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 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0604256N *I Threat Simulator Development*

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	0.000	91.921	62.678	22.075	-	22.075	21.134	22.738	23.343	23.941	Continuing	Continuing
0602: *Electronics W/F Env Simulation (ECHO)*	0.000	78.359	54.241	14.730	-	14.730	14.201	16.339	16.626	16.919	Continuing	Continuing
0672: *Effect Nav E/W (ENEWS)*	0.000	13.562	8.437	7.345	-	7.345	6.933	6.399	6.717	7.022	Continuing	Continuing

A. Mission Description and Budget Item Justification

This is a continuing program that consolidates the design, fabrication and integration of Naval Electronic Warfare (EW) threat simulators for increased managerial emphasis and coordination. These simulator development efforts provide realistic Developmental and Operational Test and Evaluation environments to test EW systems and defensive tactics. These projects develop threat Anti-Air and Anti-Ship weapon system simulators in accordance with the Services' requirements.

The 0602 Project, Electronic Warfare Environment Simulation, directly supports the Test and Evaluation resource requirements for all Naval Air EW development programs to include multi-spectral situational awareness and countermeasures. Programs in development and future programs include: Joint Strike Fighter, EA-18G, Low Band Transmitter, Next Generation Jammer, Advanced Anti-Radiation Guided Missile (AARGM), Long Range Anti-Ship Missile (LRASM), and Triton.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under RESEARCH, DEVELOPMENT, TEST and EVALUATION MANAGEMENT SUPPORT because it supports efforts directed toward sustaining or modernizing installations or operations required for general research, development, test and evaluation.

B. Program Change Summary ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	94.576	66.678	29.986	-	29.986
Current President's Budget	91.921	62.678	22.075	-	22.075
Total Adjustments	-2.655	-4.000	-7.911	-	-7.911
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-4.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.655	0.000			
• Program Adjustments	0.000	0.000	-7.911	-	-7.911
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

Change Summary Explanation

FY21 funding reduction is due to the classified program being discontinued within PU 0672.

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 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0604256N *I Threat Simulator Development*

The funding change from FY 2020 to FY 2021 is due to the end of funding that was added for the Electronic Warfare Infrastructure Improvement Project 2.0 (EWIIP 2.0) in PU 0602. Purchase of the final equipment for EWIIP 2.0 is in FY 2020.

Technical: Not applicable.

Schedule: PU 0602: The open-air range version of the closed-loop threat surface to air missile system simulator at NAWC WD China Lake did not complete in FY 2019 as scheduled. Integration and site acceptance will complete in the second quarter of FY 2020. The laboratory versions of the simulator were completed in FY 2019.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0604256N / *Threat Simulator Development*	Project (Number/Name) 0602 / *Electronics W/F Env Simulation (ECHO)*	

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
0602: *Electronics W/F Env Simulation (ECHO)*	0.000	78.359	54.241	14.730	-	14.730	14.201	16.339	16.626	16.919	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The objective of this project is development of necessary simulation facilities and approaches to allow determination of the effectiveness of Electronic Warfare (EW) in real world engagement situations and to support the introduction of modern, effective systems into Naval Aviation. The heavy use of test resources by all Services demonstrates the importance of these assets.

The Electronic Warfare Environment Simulation project is unique because it is the only program within the Department of Defense which develops and provides Naval anti-air warfare threat assets for Test and Evaluation (T&E).

This project directly supports the T&E resource requirements for all Naval Air EW development programs, to include multi-spectral situational awareness and countermeasures. Programs in development and future programs include: Joint Strike Fighter, EA-18G, Low Band Transmitter, Next Generation Jammer, Advanced Anti-Radiation Guided Missile (AARGM), Long Range Anti-Ship Missile (LRASM), and Triton.

This project provides for the development of an Integrated Air Defense T&E capability to be fielded at each of the three sites comprising the Navy's Tri-Center complex: Naval Air Warfare Center Weapons Division, China Lake and Point Mugu in CA, and Naval Air Warfare Center Aircraft Division, Patuxent River, MD.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Requirements and Validation	0.590	0.590	1.046	0.000	1.046
Articles:	-	-	-	-	-
Description: Validate and track intel updates of the threat systems necessary for the operation and continuous improvement of Navy laboratories and ranges which provide engineering support, testing and analysis to the developers, integrators, testers and users of systems and technologies that counter or penetrate air defenses.					
FY 2020 Plans: - Continue to provide program management, systems engineering, and requirements identification for the development of simulators and foreign material acquisition. - Continue to validate simulators and stimulators at the Navy tri-lab centers.					
FY 2021 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 6	**R-1 Program Element (Number/Name)** PE 0604256N / *Threat Simulator Development*	**Project (Number/Name)** 0602 / *Electronics W/F Env Simulation (ECHO)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
- Continue to provide program management, systems engineering, and requirements identification for the development of simulators and foreign material acquisition. - Continue to validate simulators and stimulators at the Navy tri-lab centers. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The funding increase from FY 2020 to FY 2021 to produce validation reports for multiple simulators that completed in FY 2020 including the L-Band radar signal emulators, S-Band radar signal emulators, passive radar systems, early warning radar systems, signal detection systems, closed-loop threat simulator, and the conversion of a threat system.					
Title: Acquisition and Measurement Capabilities	68.914	41.221	7.897	0.000	7.897
Articles:	-	-	-	-	-
Description: Provide the test community with modern threat target acquisition systems and effective measurement systems necessary for Test and Evaluation of airborne early warning, situational awareness, detection and targeting systems and airborne response systems. Project investments in FY 2019, FY 2020 and FY 2021 support procurement and integration of advanced, threat representative electronic warfare (EW) target acquisition radars to establish a frequency diverse, dense and geographically dispersed threat integrated air defense system to support operationally realistic testing of F-35, Next Generation Jammer, EA-18G and Triton in a threat representative anti-access area denial environment that does not currently exist on any Department of Defense open air range. ***FY 2020 Plans:*** - Complete the site preparation and integration of radar signal emulators at the Electronic Combat Range. - Complete the procurement of three L-Band radar signal emulators for NAWCWD by procuring spares and logistic items. - Complete the procurement of two passive radar systems for NAWCWD by procuring the second system. - Complete the procurement of three early warning radar systems for NAWCWD by procuring the second and third systems. - Complete the procurement of three signal detection and location systems for NAWCWD by procuring the third system.					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 6	**R-1 Program Element (Number/Name)** PE 0604256N / *Threat Simulator Development*	**Project (Number/Name)** 0602 / *Electronics W/F Env Simulation (ECHO)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
- Continue upgrades to the Naval Air Warfare Center ranges to support OT of the JSF by preparing sites for L-Band radar signal emulators, S-Band radar signal emulators, passive radar systems, early warning radar systems and signal detection and location systems. - Continue the development of two threat signal augmentation simulators for NAWCWD. ***FY 2021 Base Plans:*** - Complete upgrades to the Naval Air Warfare Center ranges to support OT of the JSF by preparing sites for L-Band radar signal emulators, S-Band radar signal emulators, passive radar systems, early warning radar systems and signal detection and location systems. - Continue the development of two threat signal augmentation simulators for NAWCWD. - Initiate site preparation for three radar signal emulators at NAWC WD. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The funding decrease from FY 2020 to FY 2021 is due to the completion of the procurement of L-Band radar signal emulators, S-Band radar signal emulators, passive radar systems, early warning radar systems and signal detection systems in FY 2020.					
Title: Engagement Capabilities	8.855	12.430	5.787	0.000	5.787
Articles:	-	-	-	-	-
Description: Provide the test community with the modern threat engagement systems necessary for Test and Evaluation of airborne alert, Situation Awareness, targeting systems and airborne response systems. ***FY 2020 Plans:*** - Complete the development of a closed-loop threat surface to air missile system simulator at NAWC WD China Lake by integrating the simulator with the range. - Continue the upgrade and integration of missile simulation models. - Continue the conversion of a threat system. - Continue the minor upgrades to open air and laboratory threat systems. - Continue the development of a naval-based threat radar closed-loop simulator for installation in laboratories at Naval Air Warfare Center Weapons Division and Naval Air Warfare Center Aircraft Division and designed for open air range					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 6	**R-1 Program Element (Number/Name)** PE 0604256N / *Threat Simulator Development*	**Project (Number/Name)** 0602 / *Electronics W/F Env Simulation (ECHO)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
implementation. The project will move from performing trade studies to design and material purchases. ***FY 2021 Base Plans:*** - Complete the conversion of a threat system and integrate it at NAWC WD China Lake. - Continue the upgrade and integration of missile simulation models. - Continue the minor upgrades to open air and laboratory threat systems. - Complete the development of a naval-based threat radar closed-loop simulator for installation in laboratories at Naval Air Warfare Center Weapons Division and Naval Air Warfare Center Aircraft Division and designed for open air range implementation. Deliver products to the laboratories. -Initiate analysis and development of a reconfigurable closed-loop threat simulator designed for integration at laboratories and the open-air ranges. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The funding decrease from FY 2020 to FY 2021 is due to the completion of manufacturing and integration of the closed-loop threat simulator, and the completion of the manufacturing portion of the conversion of a threat system.					
Accomplishments/Planned Programs Subtotals	78.359	54.241	14.730	0.000	14.730

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Not Applicable.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0604256N / *Threat Simulator Development*	Project (Number/Name) 0672 / *Effect Nav E/W (ENEWS)*	

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
0672: *Effect Nav E/W (ENEWS)*	0.000	13.562	8.437	7.345	-	7.345	6.933	6.399	6.717	7.022	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Beginning in FY 2021, the Classified Program has been discontinued.

A. Mission Description and Budget Item Justification

The objective of the Effectiveness of Navy Electronic Warfare (EW) Systems (ENEWS) Project is the development and application of necessary simulation assets to determine the effectiveness of Electronic Warfare for Navy ships in simulated real-world engagement situations. The project primarily supports the introduction of modern, effective shipboard and off-board Electronic Warfare systems, and tactics for the Surface Navy. The heavy use of ENEWS resources by Naval Sea Systems Command, Operational Test and Evaluation (OT&E) Force, Special Operations, and other Electronic Warfare Research, Development, Test and Evaluation (T&E) agencies speaks to the overall importance of this project. The project provides support for Electronic Warfare system design, Engineering Test (ET), Development Test (DT), Operational Test (OT), and the development of utilization tactics. In the past ENEWS quick reaction capabilities have had great impact on crisis situations such as the Libyan crises, Iran threat, Persian Gulf crisis, and Operation Desert Shield/Storm. Simulation Display (SIMDIS) is an ENEWS modeling tool that was developed to support Testing and Evaluation. Simulation Display has been adopted by most Department of Defense (DoD) Testing and Evaluation and training ranges to provide visualization of Testing and Evaluation and training scenarios. One of the primary threats to surface ships is Anti-Ship Capable Missile systems. The Effectiveness of ENEWS Project is unique in that it is the only project within the Department of Defense dedicated to developing and providing realistic Anti-Ship Capable Missile assets to test and evaluate the effectiveness of shipboard Electronic Warfare systems and tactics against these type threats. The ENEWS Project is a critical part of the Office of the Secretary of Defense Test Resource Master Plan. This plan employs many of the ENEWS assets for planning, analysis, testing, and verification of shipboard and off-board Electronic Warfare systems techniques and tactics. As part of its normal activities, ENEWS provides Development Test and Evaluation (DT&E), Operational Test and Evaluation (OT&E), and Follow-on Operational Test and Evaluation (FOT&E) support to the surface Navy for all ship classes. Development Test, Operational Test and Follow-on Operational Test and Evaluation support includes AN/SLQ-32 Surface Electronic Warfare Improvement Program (SEWIP), Nulka, Rapid Anti-ship Integrated Defense System, all MK245 Giant tests, advanced InfraRed (IR) decoys, decoy placement, ship InfraRed signature and radar cross section measurement of DDG-51, LPD-17, DD-21 and Patrol Craft class ships, High Power Microwave program, and other ship self-defense initiatives, including Test and Evaluation of Future Naval Capability process. In addition, ENEWS assets are regularly employed to test the effectiveness of North Atlantic Treaty Organization (NATO) ships' Electronic Warfare systems in joint allied exercises. ENEWS assets also support Joint Electronic Warfare exercises that are conducted with Rim of the Pacific (RIMPAC) nations.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Classified Program	7.139	4.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Details about this program are classified.					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 6	**R-1 Program Element (Number/Name)** PE 0604256N / *Threat Simulator Development*	**Project (Number/Name)** 0672 / *Effect Nav E/W (ENEWS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Details about this program and any changes are classified. ***FY 2020 Plans:*** - Details are of a higher classification. ***FY 2021 Base Plans:*** N/A ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The decrease from FY 2020 to FY 2021 is due to classified program being discontinued.					
Title: Hardware Simulation Systems	3.460	2.700	3.850	0.000	3.850
Articles:	-	-	-	-	-
Description: Maintain and perform Hardware and Software Upgrades to the inventory of Effectiveness of Navy Electronic Warfare Systems (ENEWS) flyable and shore based Anti-Ship Capable Missile (ASCM) Electro-Optic/Infrared (EO/IR), Visible and Radio Frequency (RF) Simulators. Perform characterization of Infrared (IR) and Radio Frequency (RF) simulators as part of the periodic evaluation of simulation performance and collect performance data for comparison with previously recorded data. Also includes development and maintenance of all simulator control panels. ***FY 2020 Plans:*** - Continue hardware upgrades to the SUMMIT Simulator. - Continue software upgrades to the VICTOR Standard Instrumentation Pod (SIP). - Continue hardware upgrades to the FOXTROT 3 TOWSIM(IOTA). - Continue hardware upgrades for VICTOR 1 SIP and Anti-Ship Imaging Missile (AIMS) simulators - Continue software upgrade for FOXTROT 1 Sim 1 simulator - Continue to maintain and perform hardware and software upgrades to the inventory of Effectiveness of Naval Electronic Warfare Systems (ENEWS) flyable and shore based Anti-Ship Capable Missile (ASCM) Electro-Optic/ Infrared (EO/IR), Visible and Radio Frequency (RF) Simulators and simulator control panels. - Continue to maintain and perform hardware and software upgrades to the inventory of ENEWS flyable and shore based Anti-Ship Capable Missile (ASCM) Electro-Optic/Infrared (EO/IR), Visible and Radio Frequency					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 6	**R-1 Program Element (Number/Name)** PE 0604256N / *Threat Simulator Development*	**Project (Number/Name)** 0672 / *Effect Nav E/W (ENEWS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
(RF) simulators and simulator control panels. Introduce a new simulator into the ENEWS inventory and prepare simulator for flight and field testing - Continue hardware upgrades for the NU (towed configuration) and VICTOR 1 SIP simulators - Continue and initiate flight certification of one new simulator into the ENEWS inventor - Continue software upgrades for the IOTA (towed configuration), VICTOR 1 SIP simulators - Continue software upgrades for one EO/IR simulator - Maintain and upgrade 23 hardware simulators, 5 programmable simulators and the Antenna Test Rig to support the SEWIP Block 3 and AOEW effectiveness evaluations. ***FY 2021 Base Plans:*** - Complete hardware and software upgrades to a programmable EO/IR airborne SIP. - Complete software upgrade a ground based EO/IR programmable simulator. - Complete hardware and software upgrades to towed EO/IR simulator. - Continue software upgrade for flyable EO/IR simulator. - Introduce two new simulation assets into the ENEWS inventory and prepare them for flight and field testing. - Initiate hardware upgrades for two RF and one EO/IR flyable simulators. - Maintain and upgrade 25 hardware simulators, 5 programmable simulators, simulator control panels and the antenna test rig to support the SEWIP Block 3 and AOEW effectiveness evaluations. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The funding increase from FY 2020 to FY 2021 reflects the introduction of two new simulation assets and the upgrade of two RF hardware simulators.					
Title: Simulation Characterization, Verification and Requirements	0.632	0.300	0.745	0.000	0.745
Articles:	-	-	-	-	-
Description: Provides for the documentation of Anti-Ship Capable Missile (ASMC) threat simulators. Develops reports that contain detailed descriptions and parametric data of the Anti-Ship Capable Missile threat simulators and compares the simulator's parametric data to the actual threat's parametric data. Provide technical management functions in support of the Effectiveness of Naval Electronic Warfare Systems (ENEWS) project; engineering and technical support requirements for the Anti-Ship Capable Missile simulators and upgrades					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
to meet DT/ OT testing requirements, development of detailed test resource requirements and provides an interface between OPNAV N2/N6, Office of Naval Research, and ENEWS oversight activities. ***FY 2020 Plans:*** - Continue to develop reports that compare the parametric data of the Anti-Ship Capable Missile (ASCM) threat simulators to the parametric data of the actual threat and provide technical management functions in support of the Effectiveness of Naval Electronic Warfare Systems (ENEWS) project. - Initiate and complete the FY 2020 ENEWS Program Management Plan. - Coordinate and conduct FY 2020 status reviews. - Draft and submit monthly reports, performance based management and analysis, financial execution reports and assessments. - Initiate characterization and hardware simulator documentation report for an RF simulator. ***FY 2021 Base Plans:*** - Continue all efforts of FY 2020 less those noted as completed above. - Continue to develop reports that compare parametric data of ASCM threat simulators to the parametric data of the actual threat for two RF simulators. - Provide technical and management support to the ENEWS project. - Initiate and complete the FY 2021 ENEWS Program Management Plan. - Draft and submit monthly reports, performance based management and analysis assessments and financial execution reports. - Conduct characterization testing of two RF simulators and initiate development of verification reports that compares parametric data of the ASCM threat simulators to the parametric data of the actual threat. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The funding increase from FY 2020 to FY 2021 reflects the initiation of two simulator verification and validation reports that compare simulator parametric data with threat parametric data. The process also includes verification and characterization of the simulators. One report was deferred from FY20 due to a funding reduction.					
Title: Support and Computers Simulation Systems	2.331	1.437	2.750	0.000	2.750
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 6	**R-1 Program Element (Number/Name)** PE 0604256N / *Threat Simulator Development*	**Project (Number/Name)** 0672 / *Effect Nav E/W (ENEWS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Description: Perform maintenance and intelligence upgrades to Electro-Optic/Infrared (EO/IR), Digital, and Radio Frequency (RF) Laboratory Simulation Testing facilities and flight support equipment based on existing and emerging complex threat systems. Development of Test & Evaluation scenarios and environmental modeling to support Electronic Support (ES) and Electronic Attack (EA) testing; modify Anti-Ship Cruise Missile (ASCM) threat simulators based on the latest intelligence data obtained from threat databases. ***FY 2020 Plans:*** - Continue to perform maintenance and intelligence upgrades to Electro-Optic/Infrared, Digital, and Radio Frequency Laboratory Simulation testing facilities and flight support equipment and provide ES and EA test support. - Continue target models to support Surface Electronic Warfare Improvement Program Block 3 and Advanced Offboard Electronic Warfare (AOEW) effectiveness assessments. - Continue update to the Scenario and Environmental Model used to support open and closed loop simulations. - Continue maintenance and upgrades to shore-based test facilities and mobile test vans as required to conduct testing in support of Surface Electronic Warfare Improvement Program, Nulka and multi-function Electronic Warfare programs. - Continue to transition environmental, threat and platform simulations from Subversion to Mercurial Distributed Version Control System. - Continue upgrades to configuration control software library as new releases became available. - Continue to develop new digital models of Anti-Ship Cruise Missile (ASCM) threats as they became available. - Continue upgrades and maintenance of flight support systems as necessary to support the infrared / radio frequency Effectiveness of Naval Electronic Warfare Systems (ENEWS) simulators. - Continue upgrades and user friendly enhancements to the Simulation Display (SIMDIS) toolset. - Continue development of LIMA III and LIMA IV digital models. - Continue digital model upgrades to support Surface Electronic Warfare Improvement Program (SEWIP) Block 3 test and evaluation. - Continue simulator upgrades to support SEWIP Block 3 test and evaluation. - Continue to perform maintenance and intelligence upgrades to Electro-Optic/Infrared, Digital, and Radio Frequency Laboratory Simulation testing facilities and flight support equipment and provide Electronic Support (ES) and Electronic Attack (EA) test support. - Update and install new ship models into database to support Navy studies, Development Test (DT)/Operational Test (OT) events; ENEWS digital models will be updated to allow modeling and simulation (M&S) based EW					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
testing for SEWIP Block 3, Advanced Offboard Electronic Warfare (AOEW) and Navy Enterprise Testbed programs. - Complete HWIL millimeter wave capability update. ***FY 2021 Base Plans:*** - Continue maintenance and upgrades to EO/IR, digital, and RF laboratory simulation test and evaluation facilities and flight support equipment to provide ES and EA test support to SEWIP Block 3 and AOEW programs. - Continue to maintain and update the ENEWS CRUISE_Missiles ASCM models in support of M&S based EW testing for SEWIP Block 3, AOEW, and Navy Enterprise Testbed programs. - Continue updates to the Scenario and Environmental Model used to support open and closed loop simulations. - Continue upgrades to configuration control software library as new releases became available. - Continue to update and install new ship models into database and evaluate performance. - Initiate upgrades and user friendly enhancements to the Simulation Display (SIMDIS) toolset. - Evaluate various ship, Nulka, chaff and distraction chaff models for issues, test and repair any anomalies discovered. - Compare and verify the migration of existing missile simulations to the new real-time computer in CTS. At the end of FY 2021 five RF closed-loop missile simulations and two open-loop captive carry simulations will be migrated and verified in support of SEWIP Block 3 test requirements. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The funding increase from FY 2020 to FY 2021 reflects initiation of the deferred updates to the Simulation Display (SIMDIS) visualization and display tool and completion of migration and verification of five missile simulations to the real-time computer in the Central Target Simulator (CTS).					
Accomplishments/Planned Programs Subtotals	13.562	8.437	7.345	0.000	7.345

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
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D. Acquisition Strategy

Not applicable.