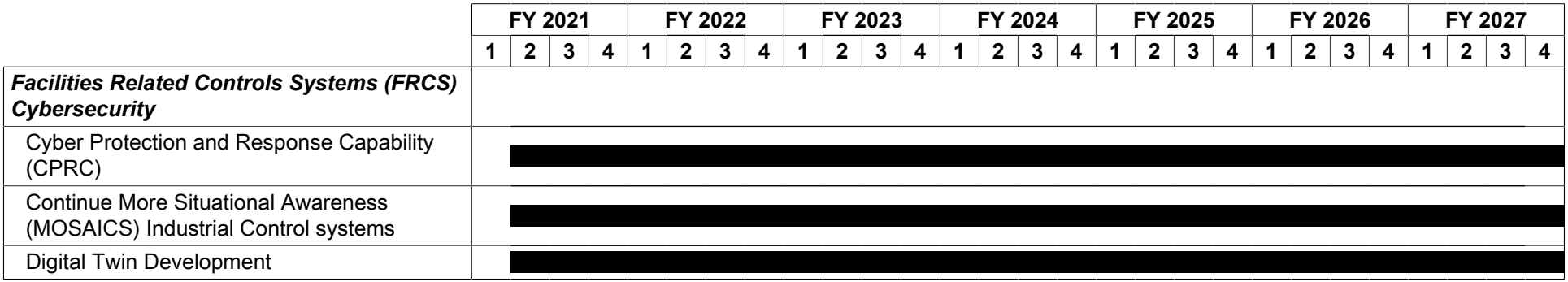

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3018 / *Facilities Related Controls Systems (FRCS) Cybersecurity RDTE*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Facilities Related Controls Systems (FRCS) Cybersecurity				
Cyber Protection and Response Capability (CPRC)	2	2021	4	2027
Continue More Situational Awareness (MOSAICS) Industrial Control systems	2	2021	4	2027
Digital Twin Development	2	2021	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy											Date: April 2022	
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 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Cost To Complete**	**Total Cost**
3155: *Force Protection Ashore*	7.535	1.104	0.940	0.842	-	0.842	1.559	1.408	1.249	1.272	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.

Facilities Related Controls Systems (FRCS) Cybersecurity RDTEN
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 and to assess the cyber vulnerability of critical defense infrastructure. Funded vulnerability assessments 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.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
Title: Force Protection Ashore	1.104	0.940	0.842	0.000	0.842
Articles:	-	-	-	-	-
FY 2022 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
-Initiate Waterside Defensive Sensor Systems (WDSS). WDSS will leverage sensors and improvements to current waterside systems, including but not limited to, boat barriers and unmanned underwater vessels (UUV). The system will look to integrate with the Waterside Intelligent Video Security System (WSIVDS) COP which is a harbor view using video analytics -Initiate Perimeter Defense Senor Systems (PDSS). PDSS will investigate sensors and their integration into a Physical Security Information Management (PSIM) system. Sensors included, but not limited to, biometrics, video analytics, Drone tracking with integration into the current PSIM.					
FY 2023 Base Plans: - Initiate Facial Recognition Access Control Technology Extension (FRACT-X). Incorporates commercial-off-the shelf facial recognition capability to directly support the acceleration of deter, detect, assess, and respond for unauthorized access of vehicles and pedestrians within protection zones managed by physical access control systems (PACS) for achieving another tier of multifactor authentication for point of ingress decision making. Leveraging an AI-powered, best in class facial recognition and verification, authentication hardware and software capability, provide near real-time and highly confident 1 to1 or 1 to N authentication of the individual attempting to gain access. - Initiate Rapid Intelligent Video Analytics Layer (RIVAL). RIVAL improves overall situational awareness, rapid assessment, and unauthorized access detection by applying advanced (AI-enabled) commercial off the shelf and Navy Physical Access Control (NPACS) - compatible video analytics (VA) capability to the abundance of underutilized existing camera and video management system (VMS) assets and infrastructure at Access Control Points (ACPs), Enclaves, Perimeter Electronic Security Systems (ESS), Electronic Harbor Security System (EHSS), etc. Applying the RIVAL extension to existing cameras and video recorders enables actionable intelligence, rapid review post-event, and unmatched Installation Situational Awareness capability for ALL available camera views (perimeter, intercom, tenant, building, drone and web) - Initiate Underwater Unmanned Vehicle Detection, Tracking and Classification (UUV-DTC). UUV-DTC significantly improves the AN/WQX-2 harbor security sonar's ability to detect Unmanned Underwater Vehicles (UUVs) Systems. Increase volumetric coverage of AN/WQX-2 sonar to include deeper depths and cover a much greater portion of the water volume. Increase ability to track and classify deeper UUV target trajectories. Development and implement new tracker and classifier algorithms to capture more dynamic and unpredictable UUV trajectories (operational deception). Implementation greatly increases detection of deeper targets and volumetric coverage while maintaining existing coverage of near-surface targets.					
FY 2023 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY23 $0.098M decrease due to reduction of costs for Facial Recognition Access Control Technology (FRACT-X), Rapid Intelligent Video Analytics Layer (RIVAL), and Underwater Unmanned Vehicle Detection, Tracking, and Classification (UUV-DTC).					
Accomplishments/Planned Programs Subtotals	1.104	0.940	0.842	0.000	0.842

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 2023 Navy		Date: April 2022
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 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 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	1.687	0.000		0.000		0.000		-		0.000	0.000	1.687	-
Access Control Point (ACP)	Various	SPAWAR : San Diego, CA	0.250	0.000		0.000		0.000		-		0.000	0.000	0.250	-
Waterside Intelligent Video Security System (WSIVDS)	Various	SPAWAR : San Diego, CA	0.454	0.300	Dec 2020	0.000		0.000		-		0.000	0.000	0.754	-
Command and Control Capability Development: Virtual Field Support	WR	SPAWAR : San Diego, CA	0.897	0.000		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	0.250	Dec 2020	0.000		0.000		-		0.000	0.000	0.250	-
Waterside Protection: Boat Barriers	C/CPFF	CTTSO : CTTSO	0.999	0.000		0.000		0.000		-		0.000	0.000	0.999	-
Multimodal Automated Vehicle Barrier (MAVB	Various	NIWC-PAC : San Diego, CA	0.000	0.405	Dec 2020	0.000		0.000		-		0.000	0.000	0.405	-
Sensor Assessment Cell (SAC) Capability Development	Various	SPAWAR : San Diego, CA	0.304	0.000		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	0.149	Dec 2020	0.000		0.000		-		0.000	0.000	0.149	-
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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
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 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
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
Waterside Intelligent Video Security System (WDSS)	Various	SPAWAR : SAN DIEGO, CA	0.000	0.000		0.535	Dec 2021	0.000		-		0.000	0.000	0.535	-
Perimeter Defense Sensor Systems (PDSS)	Various	EXWC : Pt. Hueneme, CA	0.000	0.000		0.405	Dec 2021	0.000		-		0.000	0.000	0.405	-
Rapid Intelligent Video Analytics Layer (RIVAL)	Various	SSC-PAC : SSC-PAC	0.000	0.000		0.000		0.342	Dec 2022	-		0.342	0.000	0.342	-
Facial Recognition Access Control Technology Extension (FRACT-X)	Various	SSC-PAC : SSC-PAC	0.000	0.000		0.000		0.250	Dec 2022	-		0.250	0.000	0.250	-
Underwater Unmanned Vehicle Detection, Tracking and Classification (UUV-DTC)	Various	SSC-PAC : SSC-PAC	0.000	0.000		0.000		0.250	Dec 2022	-		0.250	0.000	0.250	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
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 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	7.535	1.104		0.940		0.842		-		0.842	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	7.535	1.104		0.940		0.842		-		0.842	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3155 / *Force Protection Ashore*

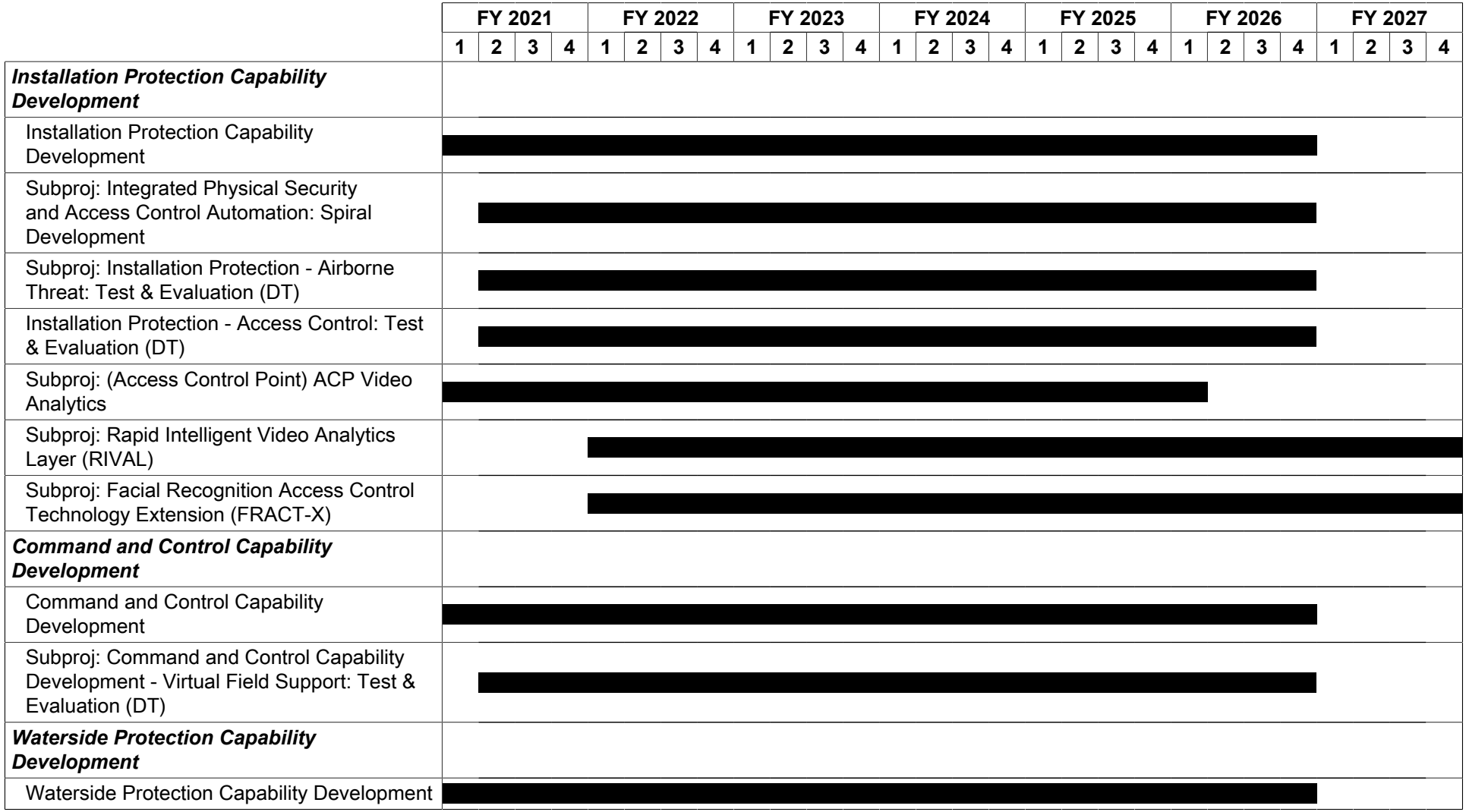

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3155 / *Force Protection Ashore*

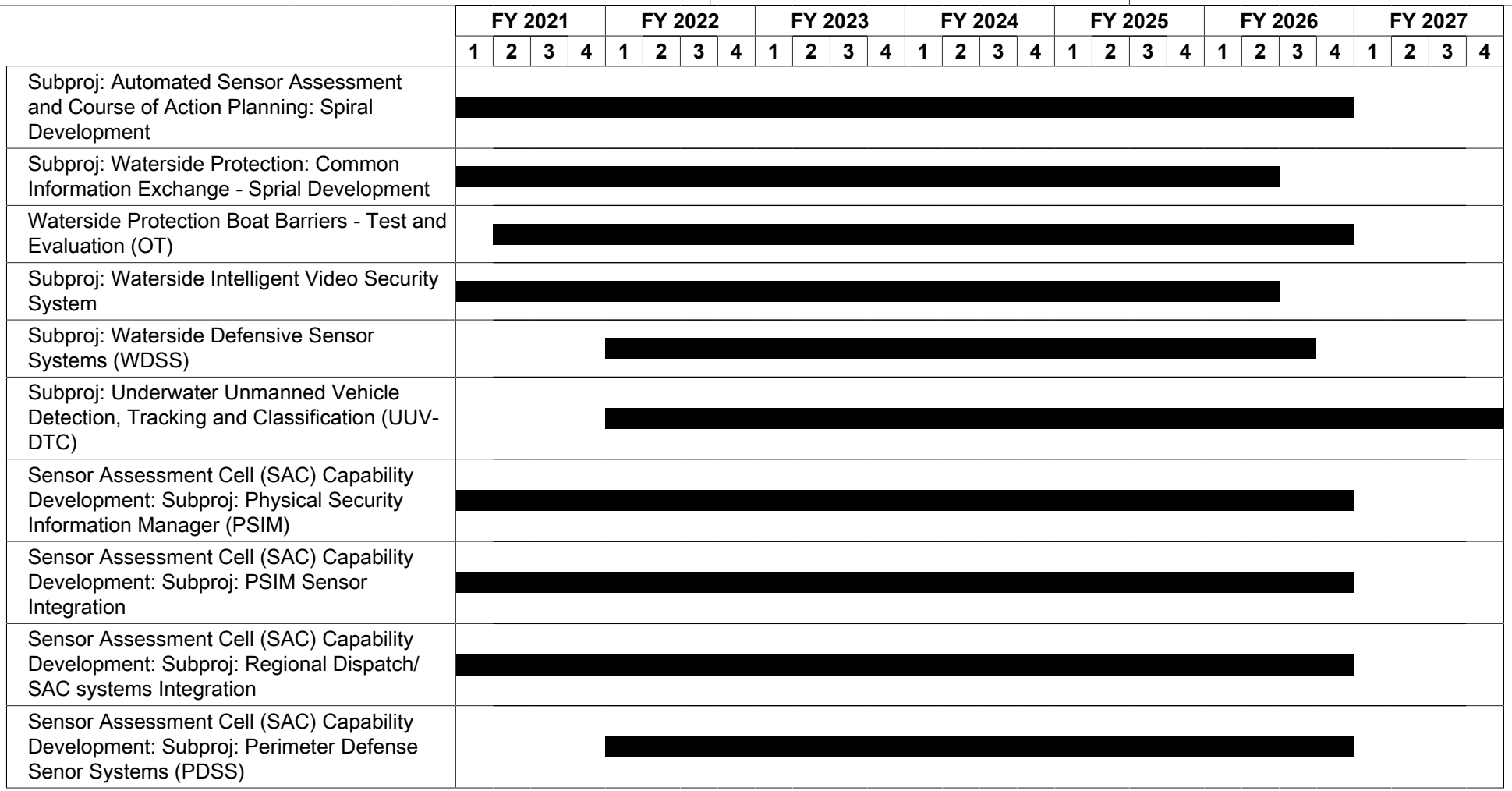

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3155 / *Force Protection Ashore*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Installation Protection Capability Development				
Installation Protection Capability Development	1	2021	4	2026
Subproj: Integrated Physical Security and Access Control Automation: Spiral Development	2	2021	4	2026
Subproj: Installation Protection - Airborne Threat: Test & Evaluation (DT)	2	2021	4	2026
Installation Protection - Access Control: Test & Evaluation (DT)	2	2021	4	2026
Subproj: (Access Control Point) ACP Video Analytics	1	2021	1	2026
Subproj: Rapid Intelligent Video Analytics Layer (RIVAL)	1	2022	4	2027
Subproj: Facial Recognition Access Control Technology Extension (FRACT-X)	1	2022	4	2027
Command and Control Capability Development				
Command and Control Capability Development	1	2021	4	2026
Subproj: Command and Control Capability Development - Virtual Field Support: Test & Evaluation (DT)	2	2021	4	2026
Waterside Protection Capability Development				
Waterside Protection Capability Development	1	2021	4	2026
Subproj: Automated Sensor Assessment and Course of Action Planning: Spiral Development	1	2021	4	2026
Subproj: Waterside Protection: Common Information Exchange - Sprial Development	1	2021	2	2026
Waterside Protection Boat Barriers - Test and Evaluation (OT)	2	2021	4	2026
Subproj: Waterside Intelligent Video Security System	1	2021	2	2026
Subproj: Waterside Defensive Sensor Systems (WDSS)	1	2022	3	2026
Subproj: Underwater Unmanned Vehicle Detection, Tracking and Classification (UUV-DTC)	1	2022	4	2027

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3155 / *Force Protection Ashore*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Sensor Assessment Cell (SAC) Capability Development: Subproj: Physical Security Information Manager (PSIM)	1	2021	4	2026
Sensor Assessment Cell (SAC) Capability Development: Subproj: PSIM Sensor Integration	1	2021	4	2026
Sensor Assessment Cell (SAC) Capability Development: Subproj: Regional Dispatch/ SAC systems Integration	1	2021	4	2026
Sensor Assessment Cell (SAC) Capability Development: Subproj: Perimeter Defense Senor Systems (PDSS)	1	2022	4	2026

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603725N / *Facilities Improvement*	Project (Number/Name) 3460 / *Red Hill Secondary Containment Research*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
3460: *Red Hill Secondary Containment Research*	0.000	0.517	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.517
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Red Hill Secondary Containment Research Project 3460 was created to provide fiscal clarity for a second containment research study due to environmental concerns for researching containment options at the Red Hill underground fuel storage site in Hawaii

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Red Hill Secondary Containment Research	0.517	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2022 Plans: N/A					
FY 2023 Base Plans: N/A					
FY 2023 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.517	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Quarterly Program Reviews.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3460 / *Red Hill Secondary Containment Research*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Testing	WR	EXWC : Red Hill, HI	0.000	0.517	Mar 2021	0.000		0.000		-		0.000	0.000	0.517	-
		Subtotal	0.000	0.517		0.000		0.000		-		0.000	0.000	0.517	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.517		0.000		0.000		-		0.000	0.000	0.517	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3460 / *Red Hill Secondary Containment Research*

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	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 3460																												
RED HILL PROJECT: Red Hill Secondary Containment Research Study	[redacted]																											

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603725N / *Facilities Improvement*	**Project (Number/Name)** 3460 / *Red Hill Secondary Containment Research*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3460				
RED HILL PROJECT: Red Hill Secondary Containment Research Study	1	2021	4	2021