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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>
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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	1,395.308	175.129	179.725	157.490	1.144	158.634	164.991	159.651	159.268	156.391	Continuing	Continuing
2178: <i>QRCC</i>	1,326.450	163.667	167.971	145.714	-	145.714	147.098	143.976	145.560	142.409	Continuing	Continuing
3172: <i>Joint Non-Lethal Weapons</i>	49.726	3.938	3.222	0.989	1.144	2.133	5.276	4.788	4.437	4.526	Continuing	Continuing
3358: <i>SSDS Training Improvement Program</i>	19.132	7.524	8.532	10.787	-	10.787	12.617	10.887	9.271	9.456	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element provides Aircraft Carriers and Amphibious Class ships Ship Self Defense System (SSDS) MK2 Combat System upgrades and integrates new equipment and systems to pace the threat and capture advances in technology. Examples of captured advanced technologies are: open architecture, advanced information assurance and initial cyber defense, Fire Control Loop Improvement Project (FCLIP), Far-Term Interoperability Improvement Project (FTIIP), and advanced sensor integration all of which require corresponding SSDS MK2 changes. The program element also includes the integrated Combat System project for embedded shipboard training and the Non-Lethal weapons project in support of anti-terrorism/force protection missions.

QRCC project (PU 2178) - implements an evolutionary acquisition of improved ship self-defense capabilities against Anti-Ship Cruise Missiles (ASCMs), and improved multi-warfare capabilities, for Aircraft carriers and Amphibious Class ships. SSDS MK 2 integrates a diverse set of fire control loop sensors and weapons, and C4I systems for each ship class (CVN68/78, LHA6, LHD1, LPD17, and LSD41/49). SSDS MK2 provides combat direction, and joint interoperability via the Cooperative Engagement Capability (CEC) and Tactical Digital Information Link (TADL)-J. System design emphasizes commonality and a single source software library which are major mechanisms for cost control and avoidances. SSDS uses a physically distributed, open system architecture computer network consisting of common hardware such as the Common Processor System (CPS) and the Common Display System (CDS). SSDS MK2 implements new combat system war-fighting capabilities and improvements, as well as, DoD and Navy mandated enhanced cybersecurity capabilities on phased basis via Advanced Capability Builds (ACB) and Technology Insertion (TI). PU 2178 efforts are divided into three major functional areas: SSDS Product Development, Combat Systems Integration, and Test and Evaluation/Certification.

Joint Non-Lethal Weapons (PU 3172) - provides a long range laser warning and dazzle system, maritime vessel stopper system, and combined effects (light, laser, and sound) system for use in the maritime environment. Optical warning and distraction has been identified by the services as a possible technology solution to mitigate and/or address several known joint nonlethal capability gaps. Visual Augmentation Systems (VAS) supports research, development, and testing of material solutions for VAS capability gaps encountered during missions in combat zones. Expeditionary force lacks the ability to detect and recognize potential threat craft at the maximum possible range and at the earliest time in all weather environments during day and night. In addition, the warfighter needs the ability to record both audio/video encounters and incidents for after action reporting

SSDS Training Improvement Program (PU 3358) - provides enhancements and upgrades to the SSDS Total Ship Training Capability (TSTC) components within the combat system, combat system elements, Battle-Force Tactical Training (BFTT), and Advanced Training Domain (ATD) to address needs for increased training

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capability and functionality in conjunction with SSDS MK2 Advanced Capability Builds (ACB)/Fire Control Loop Improvement Project (FCLIP), Far-Term Interoperability Improvement Project (FTIIP), Task Force Cyber Awakening (TFCA) Boundary Defense Capability (BDC), and Technical Insertion efforts under PU 2178 (QRCC). These enhancements will address current and future training requirements by implementing new functionality to enable the individual warfighter through distributed battle group events to engage in more complex training requirements to support fleet required training certification events. Capability Development and integration are related to Self Defense, Underwater, Surface, and other warfare areas. Capability enhancements and upgrades include development of re-useable common components that can be leveraged by SSDS MK2 combat systems, and/or integration of re-usable common components developed by the TSTC/BFTT Program and AEGIS Advanced Training Domain (ATD)/TSTC Total Ship Training Capability (TSTC) projects to meet AEGIS combat system training requirements. TSTC continues to integrate and update, as new tactical capabilities are being introduced, to enable crew operator proficiency training for basic and sustainment level training events, through distributed strike group certification fleet synthetic training (FST) events and including COMPTUEX FST at Sea integration into Live, Virtual and Constructive (LVC) environment. Continued Development is required to integrate new capabilities and interfaces to provide training for AEGIS and SSDS combat system capability upgrades, and to address the Fleet's Live, Virtual and Constructive (LVC) Fleet Training Wholeness initiative. Additionally, modernization is needed to support the DoD Training Transformation Plan, the Chief of Naval Operations Fleet Response Plan and Commander United States Fleet Forces Command Fleet Readiness Training Plan.

B. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	181.491	192.603	155.096	-	155.096
Current President's Budget	175.129	179.725	157.490	1.144	158.634
Total Adjustments	-6.362	-12.878	2.394	1.144	3.538
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-14.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.000	0.000			
• SBIR/STTR Transfer	-4.362	0.000			
• Program Adjustments	0.000	1.122	2.077	2.288	4.365
• Rate/Misc Adjustments	0.000	0.000	0.317	-1.144	-0.827

Change Summary Explanation

Funding Changes from FY 2020 to FY 2021:

The FY 2021 funding request was reduced by \$2.576 million to account for the availability of prior year execution balances.

The FY 2021 PU 2178 net decrease of \$-22.257M reflects an increase of \$6.6M which is provided to integrate the additional capabilities of the RAM Block 2B missile into SSDS Build 12 to improve ship self-defense capability against anti-ship cruise missiles; Completion of SSDS Build 10 development effort and fielding of the F35B Integration project, which were improved by the effectiveness of the test, analyze, and fix efforts, as well the efficiency of the inter-operability test and link certification efforts.

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<p>The FY 2021 PU 3172 net decrease reflects realignment of OCO to base.</p> <p>The FY 2021 PU 3358 net increase of \$+2.255M is to develop the capability that will provide SSDS ships the ability to train using Live-Virtual-Constructive (LVC). Specifically, developing requirements documentation and developing modifications to provide the necessary sensor improvements to support LVC training At-Sea. Additionally, developing an Integrate Strike Group CEC Training At-Sea capability in support of the Fleet Training Wholeness (FTW) through LVC.</p> <p>Funding Changes from Previous Budget:</p> <p>FY 2021 net increase of \$+3.538 included: \$+6.6M increase to PU 2178 to integrate the additional capabilities of the RAM Block 2B missile into SSDS Build 12 to improve ship self-defense capability against anti-ship cruise missiles offset by \$+.163 for availability of prior year execution balances; \$-2.581M decrease to PU 3172 for realignment between OCO and base, realignment of funds for partial restoration of RHIB procurement, availability of prior year execution balances; \$-1.788M decrease to PU 3358 for availability of prior year execution balances.</p> <p>FY 2020 net decrease of \$-12.878 reflects a \$-14 million congressional reduction to PU 2178 due to Ship Self Defense System Combat Systems Engineering Agent contract award delays. The contract was award in FY19. This reduction slows initial design and development of capabilities (ESSM BLK 2 integration, RAM BLK II integration) and pushes this effort into FY21. A \$+1.122 million program adjustment for OCO in PU 3172, Joint Non-Lethal Weapons. FY 2020 OCO efforts include research and prototype development to determine a material solution to satisfy current Visual Augmentation Systems (VAS) capability gaps encountered during missions, including the ability to detect and recognize potential threat craft at the maximum possible range and at the earliest time in all-weather environments and the ability to record both audio/video encounters and incidents for after action reporting. The investment to the Visual Augmentation Systems (VAS) supports research, development, and testing of material solutions for VAS capability gaps encountered during missions in combat zones. Expeditionary force lacks the ability to detect and recognize potential threat craft at the maximum possible range and at the earliest time in all-weather environments during day and night. In addition, the warfighter needs the ability to record both audio/video encounters and incidents for after action reporting.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy										Date: February 2020		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>				Project (Number/Name) 2178 / QRCC			
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
2178: QRCC	1,326.450	163.667	167.971	145.714	-	145.714	147.098	143.976	145.560	142.409	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The QRCC project (PU 2178) implements an evolutionary acquisition of improved ship self-defense capabilities against Anti-Ship Cruise Missiles (ASCMs), and improved multi-warfare capabilities, for Aircraft carriers and Amphibious Class ships. SSDS MK 2 integrates a diverse set of fire control loop sensors and weapons, and C4I systems for each ship class (CVN68/78, LHA6, LHD1, LPD17, and LSD41/49). SSDS MK2 provides combat direction, and joint interoperability via the Cooperative Engagement Capability (CEC) and Tactical Digital Information Link (TADL)-J. System design emphasizes commonality and a single source software library which are major mechanisms for cost control and avoidances. SSDS uses a physically distributed, open system architecture computer network consisting of common hardware such as the Common Processor System (CPS) and the Common Display System (CDS). SSDS MK2 implements new combat system war-fighting capabilities and improvements on phased basis via Advanced Capability Builds (ACB) and Technology Insertion (TI). PU 2178 efforts are divided into three major functional areas: SSDS Product Development, Combat Systems Integration, and Test and Evaluation/Certification.

SSDS Product Development encompasses systems engineering efforts, technology insertion and cyber-security, including the development and integration of ACB-12 with the required Technology Insertion TI12/12H computing and display configuration (SSDS Software Build 10) and the development and integration of ACB-20 with the required TI16 computing and display configuration (SSDS Software Build 12). SSDS Product Development will provide warfighter upgrades including implementation of common software components for System Track Management; integration of CPS and CDS; expansion of SSDS MK 2 Local Area Network (LAN) to a Combat System LAN; integration of new Combat System/C4I elements (EASR, ESSM Block 2, SLQ-(V)6 SEWIP, NGSSR, and CANES); implementation of shared ICS cybersecurity capabilities and Total Ship Training Capability.

SW Build 10 is fielded on the CVN 78, CVN 72, LHD 2, LSD 46 and LHD 6. CVN 72 and LHD 2 completed ship deployments, CVN 78 is currently undergoing ship operational testing and certification. LSD 46 and LHD 6 are completing the first installation of the TI-12H hardware configuration and undergoing system initialization, testing and certification. To improve efficiency and reduce SW build proliferation the SSDS design evolution will migrate an initial release of SW Build 12 (ACB-20) with Advanced Training Domain capability to the TI-16 hardware configuration for initial installation on the CVN 73. SSDS SW Build 12 (ACB-20) development will continue with additional releases to implement SSDS improvements to integrate the EASR/ERS, ESSM Block 2, SEWIP softkill coordinator, Next Generation Surface Search Radar (NGSSR) and Global Positioning System (GPS) based Positioning, Navigation, and Timing Service (GPNTS) and includes system engineering, critical experiments, software development, operating environment, cyber-security software, hardware/software integration, factory qualification testing, land-based engineering testing, system/software Test, Analyze, and Fix (TAAF) effort in support of CS, logistics products and ashore training course development. FY 2021 includes completing the hardware design for the next TI hardware configuration TI-22.

For Cybersecurity, initiatives under PU 2178 will provide the SSDS MK 2 Integrated Combat System (ICS) layered protect and detect functionality and will introduce critical response functionality to respond and recover from cyber-attacks. SSDS Cybersecurity is a phased multi-year development to define, develop, and integrate

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DoD and Navy mandated enterprise Combat System cybersecurity solutions. These solutions enhance the cybersecurity framework pillars of Identify, Protect, React, and Restore and expand force level cyber defense capabilities for the Carrier and Amphibious Fleet against actions by sophisticated adversaries.

System engineering efforts for Joint Strike Fighter (JSF) F35B&C integration onboard LHA, LHD and CVN Class ships will provide improved F35 interoperability via Link 16 and improve land domain command and control for the Amphibious Readiness Group/Marine Air Ground Task Force (ARG/MAGTF) commanders and staffs through integration of USMC Common Aviation Command and Control System (CAC2S) program of record with LHA/D SSDS combat system.

Combat System Integration under PU 2178 encompasses Combat System (CS) modeling and simulation, system analysis/engineering, and system/software development for integration of sensors, weapons and C4I systems with SSDS MK2 in Aircraft Carrier and Amphibious Class Ships. Combat System Integration includes Fire Control Loop Improvement Project (FCLIP), Far-Term Interoperability Improvement Project (FTIIP), and ACB-20 war-fighting improvements, including the integration of EASR/ERS.

FCLIP Phase 2 will provide CIWS integration with CEC/SSDS MK2, ESSM 2T Uplink, RAM Block2 Multi-Target processing in the missile, SoS integration of RAM Block 2 Multi-Target Processing, NSSMS MK9 Multi-Target Discrimination & Reporting, and modeling and analysis to ensure optimization and alignment of capabilities into the CS end-to-end fire control loop.

FTIIP is the second phase of the corrective action plan for the resolution of the strike group interoperability issues. FTIIP includes implementation of Tactical Data Link (TDL) IFF Mode 5 identification capabilities, F/A-18 Digital Air Control (Phase 1) in support of F/A-18 and F-35 Joint Strike Fighter initial deployment, integration of the Shipboard Gridlock System/Automatic Correlation (SGS/AC) system into the SSDS MK2 TI-16 configuration, and implementation of other high priority software.

ACB-20 Combat System Integration provides the system engineering for continued fire control loop improvements beyond FCLIP Phase 2 for tracking, weapon scheduling and engagement control with ESSM Block 2 missile; SEWIP Block 2 soft kill coordinator, SEWIP Block 3 Electronic Attack along with additional capability integration for NGSSR, GPNTS, IFF Mode S and RAM Block 2B.

Test and Evaluation/Certification under PU 2178 encompasses SSDS MK2 Development Test and Evaluation (DT&E) providing for comprehensive testing and certification of the integrated CS for the CVN 68, CVN 78, LPD 17, LHD1, LHA 6 and LSD41/49 ship classes. This includes Land-Based testing at Wallops Island and At-Sea testing for the lead ships for the new CS configurations, and Live Fire testing on the SDTS and land-based and shipboard cyber testing. The DT&E encompasses test planning, preparation, test conduct, data collection and analysis, and resolution and verification of deficiency corrections. The SSDS MK 2 T&E/Certification supports Integrated Combat System certification, the SSDS Test and Evaluation Master Plan (TEMP) execution and the Air Warfare Ship Self Defense CAPSTONE Enterprise TEMP execution which includes continuation of DT and FOT&E events for the CVN 78 SSDS MK 2 Mod 6C configuration with the DBR, SEWIP Block 2 ES, ESSM Block 1 with JUWL up-link, and RAM Block 2.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: SSDS MK2 Product Development/Combat Systems Integration	135.638	141.616	118.553	0.000	118.553

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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
Articles:	-	-	-	-	-
<p><i>FY 2020 Plans:</i> For Build 10 (ACB-12/TI-12/TI-12H) - Provide required Test, Analyze and Fix (TAAF) to support CVN 78 operational test events and LSD 46 and LHD 6 installation, test and certification events.</p> <p>For Build 12 (ACB-20/TI-16) - Conduct reduced initial capability Build 12 software design and development efforts with Combat System Engineering Agent (CSEA) focus on EASR integration and deferring other planned capabilities to FY21. - Conduct Build 12 Release 1 Final System Integration Test (FSIT) and Final Qualification Test (FQT). - Deliver Build 12 Release 1 SW to support CVN 73 installation and system light-off. - Continue government ACB-20 ICS integration engineering activities. - Continue designing, developing and implementing Cybersecurity capabilities to secure the combat system enclave. - Conduct SSDS ACB-20 cybersecurity phasing, implementation, development, and integration efforts with CSEA.</p> <p>For Joint Strike Fighter F35B&C - Conduct CAC2S Afloat design and development efforts for Close Air Support and Assault Support, Tactical Data Link and Maritime Common Tactical Picture integration. - Develop technical and training documentation to support ship installation, operation and maintenance. - Continue systems and software engineering effort for improved integration of CAC2S with SSDS to define information exchange and interface requirements for additional capabilities enabled with the introduction of the MIDS CMN-4 Link 16 terminal and GCCS-M integration. - Complete environmental qualification testing for CAC2S Afloat hardware.</p> <p><i>FY 2021 Base Plans:</i> For Build 12 (ACB-20/TI-16) - Rampup Build 12 software design and development efforts for inclusion of delayed capability due to FY20 congressional mark. - Continue Build 12 Release 3 software design and development efforts with CSEA. - Commence Build 12 Release 2 land-based testing with EASR. - Conduct Build 12 Release 2 FSIT and FQT.</p>					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
<ul style="list-style-type: none"> - Continue government ACB-20 ICS integration engineering activities. - Provide required Build 12 Release 1 TAAF to support CVN 73 ship installation, test and certification events. - Continue designing, developing and implementing Cybersecurity capability improvements to secure the combat system enclave. <p>For TI-22 Computing and Display Hardware</p> <ul style="list-style-type: none"> - Conduct hardware design activities. - Conduct TI-22 hardware production source selection activities. <p>For Joint Strike Fighter F35B&C</p> <ul style="list-style-type: none"> - Complete CAC2S Afloat design and development efforts for Close Air Support and Assault Support, Tactical Data Link and Maritime Common Tactical Picture integration. - Complete systems and software engineering effort for improved integration of CAC2S with SSDS and introduction of the MIDS CMN-4 Link 16 terminal and GCCS-M interface. - Initiate interoperability testing and certification. <p>FY 2021 OCO Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: The decrease is a result of both the completion of SSDS Build 10 development effort and fielding of the F35B Integration project, which were improved by the effectiveness of the test, analyze, and fix efforts, as well the efficiency of the interoperability test and link certification efforts.</p>						
<p>Title: SSDS MK2 Development Test & Evaluation</p> <p align="right">Articles:</p>						
		28.029	26.355	27.161	0.000	27.161
		-	-	-	-	-
<p>FY 2020 Plans:</p> <p>For LSD SSDS MK 2 Mod 5C (Build 10)</p> <ul style="list-style-type: none"> - Complete Combat System Ship Qualification Test (CSSQT) on LSD46 and LSD 47 - Conduct OT-III-I Phase 2 ET12 SDTS - Conduct OT-III-I Phase 3 ET14 Lead Ship Event <p>For CVN 78 SSDS MK2 Mod 6C (Build 10)</p>						

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
<ul style="list-style-type: none"> - Conduct Combat System Test (CST) at Wallops Island (WI) for authorization OQE for ICS software package for CSSQT Phase 2. - Complete DT/OT-III J Phase 3/ET-09 MSLEX on SDTS - Continue DTIII-J-Phase 3 on CVN 78. - Conduct Cybersecurity USS Secure Serial X Phase 4 Testing for ICS software package <p>For LHD6 SSDS MK2 Mod 3C Build 10 (ACB-12/TI-12H)</p> <ul style="list-style-type: none"> - Conduct CST at WI for authorization OQE for ICS software package for LHD6 SSDS Mod 3C Build 10 (ACB-12/TI-12H) for Combat System Light Off (CSLO). - Complete CSSQT on LHD 6 <p>For LHA 7 (Build 9) complete CSSQT following PSA</p> <p>FY 2021 Base Plans:</p> <p>For LPD SSDS MK 2 Mod 2B (Build 10)</p> <ul style="list-style-type: none"> - Commence and Complete CSSQT on LPD 17, LPD 23, LPD 24 <p>CVN 70/LHD SSDS MK2 Mod 1E/3E (Build 10)</p> <ul style="list-style-type: none"> - Commence and Complete CSSQT on CVN 70, LHD 1 and LHD 4 <p>For SSDS MK 2 Build 12</p> <ul style="list-style-type: none"> - Conduct CST at WI for OQE for ICS software package for CVN 73 certification - Conduct Cybersecurity Table Top (CTT) for Phase 2/3 Cybersecurity testing - Conduct USS Secure Cybersecurity Testing CVI Phase 3 <p>FY 2021 OCO Plans:</p> <p>N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement:</p> <p>Funding increase is a result of conducting more ship CSSQTs in FY21.</p>					
Accomplishments/Planned Programs Subtotals					
	163.667	167.971	145.714	0.000	145.714

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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2019	FY 2020	FY 2021	FY 2021	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Cost To	
			Base	OCO	Total					Complete	Total Cost
• OPN/ BLI 5231 (SSDS): <i>SSDS</i>	83.998	83.933	94.534	-	94.534	92.267	97.125	98.361	100.295	Continuing	Continuing
• RDTEN/0607658N: <i>Cooperative Engagement Capability</i>	124.563	127.924	143.667	-	143.667	175.605	167.200	166.177	165.607	Continuing	Continuing

Remarks

D. Acquisition Strategy

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A sole source follow-on Cost Plus Incentive Fee (CPIF) Level of Effort (LOE) contract, N00024-14-C-5128, was awarded 18 December 2013 with a Period of Performance (PoP) from FY14-FY17 for the development, test, certification of SSDS MK2 (ACB 12/TI-12) for CVN78, CVN72, LHD2, and the software migration of ACB 12 to TI-12H/TI-16 for CVN 68, LHD 1, LPD 17 ship classes. This contract was extended to June 2020 and an additional extension to Q2 FY21 is planned to provide continued support of the SSDS MK 2 to complete the contract scope requirements for CVN and Amphibious ship Modernization ACB 12 on TI-12 and TI-12H (SSDS Software Build 10).

A new competitive contract for a SSDS Combat System Engineering Agent (CSEA)/Software Design Agent (SDA) was awarded in FY 2019 with a ten (10)-year PoP from FY19-FY29. This contract provides support for the Aircraft Carrier and Amphibious Ship Class SSDS Combat System (CS) element development of ACB 20 (SSDS Software Build 12) and follow-on technology upgrades based on the evolution of the SSDS MK 2 Combat Systems Build 10 (ACB 12/TI-12/TI-12H). The current requirements include systems and software engineering support, development of engineering products to support combat system integration, configuration control, developmental test/operational test (DT/OT) support, training and logistics support, and field technical support for the SSDS ICS.

For SSDS MK2 TI-12H/TI-16 hardware, the SSDS program uses competitive build to specification production contracts, and leverages common enterprise COTS products for computing, storage, display, network, conversion, and cyber security.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy **Date:** February 2020

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Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PD - ACB12/TI12 / LSD - PSEA / SW Dev	SS/CPIF	RSC IDS (5128) : San Diego, CA	129.814	18.433	Dec 2019	17.198	Jan 2020	0.000		-		0.000	Continuing	Continuing	Continuing
PD - ACB12/TI12 / LSD / AMIIP - PSEA / SW Dev	SS/CPAF	RSC IDS (5122) : San Diego, CA	38.416	0.000		0.000		0.000		-		0.000	0.000	38.416	-
PD - ACB12/TI12 / LSD - SE	SS/CPFF	JHU/APL : Laurel, MD	74.394	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
PD - ACB12/TI12 / LSD - SW Dev/PL-STM	SS/CPAF	Gen. Dyn. (5100) : Fairfax, VA	3.628	0.000		0.000		0.000		-		0.000	0.000	3.628	-
PD - ACB12/TI12 / LSD - SE	WR	NSWC DD : Dalhgren, VA	83.069	1.993	Dec 2018	4.584	Nov 2019	0.000		-		0.000	Continuing	Continuing	Continuing
PD - ACB12/TI12 / LSD - SE / ILS	WR	CDSA DN : Dam Neck, VA	22.927	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
PD - ACB12/TI12 / LSD - SE&I/Force Pt	C/CPIF	RSC (IIS) : Suffolk, VA	0.976	0.000		0.000		0.000		-		0.000	0.000	0.976	-
PD - ACB12/TI12 / LSD - LBET/Training I	WR	NSWC PHD : Pt Hueneme, CA	32.749	1.792	Nov 2018	3.453	Nov 2019	0.000		-		0.000	Continuing	Continuing	Continuing
PD - ACB12/TI12 / LSD - CVN78 LBET/Metrics/On-site Support	WR	NSWC Corona : Corona, CA	1.273	0.200	Nov 2018	0.432	Nov 2019	0.000		-		0.000	0.000	1.905	-
PD - ACB12/TI12 / LSD - Navy Link Cert/Cross-Domain Spt	WR	SPAWAR : San Diego, CA	0.435	0.000		0.000		0.000		-		0.000	0.000	0.435	-
PD - ACB12/TI12 / LSD - Moriah Integration	WR	NAVAIR : Lakehurst, NJ	0.309	0.000		0.000		0.000		-		0.000	0.000	0.309	-
PD - ACB12/ CVN78 LBET w/DBR/RES	SS/CPIF	RSC IDS : Sudbury, MA	5.080	0.000		0.000		0.000		-		0.000	0.000	5.080	-
PD - ACB12/ CVN78 LBET w/CEC	SS/CPIF	RSC IDS : St. Petersburg, FL	1.275	0.000		0.000		0.000		-		0.000	0.000	1.275	-
PD - ACB12/ CVN78 LBET w/TPX-42	WR	NAVAIR : St. Indigoes, MD	0.111	0.000		0.000		0.000		-		0.000	0.000	0.111	-
PD - ACB12/TI-16/TI12H - HW Dev / ILS / EDM Proc (DN)	WR	CDSA DN : Dam Neck, VA	11.451	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 5				PE 0604755N / Ship Self Def (Detect & Cntrl)				2178 / QRCC							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PD - ACB12/TI-16/TI12H - HW Eng	WR	NSWC DD : Dalhgren, VA	12.663	0.000		0.834	Nov 2019	0.000		-		0.000	Continuing	Continuing	Continuing
PD - ACB12/TI-16/TI12H - SW Migration PSEA	SS/CPIF	RSC IDS (5128) : San Diego, CA	49.603	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
PD - Build 12/ACB20/TI-16 - SW Dev CSEA	C/CPIF	CSEA Contract : Moorestown, NJ	0.000	0.000		5.753	Dec 2019	32.222	Dec 2020	-		32.222	0.000	37.975	-
PD - ACB12/TI-16/TI12H - SE	SS/CPFF	JHU/APL : Laurel, MD	3.486	0.000		0.000		0.000		-		0.000	0.000	3.486	-
PD - Build 12/ACB20/TI-16 - SE Spt	C/CPFF	JHU/APL : Laurel, MD	0.000	0.000		0.632	Dec 2019	3.250	Dec 2020	-		3.250	0.000	3.882	-
PD - ACB12/TI-16/TI12H - LBET/Training Course Development	WR	NSWC-PHD : Pt Hueneme, CA	2.575	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
PD - Build 12/ACB20/TI-16/Trng Course/Dev	WR	NSWC PHD : Pt Hueneme, CA	0.000	0.000		1.082	Nov 2019	0.950	Nov 2020	-		0.950	0.000	2.032	-
PD - ACB12/TI-16/TI12H - Metrics/On-Site Sprt	WR	NSWC Corona : Corona, CA	1.087	0.000		0.000		0.000		-		0.000	0.000	1.087	-
PD - Build 12/ACB20/TI-16/Metrics/On Site spt	WR	NSWC Corona : Corona, CA	0.000	0.000		0.000		0.589	Nov 2020	-		0.589	0.000	0.589	-
PD - Build 12/ACB20/TI-16 - SE spt	WR	NSWC DD : Dalhgren, VA	0.000	0.000		0.457	Nov 2019	4.175	Nov 2020	-		4.175	0.000	4.632	-
PD - Build 12/ACB20/TI-16-SE spt	C/CPFF	Gryphon : Washington, DC	0.000	0.000		0.000		1.450	Dec 2020	-		1.450	0.000	1.450	-
PD - ACB12/TI-16/TI12H - CPS Engnr	C/IDIQ	GTS : Virginia Beach, VA	0.042	0.000		0.000		0.000		-		0.000	0.000	0.042	-
PD - ACB12/TI-16/TI12H - Navy Link Cert/Cross-Domain Sprt	WR	SPAWAR : San Diego, CA	0.326	0.000		0.000		0.000		-		0.000	0.000	0.326	-
PD - Cyber Resiliency / BDC PSEA SW DEV'T	SS/CPIF	RSC IDS (5128) : San Diego, CA	9.552	1.000	Dec 2018	0.932	Dec 2019	0.000		-		0.000	Continuing	Continuing	Continuing
PD - Cyber Resiliency / BDC REQT & ENG	SS/CPFF	JHU/APL : Laurel, MD	2.450	2.050	Dec 2018	3.257	Dec 2019	4.400	Nov 2020	-		4.400	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 5				PE 0604755N / Ship Self Def (Detect & Cntrl)				2178 / QRCC							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PD - Cyber Resiliency / BDC SE	WR	NSWC-DD : Dalhgren, VA	4.146	0.000		0.932	Nov 2019	0.555	Oct 2020	-		0.555	Continuing	Continuing	Continuing
PD - Cyber Resiliency / BDC HW EDM	WR	CDSA DN : Dam Neck, VA	0.864	0.000		0.000		0.568	Oct 2020	-		0.568	Continuing	Continuing	Continuing
PD - Cyber Resiliency / BDC CSTK DEV'T	C/CPIF	Progeny Systems Corp : Manassas, VA	0.893	3.500	Dec 2018	3.932	Jan 2020	0.000		-		0.000	Continuing	Continuing	Continuing
PD - Cyber Resiliency / BDC NETWORK TOPOLOGY	WR	G2OPS : Washington DC	0.207	0.667	Nov 2018	0.632	Dec 2019	0.000		-		0.000	0.000	1.506	-
PD - Cyber Resiliency / BDC ILS	WR	NSWC PHD : Port Hueneme, CA	1.107	0.000		0.000		0.513	Oct 2020	-		0.513	0.000	1.620	-
PD - Cyber Resiliency / BDC MODELING	WR	NSWCPCD : Philadelphia, PA	0.125	0.125	Nov 2018	0.125	Nov 2019	0.000		-		0.000	0.000	0.375	-
PD - Cyber Resiliency / BDC SEIT	C/CPIF	Gryphon/DELTA : Washington DC	0.550	0.550	Dec 2018	0.632	Dec 2019	0.900	Nov 2020	-		0.900	0.000	2.632	-
PD - Cyber Resiliency / BDC CSEA	C/CPIF	CSEA Contract : Moorestown NJ	0.000	4.000	Aug 2019	17.932	Oct 2019	22.053	Oct 2020	-		22.053	0.000	43.985	-
PD - TI-16TR/TI22 - HW Engineering	C/CPFF	Gryphon : Washington DC	0.000	0.000		0.682	Dec 2019	1.525	Nov 2020	-		1.525	0.000	2.207	-
PD - TI-16TR/TI22 -HW Engineering	WR	NSWC-DD : Dalhgren, VA	1.020	5.383	Nov 2018	9.286	Nov 2019	7.189	Oct 2020	-		7.189	0.000	22.878	-
PD - HQ Travel	Various	PEO IWS : Washington DC	0.520	0.150	Nov 2018	0.175	Oct 2019	0.178	Dec 2020	-		0.178	Continuing	Continuing	Continuing
PD - SE/Dev/Integrate	SS/CPAF	Rayth(5412) (RIDS) : Portsmouth, RI	83.451	0.000		0.000		0.000		-		0.000	0.000	83.451	-
PD - F35B Integration / LHA / LHD	C/CPFF	JHU/APL : Laurel, MD	0.000	6.983	Dec 2018	0.932	Dec 2019	1.952	Nov 2020	-		1.952	0.000	9.867	-
PD - F35B Integration / LHA / LHD	WR	NSWC DD : Dalhgren, VA	0.000	6.711	Nov 2018	3.932	Nov 2019	1.559	Oct 2020	-		1.559	0.000	12.202	-
PD - F35B Integration / LHA / LHD	C/CPIF	SEI&T : Washington DC	0.000	3.846	Dec 2018	0.000		0.350	Dec 2020	-		0.350	0.000	4.196	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>	Project (Number/Name) 2178 / QRCC
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Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PD - F35B/C - ICS Link 16 Integration	C/CPFF	JHU/APL : Laurel, MD	0.000	1.100	Dec 2018	1.182	Dec 2019	1.952	Nov 2020	-		1.952	0.000	4.234	-
PD - F35B Integration / LHA / LHD	TBD	PEO LS : Quantico, VA	0.000	0.000		8.431	Dec 2019	3.100	Dec 2020	-		3.100	0.000	11.531	-
PD - F35B/C - ICS Link 16 Integration	WR	NSWC DD : Dalhgren, VA	0.000	1.000	Nov 2018	1.931	Nov 2019	1.191	Oct 2020	-		1.191	0.000	4.122	-
PD - F35B Integration / LHA / LHD	C/CPIF	CSEA : Moorestown NJ	0.000	0.000		6.181	Oct 2019	3.250	Oct 2020	-		3.250	0.000	9.431	-
PD - F35B/C - ICS Link 16 Integration	C/CPIF	SEI&T : Washington DC	0.000	0.500	Dec 2018	0.682	Dec 2019	0.685	Dec 2020	-		0.685	0.000	1.867	-
PD - F35B Integration / LHA / LHD	TBD	PEO C4I : San Diego, CA	0.000	0.000		5.181	Dec 2019	2.000	Dec 2020	-		2.000	0.000	7.181	-
PD - Misc - Prior Year Cum Cost	C/BA	Misc : Washington DC	278.994	0.000		0.000		0.000		-		0.000	0.000	278.994	-
PD - PM Prod Development	C/CPIF	various : various	36.529	3.000	Dec 2018	2.994	Dec 2019	3.100	Dec 2020	-		3.100	0.000	45.623	-
CSI - ACB20 (Less EASR) - SE	WR	NSWC COR : Corona, CA	0.000	0.450	Nov 2018	0.557	Nov 2019	0.000		-		0.000	0.000	1.007	-
CSI - ACB20 (Less EASR) - SE	WR	NSWC DD : Dalhgren, VA	5.520	6.399	Nov 2018	3.750	Nov 2019	2.226	Oct 2020	-		2.226	0.000	17.895	-
CSI - ACB20 (Less EASR) - SE	WR	NSWC PHD : Port Huneme, CA	0.323	1.250	Nov 2018	1.432	Nov 2019	0.000		-		0.000	0.000	3.005	-
CSI - ACB20 (Less EASR) - SE	WR	NUWC KP : Keyport, WA	0.161	0.175	Nov 2018	0.200	Nov 2019	0.000		-		0.000	0.000	0.536	-
CSI - ACB20 (Less EASR) - SE	SS/CPAF	Rayth (RIDS) : Portsmouth, RI	1.075	0.000		0.000		0.000		-		0.000	0.000	1.075	-
CSI - ACB20 (Less EASR) - SEI&T	C/CPFF	Gryphon : Washington DC	3.062	2.233	Dec 2018	1.956	Dec 2019	0.452	Dec 2020	-		0.452	0.000	7.703	-
CSI - ACB20 (Less EASR) - SE	SS/CPFF	JHU/APL : Laurel, MD	5.458	5.906	Dec 2018	3.082	Dec 2019	1.050	Nov 2020	-		1.050	0.000	15.496	-
CSI - ACB20 (Less EASR) - SE	C/CPIF	CSEA Contract : Moorestown NJ	0.000	11.935	Aug 2019	5.395	Oct 2019	2.450	Oct 2020	-		2.450	0.000	19.780	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 5				PE 0604755N / Ship Self Def (Detect & Cntrl)				2178 / QRCC							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CSI - FCLIP Phase 2 - PSEA	SS/CPIF	RSC IDS (5128) : San Diego, CA	19.724	5.370	Dec 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SE	SS/CPFF	JHU/APL : Laurel, MD	11.718	1.598	Nov 2018	0.606	Dec 2019	0.000		-		0.000	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SE	WR	NSWC-DD : Dahlgren, VA	2.421	1.016	Nov 2018	0.245	Nov 2019	0.000		-		0.000	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SE	WR	CDSA DN : Dam Neck, VA	0.125	0.000		0.000		0.000		-		0.000	0.000	0.125	-
CSI - FCLIP Phase 2 - SE	WR	NSWC PHD : Pt Hueneme, CA	0.858	1.308	Nov 2018	1.052	Nov 2019	0.000		-		0.000	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SE / Planning	C/CPIF	Delta Resources : Alexandria, VA	0.339	0.000		0.000		0.000		-		0.000	0.000	0.339	-
CSI - FCLIP Phase 2 - SE & I	C/CPIF	RSC IIS (4112) : Suffolk, VA	2.136	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SEI&T	C/CPFF	Gryphon/Delta : Washington DC	1.478	2.019	Dec 2018	0.000		0.000		-		0.000	0.000	3.497	-
CSI - FCLIP Phase 2 - SE Multi-Link Antenna	TBD	IWS 5 : TBD	0.250	0.000		0.000		0.000		-		0.000	0.000	0.250	-
CSI - FCLIP Phase 2 - SE RAM/ESSM	WR	NAWC : China Lake	2.488	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SE RAM/CIWS	SS/CPFF	RSC(5432/5410) : Tucson, AZ	2.962	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SE	WR	NSWC : Crane, IN	0.250	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SE	WR	NSWC COR : Corona, CA	0.000	0.252	Nov 2018	0.244	Nov 2019	0.000		-		0.000	0.000	0.496	-
CSI - FCLIP Phase 2 - SE / SW Dev	SS/CPAF	Rayth (RIDS) : Portsmouth, RI	10.455	0.000		0.000		0.000		-		0.000	0.000	10.455	-
CSI - FCLIP Phase 2 - SE	WR	NUWC KP : Keyport, WA	0.469	0.000		0.000		0.000		-		0.000	0.000	0.469	-
CSI - FTIIP - PSEA - SW Dev	SS/CPIF	RSC IDS (5128) : San Diego, CA	10.473	6.461	Dec 2018	2.241	Dec 2019	0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 5				PE 0604755N / Ship Self Def (Detect & Cntrl)				2178 / QRCC							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CSI - FTIIP - SE	C/BA	JHU/APL : Laurel, MD	0.451	0.580	Nov 2018	0.431	Dec 2019	0.000		-		0.000	0.000	1.462	-
CSI - FTIIP - SE	WR	NSWC-DD : Dahlgren, VA	4.679	1.489	Nov 2018	1.156	Nov 2019	2.750	Oct 2020	-		2.750	Continuing	Continuing	Continuing
CSI - FTIIP - SE	WR	CDSA DN : Dam Neck, VA	0.616	0.000		0.000		0.613	Oct 2020	-		0.613	Continuing	Continuing	Continuing
CSI - FTIIP - SE&I	C/CPIF	RSC IIS (4112) : Suffolk, VA	0.495	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CSI - FTIIP - SE	WR	NSWC PHD : Port Hueneme, CA	0.215	0.000		0.456	Nov 2019	1.025	Oct 2020	-		1.025	0.000	1.696	-
CSI - FTIIP - SEI&T	C/CPFF	Gryphon : Washington DC	1.735	1.830	Dec 2018	1.447	Dec 2019	1.150	Dec 2020	-		1.150	0.000	6.162	-
CSI - FTIIP - SE	WR	NUWC KP : Keyport, WA	0.186	0.200	Nov 2018	0.225	Nov 2019	0.000		-		0.000	0.000	0.611	-
CSI - ICS SE - PSEA SE	SS/CPIF	RSC IDS (5128) : San Diego, CA	1.354	0.000		0.000		0.000		-		0.000	0.000	1.354	-
CSI - ICS SE - SE&I	C/CPIF	RSC (IIS) : Suffolk, VA	2.404	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CSI - ICS SE - SEA 05C	C/BA	SEA 05C : Washington DC	0.617	0.000		0.000		0.000		-		0.000	0.000	0.617	-
CSI - ICS SE - SEI&T	C/CPFF	Gryphon : Washington DC	2.649	2.817	Nov 2018	2.282	Dec 2019	1.750	Dec 2020	-		1.750	0.000	9.498	-
CSI - ICS SE	SS/CPFF	JHU/APL : Laurel, MD	5.724	1.448	Dec 2018	1.581	Dec 2019	1.250	Nov 2020	-		1.250	Continuing	Continuing	Continuing
CSI - ICS SE	WR	NSWC DD : Dahlgren, VA	5.576	1.635	Nov 2018	1.677	Nov 2019	0.000		-		0.000	Continuing	Continuing	Continuing
CSI - ICS SE	WR	CDSA DN : Dam Neck, VA	0.515	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CSI - ICS SE	WR	NUWC KP : Keyport, WA	0.672	0.225	Nov 2018	0.186	Nov 2019	0.000		-		0.000	0.000	1.083	-
CSI - ICS SE	C/CPIF	Delta Resources : Virginia Beach, VA	0.205	0.000		0.000		0.000		-		0.000	0.000	0.205	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy											Date: February 2020				
Appropriation/Budget Activity 1319 / 5						R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>					Project (Number/Name) 2178 / QRCC				

Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CSI - ICS SE	FFRDC	MITRE : McLean, VA	0.300	0.000		0.000		0.000		-		0.000	0.000	0.300	-
CSI - ICS SE	C/CPIF	CSEA Contract : Moorestown NJ	0.000	0.500	Aug 2019	0.431	Oct 2019	0.000		-		0.000	0.000	0.931	-
CSI - EASR / ESS SE	SS/CPFF	JHU/APL : Laurel, MD	5.392	1.648	Dec 2018	0.882	Dec 2019	0.000		-		0.000	Continuing	Continuing	Continuing
CSI - EASR / ESS SE	WR	NSWC DD : Dalhgren, VA	4.688	4.371	Nov 2018	1.766	Nov 2019	0.000		-		0.000	Continuing	Continuing	Continuing
CSI - EASR / ESS / SEI&T	C/CPFF	Gryphon : Washington DC	4.240	3.296	Nov 2018	1.538	Dec 2019	0.000		-		0.000	0.000	9.074	-
CSI - EASR / ESS SE	WR	CDSA DN : Dam Neck, VA	0.273	0.000		0.000		0.000		-		0.000	0.000	0.273	-
CSI - EASR / ESS SE	C/CPAF	RSC (5202) : St. Pete, FL	1.034	0.000		0.000		0.000		-		0.000	0.000	1.034	-
CSI - EASR / ERS SE	WR	NSWC PHD : Port Hueneme, CA	0.323	0.685	Nov 2018	0.277	Nov 2019	0.000		-		0.000	0.000	1.285	-
CSI - EASR / ERS SE	C/CPIF	CSEA Contract : Moorestown NJ	0.000	9.100	Aug 2019	2.133	Oct 2019	4.181	Oct 2020	-		4.181	0.000	15.414	-
Subtotal			1,022.185	139.179		141.616		118.553		-		118.553	Continuing	Continuing	N/A

Remarks

FY 2019-FY 2021 includes collaborative SSDS and ICS maturation efforts through the test, analyze and fix process to support DT/OT/OPEVAL and achieve requisite deployment capabilities for Ship Self Defense and Strike Group Interoperability through extensive integrated testing and software updates. - In FY 2019, a new contract will be awarded on a competitive basis for a Combat System Engineering Agent/Software Design Agent (CSEA/SDA) for development of SSDS ACB20 and follow baselines.

Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DT&E (PHD)	WR	NSWC PHD : Port Hueneme, CA	110.286	6.029	Nov 2018	5.816	Nov 2019	5.915	Oct 2020	-		5.915	Continuing	Continuing	Continuing
DT&E (SCSC-WI)	WR	SCSC-WI : Wallops Is, VA	80.464	5.960	Nov 2018	7.592	Nov 2019	7.625	Nov 2020	-		7.625	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 5				PE 0604755N / Ship Self Def (Detect & Cntrl)				2178 / QRCC							
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DT&E (JHU/APL)	SS/CPFF	JHU/APL : Laurel, MD	28.216	3.356	Dec 2018	2.517	Dec 2019	2.550	Nov 2020	-		2.550	Continuing	Continuing	Continuing
DT&E (Corona)	WR	NSWC Corona : Corona, CA	17.447	1.494	Nov 2018	2.450	Nov 2019	2.500	Oct 2020	-		2.500	Continuing	Continuing	Continuing
DT&E (RAM/CIWS//ESSM) (RSC)	SS/CPFF	RSC(5432/5410) : Tucson, AZ	4.524	0.404	Nov 2018	0.250	Dec 2019	0.000		-		0.000	Continuing	Continuing	Continuing
DT&E/CST (DD - CST)	WR	NSWC DD : Dahlgren, VA	32.719	5.352	Nov 2018	5.240	Nov 2019	4.871	Oct 2020	-		4.871	Continuing	Continuing	Continuing
DT&E (COTF)	WR	OPTEVFOR : Norfolk, VA	7.065	0.301	Nov 2018	1.172	Nov 2019	1.250	Oct 2020	-		1.250	Continuing	Continuing	Continuing
DT&E (CDSA-DN)	WR	CDSA DN : Dam Neck, VA	4.656	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
DT&E (engility)	C/CPIF	Engility : Virginia Beach, VA	4.329	1.592	Dec 2018	1.318	Dec 2019	1.450	Nov 2020	-		1.450	0.000	8.689	-
DT&E (SPAWAR-SD)	WR	SPAWAR : San Diego, CA	5.780	0.000		0.000		0.000		-		0.000	0.000	5.780	-
DT&E (Raytheon - St. Pete)	SS/CPAF	RSC (5202) : St. Pete, FL	4.708	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
DT&E (RAM/ESSM) (China Lake)	WR	NAWC : China Lake, CA	1.150	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
DT&E (Raytheon - SE&I)	C/CPIF	Rayth - IIS : Suffolk, Va.	0.571	0.000		0.000		0.000		-		0.000	0.000	0.571	-
DT&E Raytheon - PSEA	SS/CPFI	RSC (5128) : San Diego, CA	0.182	0.000		0.000		1.000	Oct 2020	-		1.000	0.000	1.182	-
DT&E (GD/AIS - IWS 1.0)	SS/CPAF	GD/AIS : Fairfax Va.	0.266	0.000		0.000		0.000		-		0.000	0.000	0.266	-
DT&E (Raytheon - RIDS)	SS/CPAF	RSC (5412) : Portsmouth, RI	1.902	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			304.265	24.488		26.355		27.161		-		27.161	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / Ship Self Def (Detect & Cntrl)	Project (Number/Name) 2178 / QRCC
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	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	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
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - T&E - REL 2 CST				■																								
SSDS MK 2 ACB 20 ICS - SoS SRR / SFR 2	■																											
SSDS MK 2 - CSEA CONTRACT AWARD				■																								
SSDS MK 2 BUILD 12 (ACB 20) REL 1 & 2 SRR/SFR					■																							
SSDS MK 2 BUILD 12 (ACB 20) - REL 1 SSR/PDR						■																						
SSDS MK 2 BUILD 12 (ACB 20) - REL 1 FSIT / FQT											■																	
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 SSR/PDR												■																
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 IPR 1													■															
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 IPR 2														■														
SSDS MK2 BUILD 12 (ACB 20) TAAF																												
SSDS MK2 BUILD 12 (ACB 20) REL 3 SSR/PDR																												
SSDS MK 2 BUILD 12 (ACB 20) REL 3 IPR																												
SSDS MK 2 BUILD 12 (ACB 20) REL 2 T&E SIT/ET @ WI																												
SSDS MK 2 BUILD 12 (ACB 20)TI-16R/TI-22 - REL 2 T&E SIT/ET @ WI																												
SSDS MK2 BUILD 12 (ACB 20) REL 2 FSIT / FQT																												
SSDS MK2 BUILD 12 (ACB 20) REL 2 TAAF																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>	Project (Number/Name) 2178 / QRCC

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2178				
SSDS MK 2 MOD 5C (LSD) - TI-12 / TI-12H (BUILD 9) TAAF	1	2019	3	2020
SSDS MK 2 MOD 5C (LSD) - TI-12 / TI-12H (BUILD 10) S/W DCT1	1	2019	3	2020
SSDS MK2 Mod 5C (OT-III-I Phase 3) CVPA	1	2019	1	2019
SSDS MK2 Mod 5C (DT-III-I Phase 1) AA	3	2019	3	2019
SSDS MK2 Mod 5C LSD-T&E CST Build 9 CST	2	2019	3	2019
SSDS MK2 Mod 5C LSD-T&E CST Build 10 CST	1	2019	2	2019
SSDS MK2 MOD 6C - CVN 78 ACB12 / TI12 - T&E - SIT/ET @ WI	1	2019	3	2020
SSDS NMK2 Mod 6C (DT-III-J Phase 1) CVI	3	2019	3	2019
SSDS NMK2 Mod 6C (DT-III-J Phase 1) AD	1	2020	1	2020
SSDS MK 2 MOD 6C - CVN 78 ACB12/TI12 - FSIT 4 / FQT 3	1	2019	4	2019
SSDS NMK2 Mod 6C (OT-III-J Phase 3) CVPA	3	2020	3	2020
SSDS MK 2 MOD 6C - CVN 78 BUILD 10 (ACB12/TI12) -T&E - DT III J PHASE 3 / ET10	1	2019	4	2020
SSDS NMK2 Mod 6C (OT-III-J Phase 3) AA	4	2020	4	2020
SSDS MK 2 MOD 6C - CVN 78 BUILD 10 (ACB12/TI12)-T&E CST EVENT(S) @ WI	1	2019	2	2020
SSDS MK 2 MOD 6C - CVN 78 BUILD 10 (ACB12/TI12)- TEST ANALYZE & FIX (TAAF)	1	2019	4	2020
SDTS - SSDS MK 2 MOD 6C - CVN 78 BUILD 10 (ACB12/TI12) - T&E - DT/OT III	1	2019	1	2020
SSDS MK 2 MOD 6C - CVN 78 BUILD 10 (ACB12/TI12)- T&E CSSQT	1	2020	2	2020
SSDS MK 2 MOD 6C - CVN 78 BUILD 10 (ACB12/TI12)- FSIT 8 / FQT 7	2	2020	3	2020
SSDS MK 2 MOD 6C - CVN 78 BUILD 10 (ACB12/TI12)- DT/OT III J PHASE 3/ ET10	3	2020	4	2020
SSDS MK 2 MOD 3C - LHD 6 BUILD 10 (ACB12/TI12H) - FSIT / FQT	4	2019	1	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>	Project (Number/Name) 2178 / QRCC
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
SSDS MK 2 MOD 3C - LHD 6 BUILD 10 (ACB12/TI12H) - T&E CST @ WI	2	2020	2	2020
SSDS MK 2 MOD 3C - LHD 6 BUILD 10 (ACB12/TI12H) - TAAF	1	2020	4	2020
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC-FSIT/FQT REL 2	1	2019	1	2019
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - T&E - REL 1 / 2 SIT / ET @ WI	1	2019	1	2019
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - T&E - REL 1 CST	2	2019	2	2019
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - TAAF	1	2019	3	2020
SSDS MK 2 FCLIP PHASE 2 / FTIIP - DT III - SDTS	2	2019	2	2020
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - T&E - REL 2 CST	4	2019	4	2019
SSDS MK 2 ACB 20 ICS - SoS SRR / SFR 2	2	2019	2	2019
SSDS MK 2 - CSEA CONTRACT AWARD	4	2019	4	2019
SSDS MK 2 BUILD 12 (ACB 20) REL 1 & 2 SRR/SFR	1	2020	1	2020
SSDS MK 2 BUILD 12 (ACB 20) - REL 1 SSR/PDR	2	2020	2	2020
SSDS MK 2 BUILD 12 (ACB 20) - REL 1 FSIT / FQT	4	2020	4	2020
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 SSR/PDR	4	2020	4	2020
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 IPR 1	2	2021	2	2021
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 IPR 2	2	2021	2	2021
SSDS MK2 BUILD 12 (ACB 20) TAAF	2	2020	4	2021
SSDS MK2 BUILD 12 (ACB 20) REL 3 SSR/PDR	3	2021	3	2021
SSDS MK 2 BUILD 12 (ACB 20) REL 3 IPR	1	2022	1	2022
SSDS MK 2 BUILD 12 (ACB 20) REL 2 T&E SIT/ET @ WI	4	2021	4	2021
SSDS MK 2 BUILD 12 (ACB 20)TI-16R/TI-22 - REL 2 T&E SIT/ET @ WI	4	2021	4	2021
SSDS MK2 BUILD 12 (ACB 20) REL 2 FSIT / FQT	1	2022	2	2022
SSDS MK2 BUILD 12 (ACB 20) REL 2 TAAF	3	2022	4	2022
SSDS MK2 BUILD 12 (ACB 20) REL 3 FSIT / FQT	3	2023	1	2024
SSDS MK2 BUILD 12 (ACB 20) REL 4 SSR/PDR	2	2024	2	2024

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>	Project (Number/Name) 2178 / QRCC
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
SSDS MK 2 BUILD 12 (ACB 20) REL 3 T&E SIT/ET @ WI	1	2024	4	2024
SSDS MK2 BUILD 12 (ACB 20) REL 3 TAAF	1	2024	1	2024
SSDS MK 2 BUILD 12 (ACB 20) REL 4 IPR	4	2024	4	2024
SSDS MK 2 BUILD 12 (ACB 20) REL 4 FSIT / FQT	3	2025	4	2025

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy										Date: February 2020		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>				Project (Number/Name) 3172 / <i>Joint Non-Lethal Weapons</i>			
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
3172: <i>Joint Non-Lethal Weapons</i>	49.726	3.938	3.222	0.989	1.144	2.133	5.276	4.788	4.437	4.526	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Develop non-lethal weapon systems in support of anti-terrorism/force protection missions. Technologies include, but are not limited to: ocular interrupters, vessel propeller occlusion systems, and acoustic hailing devices. Current efforts are focused on the Long-Range Ocular Interrupter (LROI) and Maritime Vessel Stopper (MVS) technologies.

The LROI is intended to provide the U.S. Navy with the capability to deliver a bright light producing a dazzling or glare effect on a closing target to warn and/or suppress potential threats through increasing levels of visual degradation. LROI will generate a non-lethal, eye safe laser that will provide warning and suppression effects. The extended range capability of LROI will effectively increase tactical decision-making time in support of escalation of force (EoF) tactics, techniques and procedures (TTP) across a broad range of military operations (ROMO). Further, the LROI will enhance Joint Force operations in determining the intent of a potential threat as early as possible.

MVS technologies are systems designed to temporarily disable, slow, or stop waterborne vessels of varying degrees of size and different propulsion types in order to effectively execute escalation of force and intent determination procedures. The MVS technologies will provide the US Navy with lightweight, compact, which will stop or slow marine platforms by occlusion of any type of marine propeller or propulsion.

The Visual Augmentation Systems (VAS) Family of Systems (FoS) program allows the Expeditionary force to maintain situational awareness in degraded visual environments, to obtain and maintain battlefield dominance during missions to Find, Fix, Track, Target, Engage and Assess (F2T2EA) enemy combatants and avoid accidental engagement of noncombatants while maintaining the greatest possible distance from threats. In order to accelerate future capabilities and support steady growth of the Navy's VAS FoS, VAS core technologies will: Drive standardization across the family of systems; Enable Fleet learning and experimentation via Industry involvement and capability demonstrations; Transition mature technologies from the Science and Technology communities and Industry that are aligned to Fleet priorities. This program element leverages the military research community, other DoD programs, academia and commercial industry technology development efforts in the key electro-optics technology areas of: active, passive, multi-domain imaging sensors; laser systems; display systems; optics; image processing and algorithms.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Joint Non-Lethal Weapons Development	3.938	3.222	0.989	1.144	2.133
Articles:	-	-	-	-	-
FY 2020 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>	Project (Number/Name) 3172 / <i>Joint Non-Lethal Weapons</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>Complete government acceptance testing, environmental testing, electromagnetic immunity testing, safety approvals through Laser Safety Review Board (LSRB), complete Directed Energy Weapons Approval Review Process (DEWRAP) for LROI. L</p> <p>LROI will be seeking production decision for Optics 1 (vendor) to begin production of 350 units. Continue development and testing of MVS occlusion technologies, including deployment methods for drogue utilizing a pneumatic shoulder launcher.</p> <p>FY2020 OCO Plans: Finish test and evaluation of Visual Augmentation Module Portable Imager Recorder-Expeditionary (VAMPIRE) and prepare for Milestone C.</p> <p>Finish test and evaluation of Expeditionary Imaging/Recording VAS and prepare for Milestone C. Continue development and testing of an expanded situational awareness head/helmet mounted VAS sensor and prepare</p> <p>FY 2021 Base Plans: Complete pneumatic shoulder launcher development and drogue line optimization. Complete government acceptance testing, environmental testing, Electromagnetic immunity testing, safety approvals for drogue and the pneumatic shoulder launcher for MVS.</p> <p>FY 2021 OCO Plans: Initiation of Increment II of VAS PoR to perform R&D and testing of material solutions to address VAS capability gaps identified in requirements working groups.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: MVS development and engineering tests continues through FY21 to lead to a design to be added to the request for proposal that will go to industry for final development for risk reduction.</p>					
Accomplishments/Planned Programs Subtotals	3.938	3.222	0.989	1.144	2.133

C. Other Program Funding Summary (\$ in Millions)											
Line Item	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
• OPN/8128: <i>NCW Forces Active</i>	6.512	7.223	7.193	-	7.193	6.756	6.865	7.002	7.154	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>	Project (Number/Name) 3172 / <i>Joint Non-Lethal Weapons</i>

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

The Navy Non-Lethal Effects (NNLE) Family of Systems (FoS) ACAT IVM Program of Record targeting 2 areas of development, Long Range Ocular Interrupter (LROI) and Maritime Vessel Stopping (MVS).

LROI will be seeking a production decision in Q4FY20 to produce 350 devices to be fielded to Navy Expeditionary Combat Command units.

MVS will utilize its university partners (Chapman University, Utah State University and Michigan University) as well as industry to continue to optimize, conduct model and simulation, and engineering test the drogue and pneumatic shoulder launcher.

Initial Expeditionary Imaging/Recording VAS systems will be developed and tested based on KPPs identified. These units will go through user assessment for their feedback. ECP will be performed to incorporate user inputs. The RFP, including the developmental TDP, will be provided to industry to solicit offers for the LRIP production after refining the TDP and subsequently for full rate production systems.

The Expanded Situational Awareness VAS will first focus on the development of an enhanced resolution, situational awareness sensor. Upon successful development of the new sensor, the second phase will be to develop an expanded situational awareness head/helmet mounted VAS system that incorporates the sensor that will provide expanded situational awareness with no loss of visual acuity from existing systems.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)						
1319 / 5				PE 0604755N / Ship Self Def (Detect & Cntrl)					3172 / Joint Non-Lethal Weapons						
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering NNLE	WR	NSWC Panama City : Panama City, FL	3.765	1.661	Jan 2019	0.650	Jan 2020	0.989	Dec 2020	-		0.989	Continuing	Continuing	Continuing
System Engineering	MIPR	Army SOC : TBD	0.000	0.400	Feb 2019	0.408	Jan 2020	0.000		-		0.000	0.000	0.808	-
System Engineering NNLE	WR	NSWC Dahlgren : Dahlgren, VA	17.657	0.184	Jan 2019	0.000	Jan 2020	0.000		-		0.000	Continuing	Continuing	Continuing
System Engineering	WR	NSWC Port Hueneme : Port Hueneme, CA	0.628	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
System Engineering	WR	NSWC Crane : Crane, IN	0.755	0.700	Feb 2019	0.714	Jan 2020	0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			22.805	2.945		1.772		0.989		-		0.989	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Services (NSWC) NNLE	WR	NSWC Dahlgren : Dahlgren, VA	4.000	0.000		0.250	Oct 2019	0.000		-		0.000	Continuing	Continuing	Continuing
Engineering Services NNLE	MIPR	Army NVESD : Ft. Belvoir, VA	0.000	0.750	Feb 2019	0.800	Feb 2020	0.000		-		0.000	0.000	1.550	-
Program Management	WR	NUWC Newport : Newport, RI	2.857	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering Services (NSWC) NNLE	WR	NSWC Panama City : Panama City, FL	2.075	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			8.932	0.750		1.050		0.000		-		0.000	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity 1319 / 5				R-1 Program Element (Number/Name) PE 0604755N / Ship Self Def (Detect & Cntrl)				Project (Number/Name) 3172 / Joint Non-Lethal Weapons							
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation NNLE	WR	NSWC Dahlgren : Dahlgren, VA	3.609	0.000		0.000	Mar 2020	0.000		-		0.000	Continuing	Continuing	Continuing
Test and Evaluation	MIPR	Military Sealift Command : Washington, DC	2.200	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test and Evaluation	WR	NSWC Carderock : Carderock, MD	0.193	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test and Evaluation NNLE	WR	NSWC Panama City : Panama City, FL	0.000	0.000		0.400	Dec 2019	0.000		-		0.000	0.000	0.400	-
Test and Evaluation	WR	COMOPTEVFOR : Norfolk, VA	4.925	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test and Evaluation	WR	NSWC Crane : Crane, IN	0.000	0.000		0.000		0.000		0.800	Jan 2021	0.800	0.000	0.800	-
Subtotal			10.927	0.000		0.400		0.000		0.800		0.800	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management NNLE	WR	NSWC Panama City : Panama City, FL	0.000	0.125	Jan 2019	0.000	Jan 2020	0.000		-		0.000	0.000	0.125	-
Program Management NNLE	WR	NSWC Dahlgren : Dahlgren, VA	7.062	0.118	Jan 2019	0.000	Jan 2020	0.000		-		0.000	Continuing	Continuing	Continuing
Program Management VAS	WR	NSWC Crane : Crane, IN	0.000	0.000		0.000		0.000		0.344	Nov 2020	0.344	0.000	0.344	-
Subtotal			7.062	0.243		0.000		0.000		0.344		0.344	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>	Project (Number/Name) 3172 / <i>Joint Non-Lethal Weapons</i>
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	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025							
	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				
System Development: Visual Augmentation Systems: Expanded Situational Awareness VAS Material Solution - TMRR Phase																																
System Development: Visual Augmentation Systems: Expanded Situational Awareness VAS Material Solution - Milestone B																																
System Development: Visual Augmentation Systems: Expanded Situational Awareness VAS Material Solution - Engineering & Manufacturing Development (EMD)																																
System Development: Visual Augmentation Systems: Expanded Situational Awareness VAS Material Solution -Developmental Test (DT) and Operational Test (OT)																																
System Development: Visual Augmentation Systems: Expanded Situational Awareness VAS Material Solution -Milestone C																																
System Development: Visual Augmentation Systems: Expanded Situational Awareness VAS Material Solution - Low Rate Initial Production (LRIP)																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>	Project (Number/Name) 3172 / <i>Joint Non-Lethal Weapons</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3172				
Acquisition Milestones: Navy Non-Lethal Effects: Long-Range Ocular Interrupter (LROI) Production Decision	4	2020	4	2020
Acquisition Milestones: Navy Non-Lethal Effects: Maritime Vessel Stopping (MVS) Production Decision	4	2021	4	2021
System Development: Navy Non-Lethal Effects: Long-Range Ocular Interrupter (LROI) Doc Development	1	2020	4	2022
System Development: Navy Non-Lethal Effects: Long-Range Ocular Interrupter (LROI) Delivery Order Award	1	2021	1	2021
System Development: Navy Non-Lethal Effects: Maritime Vessel Stopping (MVS) Issue Request for Proposal	1	2022	1	2022
System Development: Visual Augmentation Systems: Expeditionary Imaging/Recording VAS Material Solutions	1	2019	2	2020
System Development: Visual Augmentation Systems: Expeditionary Imaging/Recording VAS Test & Evaluation	3	2019	1	2020
System Development: Visual Augmentation Systems: Expanded Situational Awareness VAS Material Solution	2	2019	4	2021
System Development: Visual Augmentation Systems: Expanded Situational Awareness VAS Material - Milestone A	1	2020	1	2020
System Development: Visual Augmentation Systems: Expanded Situational Awareness VAS Material Solution - TMRR Phase	1	2020	3	2021
System Development: Visual Augmentation Systems: Expanded Situational Awareness VAS Material Solution - Milestone B	3	2021	3	2021
System Development: Visual Augmentation Systems: Expanded Situational Awareness VAS Material Solution - Engineering & Manufacturing Development (EMD)	3	2021	1	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>	Project (Number/Name) 3172 / <i>Joint Non-Lethal Weapons</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
System Development: Visual Augmentation Systems: Expanded Situational Awareness VAS Material Solution -Developmental Test (DT) and Operational Test (OT)	1	2023	4	2023
System Development: Visual Augmentation Systems: Expanded Situational Awareness VAS Material Solution -Milestone C	1	2024	1	2024
System Development: Visual Augmentation Systems: Expanded Situational Awareness VAS Material Solution - Low Rate Initial Production (LRIP)	1	2024	3	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy										Date: February 2020		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>				Project (Number/Name) 3358 / <i>SSDS Training Improvement Program</i>			
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
3358: <i>SSDS Training Improvement Program</i>	19.132	7.524	8.532	10.787	-	10.787	12.617	10.887	9.271	9.456	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

SSDS Training Improvement Program provides enhancements and upgrades to the SSDS Total Ship Training Capability (TSTC) components within the combat system, combat system elements, Battle-Force Tactical Training (BFTT), and Advanced Training Domain (ATD) to address needs for increased training capability and functionality in conjunction with SSDS MK2 Advanced Capability Builds (ACB)/Fire Control Loop Improvement Project (FCLIP), Far-Term Interoperability Improvement Project (FTIIP), Task Force Cyber Awakening (TFCA) Boundary Defense Capability (BDC), and Technical Insertion efforts under PU 2178 (QRCC). These enhancements will address current and future training requirements by implementing new functionality to enable the individual warfighter through distributed battle group events to engage in more complex training requirements to support fleet required training certification events. Capability Development and integration are related to Self Defense, Underwater, Surface, and other warfare areas. Capability enhancements and upgrades include development of re-useable common components that can be leveraged by SSDS MK2 combat systems, and/or integration of re-usable common components developed by the TSTC/BFTT Program and AEGIS Advanced Training Domain (ATD)/TSTC Total Ship Training Capability (TSTC) projects to meet AEGIS combat system training requirements. TSTC continues to integrate and update, as new tactical capabilities are being introduced, to enable crew operator proficiency training for basic and sustainment level training events, through distributed strike group certification fleet synthetic training (FST) events and including COMPTUEX FST at Sea integration into Live, Virtual and Constructive (LVC) environment. Continued Development is required to integrate new capabilities and interfaces to provide training for AEGIS and SSDS combat system capability upgrades, and to address the Fleet's Live, Virtual and Constructive (LVC) Fleet Training Wholeness initiative. Additionally, modernization is needed to support the DoD Training Transformation Plan, the Chief of Naval Operations Fleet Response Plan and Commander United States Fleet Forces Command Fleet Readiness Training Plan.

FY21 funding increase is to develop the capability that will provide SSDS ships the ability to train using Live-Virtual-Constructive (LVC). LVC improves the Navy's competitive advantage via high-end training and enable strike group training in a contested environment in accordance with strategic documents. Specifically, developing requirements documentation and developing modifications to provide the necessary sensor improvements to support LVC training At-Sea. Additionally, developing an Integrate Strike Group CEC Training At-Sea capability in support of the Fleet Training Wholeness (FTW) through LVC.

The Advanced Training Domain (ATD) is being developed to combine BFTT and the AEGIS Combat Training System (ACTS) into a common system that integrates with AEGIS BL 9.2.2AF, and SSDS BL 11.xAF. ATD is being hosted along with the AEGIS and SSDS combat system on TI-16 common processing and display hardware. ATD is being designed to be the core of the Total Ship Training Capability, and is projected to be more reliable, simpler to use, and architected to be extensible to meet interoperability and capability enhancement challenges in the future.

BFTT is being updated to maintain integration and capability enhancements developed for the Cooperative Engagement Capability (CEC), Surface Electronic Warfare Improvement Program (SEWIP), and the Carrier Tactical Support Center (CV-TSC), and SSDS Fire Control Loop Improvement Program.

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>	Project (Number/Name) 3358 / <i>SSDS Training Improvement Program</i>
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TSTC provides realistic joint warfare training across the spectrum of armed conflict, realistic unit level team training in all warfare areas (e.g. NIFC-CA and BMD missions to support IAMD). TSTC provides ships' Commanding Officers and Battle Group/Battle Force Commanders with the ability to conduct coordinated realistic, high stress, combat system level team training as an integral part of the Afloat Training Organization, the Tactical Training Groups and C2F/C3F FST/LVC events.

Develop and integrate MH-60R simulator to enable embedded shipboard training in support of basic and sustainment training, as well as establishes the pathway to support pier-side Fleet Synthetic Training (FST) events.

Develop and Integrate Cooperative Engagement Capability (CEC) Enhanced Training (CET) to support basic and sustainment level training, as well as provide ability to distribute and establish CEC data link during pier-side fleet synthetic training exercises. CET will also provide enable proficiency training of NIFC-CA capability.

Develop Identification Friend or Foe (IFF) simulator to enable training of Modes 1, 2, 3A, 4, C, 5 and S on both AEGIS and SSDS ships. Capability will support AEGIS and SSDS IFF MODE 4/5 Integration program will address training Mode 4 Inoculation, and allow training of Modes 5 and S IFF.

Develop and integrate commensurate training improvements to SSDS ACB 20 for Enhanced Sea Sparrow Missile (ESSM) and Electronic Warfare (EW) tactical improvements.

Integrate Navy Continuous Training Environment (NCTE) networking and cyber security upgrades to maintain authorization to participate in distributed shipboard training events.

TSTC integrated on SSDS provides the capability to complete system and operational level testing of the combat system.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: SSDS Total Ship Training Capability	7.524	8.532	10.787	0.000	10.787
Articles:	-	-	-	-	-
FY 2020 Plans:					
- Initiate the development of Strike Group Cooperative Engagement (CEC) Training At-Sea. This is in support of Fleet LIVE VIRTUAL CONSTRUCTIVE (LVC) Training At-Sea.					
- Initiate requirements for developing a PHALANX Close-In Weapon Systems (CIWS) simulation capability that includes CIWS operator training capability and supports Fast Attack Craft (FAC)/Fast Inshore Attack Craft (FIAC) training capability.					
- Begin integration of the UPX-29 IFF simulation capability with the Cooperative Engagement Capability (CEC) as part of the Ship Self Defense training capability.					

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>	Project (Number/Name) 3358 / <i>SSDS Training Improvement Program</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>- Continue development of re-hosting Battle Force Tactical Training (BFTT)/ Advanced Training Domain (ATD) capability into SSDS MK2 TI-16 Hardware.</p> <p>- Continue NGSSR integration for SSDS MK2 ACB-20.</p> <p>- For the SSDS MK2 ACB-20 Baseline, complete the design and development for integrated and optimized employment of decoys, Electronic Attack (EA), and hard kill and soft kill weapons effects.</p> <p>FY 2021 Base Plans:</p> <p>- Continue LVC sensor improvements for SSDS MK2, allowing for Real vs. Synthetic target discrimination at the sensor level.</p> <p>- Continue requirements for developing a PHALANX Close-In Weapon System (CIWS) simulation capability that includes CIWS operator training capability and supports Fast Attack Craft (FAC)/Fast Inshore Attack Craft (FIAC) training capability.</p> <p>- Initiate Future Advanced Training Domain (ATD v. 1.2) hosting requirements into SSDS.</p> <p>FY 2021 OCO Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: The increase in FY 2021 is due to redistribution of funds, due to under-execution and the FY phasing distribution used for Fleet Training Wholeness (FTW) over the FYDP. FTW Strike Group CEC Training effort begins in FY20, then ramps up in FY21.</p>					
Accomplishments/Planned Programs Subtotals	7.524	8.532	10.787	0.000	10.787

C. Other Program Funding Summary (\$ in Millions)											
Line Item	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
• RD TEN/0204571N/1427: <i>Surface Tactical Team Trainer (PU 1427)</i>	40.505	67.790	51.597	-	51.597	37.228	19.313	16.242	16.571	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>	Project (Number/Name) 3358 / <i>SSDS Training Improvement Program</i>

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2021</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• RDTEN/0604307N/3357: <i>AEGIS Training Improv. Prog. (PU 3357)</i>	6.746	10.078	8.706	-	8.706	8.081	6.190	5.313	5.420	Continuing	Continuing

Remarks

D. Acquisition Strategy

For the SSDS MK2 software development, including the integration of TSTC software improvements and the TI-16 Open Architecture Computing Environment, the acquisition strategy identified for SSDS MK2 for QRCC Project (PU 2178) (R-2A exhibit) applies.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity 1319 / 5				R-1 Program Element (Number/Name) PE 0604755N / Ship Self Def (Detect & Cntrl)				Project (Number/Name) 3358 / SSDS Training Improvement Program							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TSTC Sys Eng	WR	NSWC DD : Dahlgren, VA	0.773	0.767	Nov 2018	0.542	Nov 2019	0.828	Nov 2020	-		0.828	0.000	2.910	-
TSTC Sys Eng	WR	CDSA DN : Dam Neck, VA	2.286	0.000		0.000		0.000		-		0.000	0.000	2.286	-
TSTC Sys Eng / Integration	C/CPIF	Raytheon (4112) : Suffolk, VA	1.155	0.275	Dec 2018	0.185	Dec 2019	0.251	Dec 2020	-		0.251	0.000	1.866	-
TSTC TDL Gateway	WR	SPAWAR PMW 150 : San Diego, CA	0.421	0.000	Nov 2018	0.000		0.000		-		0.000	0.000	0.421	-
TSTC Sys Eng / PSEA	SS/CPIF	RSC (5128) : San Diego, CA	4.760	0.258	Nov 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
TSTC Sys Eng / MH-60R Training Capability	WR	Keyport (NUWC) : Keyport, RI	1.159	0.000	Nov 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
TSTC Planning Support	C/CPIF	TMB : Washington, DC	0.025	0.000		0.000		0.000		-		0.000	0.000	0.025	-
TSTC ATD	TBD	IWS 1.0 : Washington, DC	3.038	2.741	Dec 2018	2.947	Dec 2019	3.458	Dec 2020	-		3.458	0.000	12.184	-
TSTC ESSM BLK2/EW Upgrades	TBD	Various : Various	4.050	0.000		0.000		0.000		-		0.000	0.000	4.050	-
TSTC EW	TBD	IWS 2.0 : Washington, DC	1.019	0.000		0.000		0.000		-		0.000	0.000	1.019	-
TSTC NCTE	WR	Corona(NSWC) : Corona, CA	0.405	0.000		0.000		0.000		-		0.000	0.000	0.405	-
TSTC GWS	TBD	IWS 3.0 : Washington, DC	0.041	0.000		0.000		0.000		-		0.000	0.000	0.041	-
TSTC FTW SENSOR	TBD	PEO IWS 2.0 : Washington, DC	0.000	2.353	Dec 2018	1.976	Dec 2019	2.420	Dec 2020	-		2.420	0.000	6.749	-
TSTC FTW FCLIP / CSEA	C/CPIF	CSEA contract : Moorestown NJ	0.000	1.130	Dec 2018	1.491	Dec 2019	2.577	Dec 2020	-		2.577	0.000	5.198	-
TSTC FTW / STRIKE CEC	TBD	PEO IWS 6.0 : Washington, DC	0.000	0.000		1.391	Dec 2019	1.253	Dec 2020	-		1.253	0.000	2.644	-
Subtotal			19.132	7.524		8.532		10.787		-		10.787	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy								Date: February 2020					
Appropriation/Budget Activity 1319 / 5			R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>				Project (Number/Name) 3358 / <i>SSDS Training Improvement Program</i>						
	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	19.132	7.524		8.532		10.787		-		10.787	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / Ship Self Def (Detect & Cntrl)	Project (Number/Name) 3358 / SSDS Training Improvement Program

	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	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 3358																												
SSDS MK 2 ACB 20 / EASR / ERS / TI-16/ TI-16R/TI-22 - REL 2 T&E SIT/ET @WI																												
SSDS MK 2 ACB 20 / EASR / ERS / TI-16/ TI-16R/TI-22 - REL 2 FSIT / FQT																												
SSDS MK 2 ACB 20 / EASR / ERS / TI-16/ TI-16R/TI-22 - TAAF																												
SSDS MK 2 MOD 3C - LHD 6 BUILD 10 (ACB12/TI-12H - FSIT / FQT																												
SSDS MK 2 MOD 3C - LHD 6 BUILD 10 (ACB12/TI-12H) - T&E CST @ WI																												
SSDS MK 2 MOD 3C - LHD BUILD 10 (ACB12/TI-12H) - TAAF																												
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - FSIT/FQT REL 2																												
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - T&E - REL 1 / 2 SIT / ET @ WI																												
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - T&E - REL 1 CST																												
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - TAAF																												
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - T&E / REL 2 CST																												
At-Sea testing for FCLIP: SSDS MK2 FCLIP Phase 2 / DT III - SDTS																												
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - T&E - REL 2 CST																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / Ship Self Def (Detect & Cntrl)	Project (Number/Name) 3358 / SSDS Training Improvement Program
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	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	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
SSDS MK 2 ACB 20 ICS - SoS SRR / SFR 2	■																											
SSDS MK 2 - CSEA CONTRACT AWARD				■																								
SSDS MK 2 ACB 20 / EASR / ERS / TI-16/ TI-16R/TI-22 - REL 1 SSR/PDR			■																									
SSDS MK 2 BUILD 12 B(ACB 20) - REL 1 FSIT / FQT								■																				
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 SSR/PDR								■																				
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 - IPR 1										■																		
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 - IPR 2										■																		
SSDS MK 2 BUILD 12 (ACB 20) TAAF					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
SSDS MK 2 BUILD 12 (ACB 20) - REL 3 SSR/PDR											■																	
SSDS MK 2 BUILD 12 (ACB 20) - REL 3 IPR													■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 T&E SIT/ET @ WI													■															
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 FSIT/FQT														■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 TAAF															■	■	■	■	■	■	■	■	■	■	■	■	■	■
SSDS MK 2 BUILD 12 (ACB 20) - REL 3 FSIT/FQT																						■	■	■	■	■	■	■
SSDS MK 2 BUILD 12 (ACB 20) - REL 3 T&E SIT/ET @ WI																								■	■	■	■	■
SSDS MK 2 BUILD (ACB 20) - REL 3 TAAF																								■	■	■	■	■
SSDS MK 2 BUILD 12 (ACB 20) - REL 4 IPR																											■	■

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>	Project (Number/Name) 3358 / <i>SSDS Training Improvement Program</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3358				
SSDS MK 2 ACB 20 / EASR / ERS / TI-16/TI-16R/TI-22 - REL 2 T&E SIT/ET @WI	4	2021	4	2021
SSDS MK 2 ACB 20 / EASR / ERS / TI-16/TI-16R/TI-22 - REL 2 FSIT / FQT	1	2022	2	2022
SSDS MK 2 ACB 20 / EASR / ERS / TI-16/TI-16R/TI-22 - TAAF	3	2022	4	2022
SSDS MK 2 MOD 3C - LHD 6 BUILD 10 (ACB12/TI-12H - FSIT / FQT	4	2019	1	2020
SSDS MK 2 MOD 3C - LHD 6 BUILD 10 (ACB12/TI-12H) - T&E CST @ WI	2	2020	2	2020
SSDS MK 2 MOD 3C - LHD BUILD 10 (ACB12/TI-12H) - TAAF	1	2020	4	2020
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - FSIT/FQT REL 2	1	2019	1	2019
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - T&E - REL 1 / 2 SIT / ET @ WI	1	2019	1	2019
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - T&E - REL 1 CST	2	2019	2	2019
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - TAAF	1	2019	3	2020
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - T&E / REL 2 CST	4	2019	4	2019
At-Sea testing for FCLIP: SSDS MK2 FCLIP Phase 2 / DT III - SDTS	2	2019	2	2020
SSDS MK 2 FCLIP PHASE 2 / FTIIP / Cyber Security - BDC - T&E - REL 2 CST	4	2019	4	2019
SSDS MK 2 ACB 20 ICS - SoS SRR / SFR 2	2	2019	2	2019
SSDS MK 2 - CSEA CONTRACT AWARD	4	2019	4	2019
SSDS MK 2 ACB 20 / EASR / ERS / TI-16/TI-16R/TI-22 - REL 1 SSR/PDR	3	2019	3	2019
SSDS MK 2 BUILD 12 B(ACB 20) - REL 1 FSIT / FQT	4	2020	4	2020
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 SSR/PDR	4	2020	4	2020
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 - IPR 1	2	2021	2	2021
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 - IPR 2	2	2021	2	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / <i>Ship Self Def (Detect & Cntrl)</i>	Project (Number/Name) 3358 / <i>SSDS Training Improvement Program</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
SSDS MK 2 BUILD 12 (ACB 20) TAAF	2	2020	4	2021
SSDS MK 2 BUILD 12 (ACB 20) - REL 3 SSR/PDR	3	2021	3	2021
SSDS MK 2 BUILD 12 (ACB 20) - REL 3 IPR	1	2022	2	2022
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 T&E SIT/ET @ WI	4	2021	4	2021
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 FSIT/FQT	1	2022	2	2022
SSDS MK 2 BUILD 12 (ACB 20) - REL 2 TAAF	3	2022	4	2022
SSDS MK 2 BUILD 12 (ACB 20) - REL 3 FSIT/FQT	3	2023	1	2024
SSDS MK 2 BUILD 12 (ACB 20) - REL 3 T&E SIT/ET @ WI	1	2024	4	2024
SSDS MK 2 BUILD (ACB 20) - REL 3 TAAF	1	2024	4	2024
SSDS MK 2 BUILD 12 (ACB 20) - REL 4 IPR	4	2024	4	2024
SSDS MK 2 BUILD 12 (ACB 20) - REL 4 FSIT/FQT	3	2025	4	2025