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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy										Date: May 2017		
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0603582N / Combat System Integration							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	385.453	32.020	26.530	24.674	-	24.674	26.110	25.672	25.360	25.707	Continuing	Continuing
0164: Combat System Integration	361.660	23.285	26.530	20.274	-	20.274	20.610	18.672	17.660	18.007	Continuing	Continuing
3312: MTMD-Maritime Theater Missile Defense Forum	23.793	8.735	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	32.528
3425: Digital Warfare Office (DWO) MBE&DT Development	0.000	0.000	0.000	4.400	-	4.400	5.500	7.000	7.700	7.700	Continuing	Continuing

A. Mission Description and Budget Item Justification

Chief of Naval Operations (CNO) created the Navy's Strike Force Interoperability (SFI) Program in 1998 in response to critical shortfalls in the introduction of integrated and interoperable System of Systems (SoS) to deploying Strike Forces. Naval Sea Systems Command (NAVSEA) acts as management lead for Joint System Command (SYSCOM) system certification policy and guidance and certifies platforms for interoperability within the platform and throughout the enterprise, in accordance with Commander, US Fleet Forces Command/Commander, Pacific Fleet COMUSFLTFORCOM/COMPACFLT Inst. 4720.3B (OCT 2008), C5ISR Modernization Policy. COMUSFLTFORCOM/COMPACFLT Inst. 4720.3B also requires that NAVSEA act as administrative agent for NAVIFOR Command and Control, Communications, Computers, Combat Systems, and Intelligence Modernization Process (C5IMP) and execution agent for Navy Command and Control, Communications, Computers, and Combat Systems Integration (C5I) Modernization Conferences (NCCMC). This program conducts Interoperability Assessments that are required to certify Aircraft Carriers, Amphibious Assault Ships, and Surface Combatants in accordance with the Naval Warfare System Certification Policy (NWSCP), NAVSEAINST 9410.2A, NAVAIR 5230.20, SPAWAR 5234.1.

The SFI Program ensures overall strike force interoperability is characterized and assessed. NAVSEA is assigned central United States Navy (USN) responsibility for interoperability, directing the development of policy and architecture for Strike Force warfare systems engineering and implementation of common warfare systems engineering processes and preliminary work to support the Digital Warfare Office (DWO) mission area model based system engineering.

There are three priorities within the Strike Force Interoperability Program:

- (1) Support Fleet "as-is" state which includes Navigation System Certification (NAVCERT), Interoperability Capabilities & Limitations, and Interoperability Tactical Information Coordinator Technical Aids (TIC TECHAIDs).
- (2) Support Ship's system modernization (non-HME) including warfighting capability & other C5I upgrades including C5IMP Baseline Management.

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<p>(3) Support Ship Warfare System Certification & Force Level Assessments. This includes Warfare Systems Certification, Interoperability Certification, Force Level Interoperability Analysis, & Assessments, Cybersecurity Assessments and recommendations for improvements to the program offices for implementation at the systems level.</p> <p>Project 0164 Combat System Integration: This project consists of five key Pillars executed within the Strike Force Interoperability (SFI) Program:</p> <p>(1) Command & Control, Communications, Computer, Combat Systems, and Intelligence Modernization Process (C5IMP) and Fleet Readiness (C5I Surveillance and Reconnaissance (C5ISR)). The C5IMP validates the introduction of new systems into the Fleet and ensures systems' maturity prior to shipboard installation thereby reducing risk and enhancing readiness and effectiveness of deploying ships and strike groups.</p> <p>(2) Warfare Systems Certification (WSCERT), which is essential to validating the maturity and operational performance of warfare systems prior to Fleet delivery and deployment.</p> <p>(3) Navigation Certification (NAVCERT) and Electronic Charting and Display System - Navy (ECDIS-N) Certification, which certifies ship electronic charting capability as well as certifies the accurate transmission of navigation data to combat and weapons systems.</p> <p>(4) Interoperability Certification and Assessment (IOP C&A), the independent assessment of strike group warfare systems operational performance. Interoperability assessment examines Force Level engagement threads, aircraft control, air battle management, and operational displays. Assessments of deploying ships in strike force configurations are accomplished through the use of the Navy's Distributed Integration and Interoperability Assessment Capability (DIIAC) concept which supports the Deputy Assistant Secretary of the Navy (DASN) "shift to the left" policy by providing early interoperability testing in the acquisition lifecycle. It is a U.S. Fleet Forces Command and Command (CFFC) and U.S. Pacific Fleet (PACFLT) requirement that all strike forces undergo interoperability assessment testing in the DIIAC prior to deployment. Interoperability certification results are used to develop Fleet tactical tools (Capabilities & Limitations (C&L) and Tactical Information Coordinator Technical Aids (TIC TECHAIDS)), that ensure that systems' operators understand the interoperability capabilities and limitations of their combat systems and have the watch station tools necessary for the conduct of their tactical responsibilities.</p> <p>\$3 Million is required to support approved increases for the Digital Warfare Office (DWO). Funding supports development of requirements modeling and data science experimentation environment, mission area model-based engineering (MBE) teams, development of digital technical baselines, development of digital architectures, and the development of workforce training in model-based systems engineering.</p> <p>DWO funding will be moved to PU 3425 starting in FY18.</p> <p>(5) Cybersecurity Certification and Assessment (CYBER C&A), the assessment of systems' cybersecurity, as directed by OPNAV Memorandum 5400 Ser N2N6/4U1119089, including compliance with DODi 8500.01 for each warfare system element, identifies vulnerabilities at both the element, system and enclave levels, and assesses a ship's cybersecurity posture in support of Warfare Systems Certification per NAVSEAINST 9410.2 (Series).</p>		

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<p>Project 3312 Maritime Theater Missile Defense Forum (MTMD):</p> <p>This project funds participation in Maritime Integrated Air and Missile Defense projects with other nations. Included is participation in the Maritime Missile Defense Projects Framework Memorandum of Understanding of 2004 (as amended 2009). Known as the Maritime Theater Missile Defense (MTMD) forum, it promotes interoperability with the Navies of ten participating nations (Australia, Canada, France, Germany, Italy, Netherlands, Norway, Spain, United Kingdom and the United States). This project funds participation in several Project Arrangements and includes maritime contribution to the NATO Active Layered Theater Ballistic Missile Defense (ALTBMD) project, now known as NATO Ballistic Missile Defense (BMD). Engineering analysis and recommendations from MTMD activities are provided to European, Pacific and Central Combatant Commands to influence present day operations. Specifically, the MTMD Forum is addressing challenges with "Maritime Allied Air Defense in Support of Ballistic Missile Defense Operations" that face the Combatant Commanders during present day operations.</p> <p>The MTMD forum provides protection against the proliferation of short, medium and long-range Ballistic Missile (BM) and Advanced Anti-Ship Cruise Missile (ASCM) threats through the creation of an interoperable sea-based Integrated Air and Missile Defense (IAMD) capability among coalition nations. This includes protection across the full spectrum of these threats through the enhanced utilization of existing sea-based systems to protect against current threats while progressively improving and developing systems and system-of- systems to effectively counter evolving threats.</p> <p>This project supports USN participation in several Maritime IAMD related Project Arrangements and Working Groups including:</p> <ol style="list-style-type: none"> (1) Battle Management Command, Control, Communications, Computers, and Intelligence (BMC4I) to define and develop architectures as well as to perform engineering to address coalition capability gaps. (2) Modeling & Simulation (M&S) to establish and maintain a maritime coalition M&S testbed and to perform legacy and future systems simulation testing. (3) Coalition Distributed Engineering Plant (CDEP) to establish and maintain a maritime coalition Hardware-in-the-Loop Testbed and to conduct CDEP testing. (4) Open Architecture (OA) to develop Interface Standards and Data Models. (5) Test Planning and Execution (TPEX) to develop Test Plans, oversee exercise participation and conduct post event data analysis and reporting. (6) Operational Requirements (OR) to develop a Coalition Maritime Missile Defense Operational Concept Document and to identify operational constraints and tactical constructs surrounding coalition maritime missile defense activities. (7) Reciprocal Use of Test Facilities agreements with other nations to support Maritime IAMD and MTMD related demonstrations. <p>Starting in FY17 and through the out-years, the MTMD project moves to Program Element 0605853N under Project Unit 3312: MTMD-Maritime Theater Missile Defense Forum.</p>		

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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	32.561	23.530	22.055	-	22.055
Current President's Budget	32.020	26.530	24.674	-	24.674
Total Adjustments	-0.541	3.000	2.619	-	2.619
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.540	0.000			
• Program Adjustments	0.000	3.000	2.510	-	2.510
• Rate/Misc Adjustments	-0.001	0.000	0.109	-	0.109
Change Summary Explanation					
FY17: \$3.000 million added to stand up Digital Warfare Office.					
FY18: \$4.400 million increase to continue FY17 effort to establish Digital Warfare Office.					
Funding reduced by \$1.800 million to account for the availability of prior year execution balances.					

UNCLASSIFIED

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Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603582N / <i>Combat System Integration</i>				Project (Number/Name) 0164 / <i>Combat System Integration</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0164: <i>Combat System Integration</i>	361.660	23.285	26.530	20.274	-	20.274	20.610	18.672	17.660	18.007	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 0164: Combat System Integration:

This project consists of five key Pillars executed within the Strike Force Interoperability (SFI) Program:

- (1) Command & Control, Communications, Computer, Combat Systems, and Intelligence Modernization Process (C5IMP) and Fleet Readiness (C5I Surveillance and Reconnaissance (C5ISR)). The C5IMP validates the introduction of new systems into the Fleet and ensures systems' maturity prior to shipboard installation thereby reducing risk and enhancing readiness and effectiveness of deploying ships and strike groups.
- (2) Warfare Systems Certification (WSCERT), which is essential to validating the maturity and operational performance of warfare systems prior to Fleet delivery and deployment.
- (3) Navigation Certification (NAVCERT) and Electronic Charting and Display System - Navy (ECDIS-N) Certification, which certifies ship electronic charting capability as well as certifies the accurate transmission of navigation data to combat and weapons systems.
- (4) Interoperability Certification and Assessment (IOP C&A), the independent assessment of strike group warfare systems operational performance. Interoperability assessment examines Force Level engagement threads, aircraft control, air battle management, and operational displays. Assessments of deploying ships in strike force configurations are accomplished through the use of the Navy's Distributed Integration and Interoperability Assessment Capability (DIIAC) concept which supports the Deputy Assistant Secretary of the Navy (DASN) "shift to the left" policy by providing early interoperability testing in the acquisition lifecycle. It is a U.S. Fleet Forces Command and Command (CFFC) and U.S. Pacific Fleet (PACFLT) requirement that all strike forces undergo interoperability assessment testing in the DIIAC prior to deployment. The RDT&E component of the SFI budget funds the staffing and operations of this distributed test bed, complimented by the OPN SFI funding that upgrades and maintains the physical components of the test bed. Interoperability certification results are used to develop Fleet tactical tools (Capabilities & Limitations (C&L) and Tactical Information Coordinator Technical Aids (TIC TECHAIDS)), that ensure that systems' operators understand the interoperability capabilities and limitations of their combat systems and have the watch station tools necessary for the conduct of their tactical responsibilities.
- (5) Cybersecurity Certification and Assessment (CYBER C&A), the assessment of systems' Cybersecurity, as directed by OPNAV Memorandum 5400 Ser N2N6/4U1119089, including compliance with DODi 8500.01 for each warfare system element, identifies vulnerabilities at both the element, system and enclave levels, and assesses a ship's Cybersecurity posture in support of Warfare Systems Certification per NAVSEAINST 9410.2 (Series).

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Navigation System Certification (NAVCERT)		1.824	1.583	1.495	0.000	1.495
Articles:		-	-	-	-	-
Description: The Navigation Certification (NAVCERT) program provides assurance to the ship, Immediate Superior in Command (ISIC) and Type Commander that the ship's integrated navigation suite operates as intended and meets performance requirements for safe and reliable navigation and system operation. Forecasting the schedule for NAVCERT is based on the projection of schedule drivers at the particular point in time. The scheduling realities associated with this process are such that in the face of frequent availability deferrals, cancellations, or delays, the supporting NAVCERT schedules adjust accordingly and those adjustments result in regular modifications to the numbers of NAVCERT projected period to period. This project funds assessments in support of new capability upgrades and modernization funded by the cognizant program office. The certification verifies the accuracy of the data originating from sensors and validates its receipt by all users including Aircraft Inertial Alignment System, and Integrated Warfare Systems. Certification is required at five year intervals, following Chief of Naval Operations Availabilities greater than six months, or in support of Precision Approach and Landing System (PALS) operations. The scope of the certification includes all inertial navigation system equipment as well as the Electronic Charting and Display System Navy (ECDIS-N). This program meets OPNAV ECDIS-N and Operational Safety and Assurance certification requirements in accordance with the guidance in SECNAVINST 5400.15C and OPNAVINST 9420.2, and in the current draft of OPNAVINST 9420.1.						
FY 2016 Accomplishments:						
(1) Completed to perform critical U.S. Navy NAVCERT efforts to include the conduct of 26 NAVCERTs on Cruisers, Destroyers, Aircraft Carriers, and Amphibious Ships.						
FY 2017 Plans:						
(1) Perform critical U.S. Navy NAVCERT efforts to include the conduct of 39 NAVCERTs on Cruisers, Destroyers, Aircraft Carriers, and Amphibious Ships. Issue update of NAVSEA Instruction 9420.2A (Naval Warfare Systems Certification Policy). Achieve cost efficiencies by leveraging test results from conjunctive alterations to navigation systems during modernization periods.						
FY 2018 Base Plans:						
(1) Conduct 20 scheduled NAVCERTs on Cruisers, Destroyers, Aircraft Carriers, and Amphibious Ships. Continue to achieve cost efficiencies by leveraging test results from conjunctive alterations to navigation systems during modernization periods.						
FY 2018 OCO Plans:						

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A						
Title: Command, Control, Communications, Computer, Combat Systems, and Intelligence Modernization Process (C5IMP) and Fleet Readiness (C5ISR)		1.780	2.003	1.886	0.000	1.886
Articles:		-	-	-	-	-
Description: This project is required to support the Fleet C5I Modernization Policy (per COMUSFLTFORCOM/COMPACFLT Inst. 4720.3B) to manage operational risks associated with C5I Surveillance and Reconnaissance (C5ISR) modernization in both afloat and ashore units ensuring deploying units receive improved, interoperable, and certified warfighting capabilities in order to meet theater operational requirements. Forecasting C5IMP/C5ISR requirements and schedules is based on the projection of ships' operating/maintenance schedules at the particular point in time. Due to changing operational needs, these schedules frequently change causing availability deferrals, cancellations, or delays. Also, the length of availabilities vary and often extend past fiscal years. The supporting C5IMP/C5ISR schedules must adjust accordingly, resulting in regular modifications to the numbers of events/requirements projected for C5IMP/C5ISR from period to period. This project funds engineering assessments of proposed C5I capability modernizations to determine maturity for installation and risk associated with installs of equipment outside of normal modernization windows. The deliverables of this project are created by determining the maturity, through engineering analysis, of the critical linchpins needed to achieve interoperability for each proposed C5IMP capability improvement item to be installed in a ship's baseline (Baseline Change), developing installation recommendations of C5I system upgrades for the Fleet Commanders, and researching and analyzing installation or operating problems. Failure to achieve required maturity for one system that is part of a warfare system package can prevent this system from being installed, thus breaking the capability planned for the entire originally warfare package, which will impact Strike Group warfighting capabilities. There is close coordination with the FLTCDRs and TYCOMs as well as other members of the C5IMP community to address, coordinate, and resolve C5IMP modernization issues thereby reducing risk and enhancing readiness and effectiveness of deploying ships and strike groups. Generally, a Baseline Manager (BLM) is assigned for each ship availability and provides continuous support associated with that ship's availability. Focus is on two key milestones (though Aircraft Carriers typically have one) known as Baseline Locks (BL) and a Planned "Not Authorized" (PNA) events, which are Fleet required events. The BLs and PNAs are the primary costable work items in the C5IMP process. Note, depending on when the ship's availability is scheduled (i.e., in which FY), there can be none, one or both events completed for that ship in a given year. Strike Group Engineers (SGEs) analyze planned C5I configurations of ships and Strike Groups; identify and analyze capability, interoperability, and modernization issues in a Strike Group context; assess impacts against requirements; and provide recommendations for resolution.						

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>FY 2016 Accomplishments:</p> <p>(1) Facilitated the review, assessment, and execution of C5I installations during approximately seventy one (71) CNO Availabilities which included sixty two (62) baseline locks (BL) and forty five (45) Planned not Authorized (PNA) events. The number of CNO Availabilities decreased from the initial PB2016 budget exhibit projection because ship schedules are very fluid and maintenance periods change as national tasking and other exigent circumstances arise.</p> <p>(2) Supported two (2) Combat Systems Integration (C5I) Modernization Conferences (NMCs).</p> <p>(3) Supported twelve (12) Monthly Baseline Events and twelve (12) PNA review meetings.</p> <p>*Note: The twelve (12) Monthly Baseline Events and twelve (12) PNA Review Meetings are where the BLs and PNAs are delivered.</p> <p>FY 2017 Plans:</p> <p>(1) Facilitate reviews, assessments, and execution of C5I installations during approximately seventy two (72) CNO Availabilities.</p> <p>(2) Support two (2) NMCs</p> <p>(3) Support twelve (12) Monthly Baseline Events where sixty three (63) BLs will be completed and twelve (12) PNA Review Meetings where fifty seven (57) PNAs will be completed.</p> <p>FY 2018 Base Plans:</p> <p>(1) Facilitate reviews, assessments, and execution of C5I installations during approximately seventy four (74) CNO Availabilities.</p> <p>(2) Support two (2) NMCs</p> <p>(3) Support twelve (12) Monthly Baseline Events where sixty three (63) BLs will be completed and twelve (12) monthly PNA Review Meetings where forty nine (49) PNAs will be completed.</p> <p>FY 2018 OCO Plans:</p> <p>N/A</p>						
<p>Title: Interoperability Certification and Assessment</p> <p>Articles:</p> <p>Description: This project funds interoperability assessments via the Distributed Integration & Interoperability Assessment Capability (DIIAC), the technical assessment of interoperable systems to meet mission requirements, the updating of Strike Group Capabilities and Limitations (C&L) and the updating of the Tactical Information Coordinator Technical Aids (TIC TECHAIDs). The project ensures NAVSEA/PEOs are delivering</p>		8.973 -	15.952 -	12.152 -	0.000 -	12.152 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>mature and interoperable warfare systems at the platform and Strike Group levels, with NAVSEA providing Strike Force interoperability certification and assessments. This project focuses on new systems and platforms under development. Interoperability Assessments of deploying ships in Strike Force configurations are accomplished through the utilization of the Navy's DIIAC, located at multiple Navy land-based sites located across the country and connected via networking technology, and that provides operational configurations for all naval combat systems. It is a U.S. Fleet Forces Command requirement that all Strike Forces undergo Interoperability Assessment Testing in the DIIAC prior to deployment. The DIIAC provides the only opportunity for comprehensive interoperability testing of combat system and C5I configuration items prior to shipboard delivery for operational use in surface combatant platforms and Strike Groups. DIIAC, with its ability to test systems in a Strike Group environment, is funded to support the warfare system's acquisition community to test their developmental items for interoperability. However, in this instance, while funds are provided to test the item in a Strike Group environment, funds are not provided for subsequent data analysis and risk assessment, as this is the cognizant acquisition program's responsibility. When the acquisition development is complete and corrections are made, DIIAC will then fund for the full interoperability certification testing of the baseline to include the requisite warfare system analysis and risk assessments needed to obtain an Interoperability Certification. Note, this effort also supports and feeds into the development of Fleet Tactical Tools such as Capabilities & Limitations (C&L) and Tactical Information Coordinator Technical Aids (TIC TECHAIDS), which ensure that operators understand the interoperability capabilities and limitations of their combat systems. C&Ls are published for all Strike Groups, Independent Deployers, and their Coalition and Joint partners. TIC TECHAIDS are delivered to deploying Strike Group ships prior to workups and then a final copy is provided prior to deployment. C&L and TIC TECHAIDS are the final report-out to Fleet operators of the acquisition community's efforts. They are used on a daily basis in every operational theater, as well as in every Navy and Joint Schoolhouse. Note, the DIIAC infrastructure is available, but not funded to support the surface Navy's participation in the Joint Testing Environments as well as the Maritime Theater Missile Defense (MTMD) Coalition Forces interoperability testing. This project also supports the stand-up and initial activities of the Digital Warfare Office (DWO) to set Model Based Systems Engineering (MBSE) requirements, prioritize resources, and lead efforts on information interoperability and human/machine teaming.</p> <p>FY 2016 Accomplishments:</p> <p>(1) Completed three (3) Interoperability Land-Based test events that included the following:</p> <p>-Development interoperability test to support: SSDS 10.10.x; SSDS 10.10.02; SSDS 9.08.04; ACS BL 7.2.1; ACS BL 9.2 and ACS 9o8</p> <p>-Certification test for ACS BL 9.C1</p> <p>-Certification Interoperability Risk assessment & Report for ACS BL 9.C1</p>						

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>(2) Completed C&L and TIC TECHAIDS, normally a near constant yearly demand requirement, also addressed AEGIS Ashore (Romania). This resulted in updates to Interoperability C&L for:</p> <p>-Twenty three (23) Deploying Strike Group Ships (from a database containing 208 U.S. Surface Ships)</p> <p>-Ten (10) Naval Air Squadrons (covering F/A-18s, E-2Cs (only), MH-60Ss (only), EA-6Bs, EA-18Gs, P-3Cs and P-8As)</p> <p>-AEGIS Ashore (Romania)</p> <p>(3) Provided annual deliveries of Preliminary/Final TIC TECHAIDS to:</p> <p>-Forty (40) Carrier Strike Group (CSG) Ships</p> <p>-Six (6) Amphibious Ready Group (ARG) Ships</p> <p>-Seventeen (17) BMD Ships</p> <p>-Fifteen (15) Forward Deployed Naval Force (FDFN) Ships</p> <p>-Eighteen (18) Independent Deploying Ships (CRUDES, CVN, LCS and L-Ship)</p> <p>-AEGIS Ashore Site (Romania)</p> <p>-Four (4) Fleet Area Control and Surveillance Facility (FACSFAC) sites</p> <p>-Six (6) Maritime Operations Center (MOC) sites.</p> <p>(4) Completed engineering to support for two (2) systems Verification and Validation Tests.</p> <p>FY 2017 Plans:</p> <p>(1) Conduct three (3) Interoperability Land-Based test events including the following:</p> <p>-Development interoperability test to support: ACS 9.A2.0 (B24); ACS 9.C2.0 (B24); SSDS 10.10.02; SSDS 10.10.04; SSDS 10.10.X; LCS Freedom 3.1 and LCS Independence 6.1</p> <p>-Certification test for ACS 9.A0.1 (B21) ; SSDS 9.08.05; SSDS 10.10.04 and LCS Freedom 3.1</p> <p>-Certification Interoperability Risk assessment & Report for ACS 9.A0.1 (B21) ; SSDS 9.08.05 and SSDS 10.10.04</p> <p>(2) Deep dive analysis and characterization for IFF/Mode 5.</p> <p>(3) Plan to complete C&L and TIC TECHAIDS, normally a near constant yearly demand requirement, also addressed AEGIS Ashore (Romania). This resulted in updates to Interoperability C&L for:</p> <p>-Twenty three (23) Deploying Strike Group Ships (from a database containing 208 U.S. Surface Ships)</p>						

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Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603582N / Combat System Integration	Project (Number/Name) 0164 / Combat System Integration			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>-Ten (10) Naval Air Squadrons (covering F/A-18s, E-2Cs (only), MH-60Ss (only), EA-6Bs, EA-18Gs, P-3Cs and P-8As)</p> <p>-AEGIS Ashore (Romania).</p> <p>(4) Provide annual deliveries of Preliminary/Final TIC TECHAIDS to:</p> <p>-Fifty seven (57) Carrier Strike Group (CSG) Ships,</p> <p>-Ten (10) Amphibious Ready Group (ARG) Ships,</p> <p>-Eighteen (18) BMD Ships,</p> <p>-Fourteen (14) Forward Deployed Naval Force (FDNF) Ships (2 deliveries)</p> <p>-Thirty three (33) Independent Deploying Ships (CRUDES, CVN, LCS and L-Ship)</p> <p>-Fifteen (15) Littoral Combatant Ships (LCS)</p> <p>-AEGIS Ashore Site (Romania)</p> <p>-Four (4) Fleet Area Control and Surveillance Facility (FACSFAC) sites</p> <p>-Six (6) Maritime Operations Center (MOC) sites</p> <p>(5) Plan to conduct engineering to support two (2) systems Verification and Validation Tests.</p> <p>(6) Provide DWO Stand-Up and initial MBSE model development directed by OPNAV N81 and N9I for the specific mission area capabilities.</p> <p>(7) Provide modeling and documentation support for JCIDS, OPNAV POM process, ASN (RD&A) Acquisition Process. Coordinate Program Executive Office (PEO) requirements allocation process.</p> <p>(8) Participate in the definition of MBSE tool functionality and views based on Echelon I stakeholder requirements.</p> <p>(9)Collaboratively develop tool extensions to complement JCIDS and POM processes. Support development of cross-SYSCOM Modeling Standards and Policies for S&T and PoRs. Curate models in the modeling environment.</p> <p>FY 2018 Base Plans:</p> <p>(1) Conduct three (3) Interoperability Land-Based test events including the following:</p> <p>-Development interoperability test to support for ACS 9.C2.0 (B24) ; ACS 9.A2.1 (B27) ; ACS 9.C2.1 (B27) ; AEGIS 5.4; SSDS 11.X10.10.05; (LPD 23) and LCS Independence 6.X</p>						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017			
Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603582N / Combat System Integration	Project (Number/Name) 0164 / Combat System Integration			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>-Certification Interoperability test for ACS 9.A2.0 (B24) ; ACS 9.C2.0 (B24); and SSDS 10.10.06; and LCS Independence 6.X</p> <p>-Certification Interoperability Risk assessment & Report for ACS 9.A2.0 (B24) ; ACS 9.C2.0 (B24), and SSDS 10.10.06, LCS Freedom 3.1, and LCS Independence 6.1</p> <p>(2) Complete C&L and TIC TECHAIDS, normally a near constant yearly demand requirement, also addressed AEGIS Ashore. This resulted in updates to Interoperability C&L for:</p> <p>-Twenty three (23) Deploying Strike Group Ships (from a database containing 179 U.S. Surface Ships),</p> <p>-Ten (10) Naval Air Squadrons (covering F/A-18s, E-2Cs, E-2Ds, MH-60Ss, MH-60Rs, EA-6Bs, EA-18Gs, P-3Cs and P-8As)</p> <p>-AEGIS Ashore (Romania, Poland and Pacific Missile Range Facility)</p> <p>(3) Provide annual deliveries of Initial/Draft/Final TIC TECHAIDS to:</p> <p>-Six (6) Carrier Strike Groups (CSG's) Thirty Five (35) Ships</p> <p>-Four (4) Amphibious Ready Groups (ARG's) Eight (8) Ships</p> <p>-Twenty two (22) BMD Ships</p> <p>-Fifteen (15) Forward Deployed Naval Force (FDNF) Ships</p> <p>-Twenty two (22) Independent Deploying Ships (CRUDES, CVN, LCS and L-Ship)</p> <p>-Aegis Ashore Site (Romania, Poland)</p> <p>-Four (4) Fleet Area Control and Surveillance Facilities (FACSFAC's) sites</p> <p>-Six (6) Fleet Maritime Operations Centers (MOC's) sites.</p> <p>(4) Plan to conduct engineering to support two (2) systems Verification and Validation Tests.</p> <p>FY 2018 OCO Plans: N/A</p>						
<p>Title: Warfare Systems Certification</p> <p>Articles:</p> <p>Description: This project provides operational risk assessments to the Fleet Commanders using Objective Quality Evidence (OQE) against set criteria to ensure installation readiness and deployment readiness of warfare systems in Navy surface ships. As directed by COMUSFLTFORCOM/COMPACFLT Inst. 4720.3B, C5ISR</p>		7.708 -	4.019 -	3.768 -	0.000 -	3.768 -

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017			
Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603582N / Combat System Integration	Project (Number/Name) 0164 / Combat System Integration			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Modernization Policy, and in accordance with NAVSEAINST 9410.2, Naval Warfare System Certification Policy (NWSCP), NAVSEA performs these assessments based on OQE obtained through testimony of subordinate activities and independent modeling, simulation, and testing both for initial assessments and certifications. NAVSEA engineering analyses and risk assessments are developed and staffed for criteria not met. NAVSEA accomplishes these efforts through Warfare Systems Certification Readiness Reviews (WSCRR), Warfare Systems Installation Assessments (WSIA), and Warfare Systems Certification Decisions (WSCD) to support the installation and deployment of warfare systems in Navy surface platforms. The purpose of the WSCRR is to review and approve the Warfare System Certification Plan (WSCP), monitor warfare systems against the WSCP and monitor satisfaction of established criteria to facilitate successful completion of a WSIA and WSCD. The purpose of the WSIA is to provide the Fleet with an early assessment of risk and characterization of the warfare systems maturity and readiness to support sail-away and any shipboard test and training events for New Construction (NC) phase, Refueling Complex Overhaul (RCOH) or lead ships that are test platforms for major modernization effort and/or an assessment to support an authorization for installation of the warfare system(s) for in-service platforms. This allows the Fleet to make informed installation, testing/exercise, and training decisions. The purpose of the WSCD is to provide warfare systems certification including an assessment of risk and characterization of the warfare systems maturity and readiness to support deployment. A NAVSEA certification decision message is released following the WSCD event. An operational risk assessment characterizing warfare systems' maturity and readiness to support the subject ship's deployment is developed from OQE gathered from NWSCP criteria for each decision point meeting/panel. This pillar also ensures that aggregate deficiencies and workarounds do not render the operator ineffective by conducting modeling, simulation, or testing and analysis of all work-arounds documented in Tactics, Techniques and Procedures (TTPs), Capabilities & Limitations (C&L), and Trouble Reports (TR).</p> <p>FY 2016 Accomplishments:</p> <p>(1) Conducted Warfare Systems Certifications Events for a subset of twenty (20) criteria for seventy nine (79) ships efforts for seventy four (74) Warfare Systems Certification Events (WSCRRs, WSIA's and WSCDs) and three (3) Warfare Systems Certification Plans (WSCP's) involving CG 47, DDG 51, CVN 68/78, LHA 1/6, LHD 1, LPD 17 LSD 41/49, LCS ship classes and Amphibious Assault Ships.</p> <p>(2) Assessed emergent risks in Criteria Four in area of Identification Friend Foe (IFF) Mode 5 and emergent combat system baselines. Assessed platform warfare system maturity with Strike Group operations through Strike Group engineering.</p> <p>FY 2017 Plans:</p>						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017			
Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603582N / Combat System Integration		Project (Number/Name) 0164 / Combat System Integration		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
(1) Conduct Warfare Systems Certifications for subset of the twenty (20) criteria for eighty six (86) ships efforts for one hundred forty five (145) Warfare Systems Certifications Events (WSCRRs, WSIAs, and WSCDs) and fifty (50) WSCPs						
(2) Achieve significant WSCERT execution efficiencies through workforce streamlining initiatives related to WSCERT, criteria management and consolidation of WSCERT events. The program will be able to achieve significant WSCERT execution efficiencies thereby enabling completion of more events per investment dollar.						
FY 2018 Base Plans:						
(1) Conduct Warfare Systems Certifications Events for a subset of twenty (20) criteria for one hundred one (101) ships efforts for approximately one hundred sixty three (163) Warfare Systems Certification Events (WSCRRs, WSIAs, and WSCDs) and fifty six (56) WSCPs for above ship classes.						
(2) Update the NWSCP and implement revised Naval Warfare Systems Certification Policy.						
(3) Continue to achieve significant WSCERT execution efficiencies through workforce streamlining initiatives related to WSCERT Criteria management and consolidation of WSCERT events thereby enabling completion of more events per investment dollar.						
FY 2018 OCO Plans:						
N/A						
Title: Warfare Systems Cybersecurity		3.000	2.973	0.973	0.000	0.973
Articles:		-	-	-	-	-
Description: The required assessment and characterization of aggregate levels of risk for ships is specified to be accomplished at the Warfare Systems System of Systems (SoS) level and will be part of the requirements identified in the Naval Warfare Systems Certification of Navy Aircraft Carriers and Surface Combatants. Cybersecurity assessment activities began FY16.						
Cybersecurity Assessment at the SoS level will entail:						
(1) Establishing and collecting metrics to characterize Warfare Systems ability to protect, detect, react, and restore capabilities, as well as analyze the mission effects induced by the cyber threat activity.						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017			
Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603582N / Combat System Integration	Project (Number/Name) 0164 / Combat System Integration			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
(2) Maintain, improve and refine the methodologies, tools, and techniques used to conduct such risk assessments appropriate to ship warfare systems baselines and representative strike group interoperability requirements.						
(3) Conduct an assessment of developmental and operational warfare systems.						
FY 2016 Accomplishments:						
(1) Developed initial Cybersecurity metrics, methodologies and support for Warfare Systems Certifications by providing Cybersecurity assessments in support of WSIA's and WSCDs.						
(2) Conducted Cybersecurity Assessments on ninety two (92) Ships.						
(3) Developed five (5) Ship Cybersecurity Certification Plans. Preliminary Cyber Capabilities & Limitations (C&Ls) framework was developed to support tabletop, land-based and pier-side testing; focus was on impacts of HM&E disconnects procedures.						
(4) Completed initial CYBER TECHAID development and delivery to CTF 70 and CTF 76 ships, in a limited scope, in support of Valiant Shield 2016.						
FY 2017 Plans:						
(1) Refine and align Cybersecurity metrics and assessment methodologies in support of the Naval Warfare Systems Certification Program.						
(2) Execute Cybersecurity assessment methodology through modeling, simulation or testing in support of the Warfare Systems Certification events.						
(3) Conduct Cybersecurity Assessments on ninety two (92) Ships.						
(4) Develop approximately twelve (12) Ship Cybersecurity Plans, Installation Decisions or Certifications.						
(5) Finalize development of Cybersecurity Assessment Scorecards (CSA) in support of scheduled Warfare Systems Certification WSIA/WSCD Events.						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017			
Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603582N / Combat System Integration	Project (Number/Name) 0164 / Combat System Integration			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
(6) Initiate the development of Guidebooks for drafting Cyber C&Ls and TECHAIDS enabling follow-on development of Tactics, Techniques and Procedures (TTPs) that incorporate effective Cyber Pre-Planned Responses to known/emerging threats.						
(7) Continue to develop and expand Cyber C&Ls and TECHAIDS in support of three (3) Strike Groups/ Amphibious Readiness Groups and to include at least one combat system enclave.						
(8) Integrate Cyber Information Assurance Assessments into C5IMP Baseline Lock Events.						
FY 2018 Base Plans:						
(1) Implement Cybersecurity metrics and assessment methodologies in support of the Naval Warfare Systems Certification Program.						
(2) Execute Cybersecurity Assessment methodology through modeling, simulation or testing in support of the Warfare Systems Certification events.						
(3) Conduct Cybersecurity Assessments on eighty-four (84) Ships.						
(4) Develop approximately twenty (20) Ship Cybersecurity Plans, Installation Decisions or Certifications.						
(5) Finalize development of Cybersecurity Assessment Scorecards (CSA) in support of scheduled Warfare Systems Certification WSIA/WSCD Events.						
(6) Continue the development of Guidebooks for drafting Cyber CAPS&LIMS and TECHAIDS enabling follow-on development of Tactics, Techniques and Procedures (TTPs) that incorporate effective Cyber Pre-Planned Responses to known/emerging threats.						
(7) Continue to develop and expand Cyber CAPS&LIMS and TECHAIDS in support of 5 Strike Groups/ Amphibious Readiness Groups; TECHAIDS will include 5 Maritime Operational Centers (MOCs).						
(8) Integrate Cyber Information Assurance Assessments into C5IMP Baseline Lock Events.						
FY 2018 OCO Plans:						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy										Date: May 2017	
Appropriation/Budget Activity 1319 / 4				R-1 Program Element (Number/Name) PE 0603582N / <i>Combat System Integration</i>				Project (Number/Name) 0164 / <i>Combat System Integration</i>			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)											
				FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total			
N/A											
Accomplishments/Planned Programs Subtotals				23.285	26.530	20.274	0.000	20.274			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN 2960: <i>ICSTF: Integrated Combat System Test Facility</i>	13.614	8.376	5.019	-	5.019	6.796	6.796	6.603	6.796	0.000	75.932
Remarks											
D. Acquisition Strategy											
<p>RD TEN funding under this line supports independent certification of the integration of major capability upgrades acquired by Program Executive Offices (PEOs) into host Navy Platforms and Strike Forces. The RD TEN engineering and certification activities at field sites do not involve direct procurement of equipment or engineering services, and hence no acquisition strategy is required. The major capability upgrades evaluated under this program fall under their associated PEOs' acquisition strategies.</p>											
E. Performance Metrics											
Quarterly Program Reviews and Baseline Assessments											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy												Date: May 2017			
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603582N / <i>Combat System Integration</i>				Project (Number/Name) 0164 / <i>Combat System Integration</i>					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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
SF Requirements Engineering & Analysis	WR	NSWCs : DN/PHD/ Corona	5.157	0.000		0.000		0.000		-		0.000	0.000	5.157	-
SF Requirements Engineering & Analysis	WR	Non-NSWCs : Various	5.295	0.000		0.000		0.000		-		0.000	0.000	5.295	-
Platform/Strike Force Certification	WR	NSWCs : DD/ICSTD/ DN/Corona	39.732	0.000		0.000		0.000		-		0.000	0.000	39.732	-
Platform/Strike Force Certification	WR	Non-NSWCs : Various	27.843	0.000		0.000		0.000		-		0.000	0.000	27.843	-
Fleet Response Plan (FRP)	WR	NSWCs : DD/PHD/ DN	27.030	0.000		0.000		0.000		-		0.000	0.000	27.030	-
Fleet Response Plan (FRP)	WR	Non-NSWCs : Various	3.793	0.000		0.000		0.000		-		0.000	0.000	3.793	-
Combat Systems Cert ISO Platform Cert	WR	NSWCs : DN/DD/ PHD/Corona	24.640	0.000		0.000		0.000		-		0.000	0.000	24.640	-
Combat Systems Cert ISO Platform Cert	WR	Non-NSWCs : Various	1.853	0.000		0.000		0.000		-		0.000	0.000	1.853	-
C5IMP & Fleet Readiness	WR	NSWCs : PHD	6.237	2.773	Nov 2015	3.252	Nov 2016	3.036	Nov 2017	-		3.036	Continuing	Continuing	Continuing
C5IMP & Fleet Readiness	C/CPFF	Non-NSWCs : Various	0.000	0.000		0.000		0.240	Dec 2017	-		0.240	0.000	0.240	-
Warfare Systems Certification	WR	NSWCs : DD/Crane	16.530	0.883	Nov 2015	0.719	Nov 2016	0.671	Nov 2017	-		0.671	Continuing	Continuing	Continuing
Warfare Systems Certification	WR	Non-NSWCs : Various	3.500	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CNI/Design Agent	SS/CPAF	General Dynamics : Not Specified	47.926	0.000		0.000		0.000		-		0.000	0.000	47.926	-
CNI/Software Engineering	WR	NSWC : Dahlgren	8.383	0.000		0.000		0.000		-		0.000	0.000	8.383	-
CNI/Test and Evaluation	WR	CDSA : Not Specified	3.922	0.000		0.000		0.000		-		0.000	0.000	3.922	-
CNI/Systems Engineering	WR	NSWC : PHD	2.645	0.000		0.000		0.000		-		0.000	0.000	2.645	-
CNI/Miscellaneous	WR	Various : Various	7.529	0.000		0.000		0.000		-		0.000	0.000	7.529	-
OA Automated Test and Retest	WR	NSWCs : Various	17.500	0.000		0.000		0.000		-		0.000	0.000	17.500	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy												Date: May 2017			
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603582N / <i>Combat System Integration</i>				Project (Number/Name) 0164 / <i>Combat System Integration</i>					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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
Contract Engineering Support	C/CPFF	Gryphon Technology : VA	25.072	5.819	Jan 2016	5.393	Jan 2017	5.034	Jan 2018	-		5.034	Continuing	Continuing	Continuing
Contract Program Management Support	C/CPFF	Delta Resources Inc. : VA	8.141	0.000		0.000		0.000		-		0.000	0.000	8.141	-
Travel	Allot	NAVSEA HQ : Washington, DC	2.302	0.028	Jan 2016	0.021	Jan 2017	0.020	Jan 2018	-		0.020	0.000	2.371	-
Interoperability Fixes	WR	NSWCs : Various	1.500	0.000		0.000		0.000		-		0.000	0.000	1.500	-
TIC TECHAIDS	WR	CSC : VA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Warfare Systems Cybersecurity	WR	NSWCs : PHD, Dahhren & Corna	0.000	2.456	Jan 2016	3.111	Jan 2017	0.973	Jan 2018	-		0.973	0.000	6.540	-
Capabilities & Limitations	WR	NSWCs : PHD	2.696	2.596	Nov 2015	3.332	Nov 2016	3.110	Nov 2017	-		3.110	0.000	11.734	-
Cybersecurity IA	C/CPFF	CSC : VA	0.000	0.544	Apr 2016	0.000		0.000		-		0.000	0.000	0.544	-
Subtotal			289.226	15.099		15.828		13.084		-		13.084	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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
Combat System Integration Testing (CSIT)	WR	NSWCs : DD/ICSTF	5.736	0.000		0.000		0.000		-		0.000	0.000	5.736	-
Interoperability Certification Assessment	WR	NSWCs : DD/ SPAWAR/San Diego	26.804	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Navigation System Certification	WR	SPAWAR : Charleston, SC	7.433	1.824	Nov 2015	1.657	Nov 2016	1.547	Nov 2017	-		1.547	0.000	12.461	-
DIAC Engineering and Operations	WR	NSWCs : DD/DN/ SPAWAR	18.083	2.240	Jan 2016	2.196	Jan 2017	2.050	Jan 2018	-		2.050	Continuing	Continuing	Continuing
DEP Engineering and Operations	WR	NSWCs : Various	12.623	0.000		0.000		0.000		-		0.000	0.000	12.623	-
Interoperability Cert Assessment	WR	NSWCs : DD/DN/ Corona	1.242	2.917	Nov 2015	2.724	Nov 2016	2.542	Nov 2017	-		2.542	0.000	9.425	-
Interoperability Cert Assessment	C/CPFF	Non-NSWCS : CNA	0.373	0.876	Jan 2016	0.818	Jan 2017	0.764	Jan 2018	-		0.764	0.000	2.831	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy												Date: May 2017			
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603582N / <i>Combat System Integration</i>				Project (Number/Name) 0164 / <i>Combat System Integration</i>					
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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
Interoperability Cert Assessment	C/CPFF	CSC : Washington, DC	0.140	0.329	Jan 2016	0.307	Jan 2017	0.287	Jan 2018	-		0.287	0.000	1.063	-
Interoperability Cert Assessment	WR	NUWCs : Keyport	0.000	0.000		1.268	Jun 2017	0.000	Jun 2018	-		0.000	0.000	1.268	-
Interoperability Cert Assessment	WR	NSWCs : Crane/ Dahlgren	0.000	0.000		0.880	Jun 2017	0.000	Jun 2018	-		0.000	0.000	0.880	-
Interoperability Cert Assessment	C/CPFF	Various : Various	0.000	0.000		0.852	Sep 2017	0.000	Sep 2018	-		0.000	0.000	0.852	-
Subtotal			72.434	8.186		10.702		7.190		-		7.190	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			361.660	23.285		26.530		20.274		-		20.274	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy

Date: May 2017

Appropriation/Budget Activity

1319 / 4

R-1 Program Element (Number/Name)

PE 0603582N / *Combat System Integration*

Project (Number/Name)

0164 / *Combat System Integration*

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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
COMBAT SYSTEM INTEGRATION																												
NAVCERT: FY16 NAVCERTs (DDGs 70, 112)	■																											
NAVCERT: FY16 NAVCERTs (DDGs 102, 104, 111, 57, 58; LHD 8)		■																										
NAVCERT: FY16 NAVCERTs (DDGs 95, 109; LHD 7; CG 55, CVN 77, LHD 5, LPDs 19, 22; CVN 70)			■																									
NAVCERT: FY16 NAVCERTs (DDGs 62, 89, 97 98; LHD 6; LPDs 21, LCS 2, CVN 68, CG 52)				■																								
NAVCERT: NAVCERT: FY17 NAVCERTs (CG 54, CG 60, DDG 88, LPD 23, MCM 12, CVN 71, DDG 79)					■																							
NAVCERT: NAVCERT: FY17 NAVCERTs (DDG 96, DDG 81, DDG 99, LHD 3, LPD 24)						■																						
NAVCERT: NAVCERT: FY17 NAVCERTs (CVN 75, CVN 76, DDG 93, DDG 112,LHD 1, LHD 2, MCM 6, MCM 10)							■																					
NAVCERT: NAVCERT: FY17 NAVCERT (CG 62, CVN 74, DDG 59, DDG 59, DDG 84, DDG 101, DDG 106, DDG 110, LCC 19, LHD 4, CVN 71, DDG 63, DDG 99, LPD 17, LPD 19, LPD 21)								■																				
NAVCERT: NAVCERT: FY18 NAVCERT (CVN 69, DDG 53, DDG 55, DDG 75, LCC 20, LCS 2, LCS 3)									■																			
NAVCERT: FY18 NAVCERTs (DDG 87, CG 58, DDG 94, LPD 17, LPD 18)										■																		

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy

Date: May 2017

Appropriation/Budget Activity

1319 / 4

R-1 Program Element (Number/Name)

PE 0603582N / *Combat System Integration*

Project (Number/Name)

0164 / *Combat System Integration*

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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
NAVCERT: FY18 NAVCERTs (DDG 103, LHD 5, CG 56, LPD 25)																												
NAVCERT: FY18 NAVCERTs (DDG 64, DDG 71, DDG 85, LHD 8, LPD 19, DDG 91, DDG 100, LCC 20)																												
NAVCERT: FY19 NAVCERTs (CG 61, LCC 20, MCM 8, MCM 3, LPD 23, CVN 71)																												
NAVCERT: FY19 NAVCERTs (LPD 22, LHA 6, DDG 105, DDG 103)																												
NAVCERT: FY19 NAVCERTs (CVN 68, DDG 52, DDG 78, MCM 9, LHD 7, DDG 90)																												
NAVCERT: FY19 NAVCERTs (LSD 52, LPD 21, LHD 6, LSD 50, LHD 2, DDG 68, DDG 54, CVN 77)																												
NAVCERT: FY20 NAVCERTs (CG 59, DDG 55, DDG 59, DDG 65, DDG 107, DDG 108)																												
NAVCERT: FY20 NAVCERTs (LHD 3, LPD 23, LSD 49, MCM 11, MCM 14)																												
NAVCERT: FY20 NAVCERTs (CVN 69, CVN 70, CVN 72, CVN 75, LHD 1, CVN 78)																												
NAVCERT: FY20 NAVCERTs (LHD 4, LPD 18, LSD 48, LSD 51, MCM 12, LCS 1)																												
NAVCERT: FY21 NAVCERTs (DDG 113, LCS 2, LPD 17, LHD 5)																												
NAVCERT: FY21 NAVCERTs (CG 55, CG 57, DDG 104, DDG 109, LCS 4, LSD 44, LSD 52, MCM 4, LHD 8, LPD 19, LPD 25, LPD 26)																												
NAVCERT: FY21 NAVCERTs (DDG 56, DDG 95, DDG 111, LCS 5, LCS 6, PC 2, PC 3, PC 5, PC 11)																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy

Date: May 2017

Appropriation/Budget Activity

1319 / 4

R-1 Program Element (Number/Name)

PE 0603582N / Combat System Integration

Project (Number/Name)

0164 / Combat System Integration

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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
NAVCERT: FY21 NAVCERTs (CVN 78, DDG 57, DDG 98, LCS 7, LCS 8, LCS 9)																												
NAVCERT: FY22 NAVCERTs (CG 54, CG 60, DDG 88, LPD 23, MCM 12, CVN 7, DDG 79, DDG 81, DDG 112)																												
NAVCERT: FY 22 NAVCERTs (CVN 74, DDG 96, DDG 59, DDG 84, DDG, 99, LHD 3, LPD 24)																												
NAVCERT: FY22 NAVCERTs (CVN 74, CVN 75, CVN 76, DDG 93, LHD 1, LHD 2, MCM 4, MCM 6, MCM 10)																												
NAVCERT: FY 22 NAVCERTs (CG 62, DDG 53, DDG 82, DDG 101, DDG 106, DDG 110, LCC 19, LCS 3, LHD 4, CVN 71, DDG 63, 99, LPD 17 , LPD 21, PC 14)																												
C5IMP: FY16 C5IMP Monthly Baseline (12/ Year) (with total 62 BLs completed)																												
C5IMP: FY16 NCMC - 1																												
C5IMP: FY16 NCMC - 2																												
C5IMP: FY16 PNA Reviews (12/Year) (Supports Approx 71 ship availabilities with total 45 PNAs completed)																												
C5IMP: FY17 C5IMP Monthly Baseline (12/ Year) (63 BLs planned)																												
C5IMP: FY17 NCMC - 1																												
C5IMP: FY17 NCMC - 2																												
C5IMP: FY17 PNA Reviews (12/Year) (Supports Approx 72 ship availabilities with total 57 PNAs planned)																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy

Date: May 2017

Appropriation/Budget Activity

1319 / 4

R-1 Program Element (Number/Name)

PE 0603582N / Combat System Integration

Project (Number/Name)

0164 / Combat System Integration

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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
C5IMP: FY18 C5IMP Monthly Baseline (12/Year)(63 BLs planned)																												
C5IMP: FY18 NCMC - 1																												
C5IMP: FY18 NCMC - 2																												
C5IMP: FY18 PNA Reviews (12/Year) (Supports Approx 74 ship availabilities with total 49 PNAs planned)																												
C5IMP: FY19 C5IMP Monthly Baseline (12/Year)																												
C5IMP: FY19 NCMC - 1																												
C5IMP: FY19 NCMC - 2																												
C5IMP: FY19 PNA Reviews (12/Year) (71 Ships)																												
C5IMP: FY20 C5IMP Monthly Baseline (12/Year)																												
C5IMP: FY20 NCMC - 1																												
C5IMP: FY20 NCMC - 2																												
C5IMP: FY20 PNA Reviews (12/Year) (70 Ships)																												
C5IMP: FY21 C5IMP Monthly Baseline (12/Year)																												
C5IMP: FY21 NCMC - 1																												
C5IMP: FY21 NCMC - 2																												
C5IMP: FY21 PNA Reviews (12/Year) (69 Ships)																												
C5IMP: FY22 C5IMP Monthly Baseline (12/Year)																												
C5IMP: FY22 NCMC - 1																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy

Date: May 2017

Appropriation/Budget Activity

1319 / 4

R-1 Program Element (Number/Name)

PE 0603582N / *Combat System Integration*

Project (Number/Name)

0164 / *Combat System Integration*

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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
C5IMP: FY22 NCMC - 2																												
C5IMP: FY22 PNA Reviews (12/Year) (69 ships)																												
Interoperability Certification & Assessments: FY16 BL 9C1 Interoperability Assessment (16-1)																												
Interoperability Certification & Assessments: FY16 Interoperability Certification/ Developmental Tests (16-2)																												
Interoperability Certification & Assessments: FY16 Interoperability Certification/ Developmental Tests (16-3)																												
Interoperability Certification & Assessments: FY17 BL 9C2 Interoperability Certification/ Development Tests (17-1)																												
Interoperability Certification & Assessments: FY17 BL 9C2 Interoperability Certification/ Development Tests (17-2)																												
Interoperability Certification & Assessments: FY17 Interoperability Certification/ Development Tests (17-3)																												
Interoperability Certification & Assessments: FY18 Interoperability Certification/ Developmental Tests (18-1)																												
Interoperability Certification & Assessments: FY18 Interoperability Certification/ Developmental Tests (18-2)																												
Interoperability Certification & Assessments: FY18 Interoperability Certification/ Developmental Tests (18-3)																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy

Date: May 2017

Appropriation/Budget Activity

1319 / 4

R-1 Program Element (Number/Name)

PE 0603582N / *Combat System Integration*

Project (Number/Name)

0164 / *Combat System Integration*

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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
Interoperability Certification & Assessments: FY19 Interoperability Development/ Certification Test (19-1)																												
Interoperability Certification & Assessments: FY19 Interoperability Development/ Certification Test (19-2)																												
Interoperability Certification & Assessments: FY19 Interoperability Development/ Certification Test (19-3)																												
Interoperability Certification & Assessments: FY19 Interoperability Development/ Certification Test (19-4)																												
Interoperability Certification & Assessments: FY20 Interoperability Development/ Certification Test (20-1)																												
Interoperability Certification & Assessments: FY 20 FY20 Interoperability Development/ Certification Test (20-2)																												
Interoperability Certification & Assessments: FY 20 FY20 Interoperability Development/ Certification Test (20-3)																												
Interoperability Certification & Assessments: FY 20 FY20 Interoperability Development/ Certification Test (20-4)																												
Interoperability Certification & Assessments: FY 21 Interoperability Certification & Assessments: FY21 Event (21-1)																												
Interoperability Certification & Assessments: FY 21 nteroperability Certification & Assessments: FY21 Event (21-2)																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy

Date: May 2017

Appropriation/Budget Activity

1319 / 4

R-1 Program Element (Number/Name)

PE 0603582N / *Combat System Integration*

Project (Number/Name)

0164 / *Combat System Integration*

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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
Interoperability Certification & Assessments: FY 21 Interoperability Certification & Assessments: FY21 Event (21-3)																												
Interoperability Certification & Assessments: FY 21 FY21 Interoperability Development/ Certification Test (21-4)																												
Interoperability Certification & Assessments: FY 22 Interoperability Certification & Assessments: FY22 Event (22-1)																												
Interoperability Certification & Assessments: FY 22 Interoperability Certification & Assessments: FY22 Event (22-2)																												
Interoperability Certification & Assessments: FY 22 Interoperability Certification & Assessments: FY22 Event (22-3)																												
Interoperability Certification & Assessments: FY 22 Interoperability Certification & Assessments: FY22 Event (22-4)																												
Warfare Systems Certification: FY16 Warfare Systems Cert (74 events + 3 WSCPs)																												
Warfare Systems Certification: FY17 Warfare Systems Cert (145 events + 50 WSCPs)																												
Warfare Systems Certification: FY18 Warfare Systems Cert (163 events + 56 WSCPs)																												
Warfare Systems Certification: FY19 Warfare Systems Cert (146 events + 0 WSCPs)																												
Warfare Systems Certification: FY 20 Warfare Systems Cert (146 events + 0 WSCPs)																												
Warfare Systems Certification: FY21 Warfare Systems Cert (146 events + 0 WSCPs)																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy																			Date: May 2017									
Appropriation/Budget Activity									R-1 Program Element (Number/Name)								Project (Number/Name)											
1319 / 4									PE 0603582N / <i>Combat System Integration</i>								0164 / <i>Combat System Integration</i>											
	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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
Warfare Systems Certification: FY22 Warfare Systems Cert (146 events + 0 WSCPs)																												
Warfare Systems Cybersecurity: Warfare Systems Cybersecurity																												
Warfare Systems Cybersecurity: Assessment development, codification, and refinement (metrics & methodology)																												
Warfare Systems Cybersecurity: Pilot with DIIAC & SFI Testing																												
Warfare Systems Cybersecurity: Follow-on Testing Event																												
Warfare Systems Cybersecurity: Assessment refinement and maintenance (metrics & methodology)																												
Warfare Systems Cybersecurity: FY17 Testing Events (2)																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603582N / <i>Combat System Integration</i>	Project (Number/Name) 0164 / <i>Combat System Integration</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
COMBAT SYSTEM INTEGRATION				
NAVCERT: FY16 NAVCERTs (DDGs 70, 112)	1	2016	1	2016
NAVCERT: FY16 NAVCERTs (DDGs 102, 104, 111, 57, 58; LHD 8	2	2016	2	2016
NAVCERT: FY16 NAVCERTs (DDGs 95, 109; LHD 7; CG 55, CVN 77, LHD 5, LPDs 19, 22; CVN 70)	3	2016	3	2016
NAVCERT: FY16 NAVCERTs (DDGs 62, 89, 97 98; LHD 6; LPDs 21, LCS 2, CVN 68, CG 52)	4	2016	4	2016
NAVCERT: NAVCERT: FY17 NAVCERTs (CG 54, CG 60, DDG 88, LPD 23, MCM 12, CVN 71, DDG 79)	1	2017	1	2017
NAVCERT: NAVCERT: FY17 NAVCERTs (DDG 96, DDG 81, DDG 99, LHD 3, LPD 24)	2	2017	2	2017
NAVCERT: NAVCERT: FY17 NAVCERTs (CVN 75, CVN 76, DDG 93, DDG 112,LHD 1, LHD 2, MCM 6, MCM 10)	3	2017	3	2017
NAVCERT: NAVCERT: FY17 NAVCERT (CG 62, CVN 74, DDG 59, DDG 59, DDG 84, DDG 101, DDG 106, DDG 110, LCC 19, LHD 4, CVN 71, DDG 63, DDG 99, LPD 17, LPD 19, LPD 21)	4	2017	4	2017
NAVCERT: NAVCERT: FY18 NAVCERT (CVN 69, DDG 53, DDG 55, DDG 75, LCC 20, LCS 2, LCS 3)	1	2018	1	2018
NAVCERT: FY18 NAVCERTs (DDG 87, CG 58, DDG 94, LPD 17, LPD 18)	2	2018	2	2018
NAVCERT: FY18 NAVCERTs (DDG 103. LHD 5, CG 56, LPD 25)	3	2018	3	2018
NAVCERT: FY18 NAVCERTs (DDG 64, DDG 71, DDG 85, LHD 8, LPD 19, DDG 91, DDG 100, LCC 20)	4	2018	4	2018
NAVCERT: FY19 NAVCERTs (CG 61, LCC 20, MCM 8, MCM 3, LPD 23, CVN 71)	1	2019	1	2019
NAVCERT: FY19 NAVCERTs (LPD 22, LHA 6, DDG 105, DDG 103)	2	2019	2	2019
NAVCERT: FY19 NAVCERTs (CVN 68, DDG 52, DDG 78, MCM 9, LHD 7, DDG 90)	3	2019	3	2019

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy			Date: May 2017	
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603582N / <i>Combat System Integration</i>		Project (Number/Name) 0164 / <i>Combat System Integration</i>	
	Start		End	
Events by Sub Project	Quarter	Year	Quarter	Year
NAVCERT: FY19 NAVCERTs (LSD 52, LPD 21, LHD 6, LSD 50, LHD 2, DDG 68, DDG 54, CVN 77)	4	2019	4	2019
NAVCERT: FY20 NAVCERTs (CG 59, DDG 55, DDG 59, DDG 65. DDG 107, DDG 108)	1	2020	1	2020
NAVCERT: FY20 NAVCERTs (LHD 3, LPD 23, LSD 49, MCM 11, MCM 14)	2	2020	2	2020
NAVCERT: FY20 NAVCERTs (CVN 69, CVN 70, CVN 72, CVN 75, LHD 1, CVN 78)	3	2020	3	2020
NAVCERT: FY20 NAVCERTs (LHD 4, LPD 18, LSD 48, LSD 51, MCM 12, LCS 1)	4	2020	4	2020
NAVCERT: FY21 NAVCERTs (DDG 113, LCS 2, LPD 17, LHD 5)	1	2021	1	2021
NAVCERT: FY21 NAVCERTs (CG 55, CG 57, DDG 104, DDG 109, LCS 4, LSD 44, LSD 52, MCM 4, LHD 8, LPD 19, LPD 25, LPD 26)	2	2021	2	2021
NAVCERT: FY21 NAVCERTs (DDG 56, DDG 95, DDG 111, LCS 5, LCS 6, PC 2, PC 3, PC 5, PC 11)	3	2021	3	2021
NAVCERT: FY21 NAVCERTs (CVN 78, DDG 57, DDG 98, LCS 7, LCS 8, LCS 9)	4	2021	4	2021
NAVCERT: FY22 NAVCERTs (CG 54, CG 60. DDG 88, LPD 23, MCM 12, CVN 7, DDG 79, DDG 81, DDG 112)	1	2022	1	2022
NAVCERT: FY 22 NAVCERTs (CVN 74, DDG 96, DDG 59, DDG 84, DDG, 99, LHD 3, LPD 24)	2	2022	2	2022
NAVCERT: FY22 NAVCERTs (CVN 74, CVN 75, CVN 76, DDG 93, LHD 1, LHD 2, MCM 4, MCM 6, MCM 10)	3	2022	3	2022
NAVCERT: FY 22 NAVCERTs (CG 62, DDG 53, DDG 82, DDG 101, DDG 106, DDG 110, LCC 19, LCS 3, LHD 4, CVN 71, DDG 63, 99, LPD 17 , LPD 21, PC 14)	4	2022	4	2022
C5IMP: FY16 C5IMP Monthly Baseline (12/Year) (with total 62 BLs completed)	1	2016	4	2016
C5IMP: FY16 NCMC - 1	1	2016	1	2016
C5IMP: FY16 NCMC - 2	3	2016	3	2016
C5IMP: FY16 PNA Reviews (12/Year)(Supports Approx 71 ship availabilities with total 45 PNAs completed)	1	2016	4	2016
C5IMP: FY17 C5IMP Monthly Baseline (12/Year) (63 BLs planned)	1	2017	1	2017
C5IMP: FY17 NCMC - 1	1	2017	1	2017

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy			Date: May 2017	
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603582N / Combat System Integration		Project (Number/Name) 0164 / Combat System Integration	
	Start		End	
Events by Sub Project	Quarter	Year	Quarter	Year
C5IMP: FY17 NCMC - 2	3	2017	3	2017
C5IMP: FY17 PNA Reviews (12/Year) (Supports Approx 72 ship availabilities with total 57 PNAs planned)	1	2017	4	2017
C5IMP: FY18 C5IMP Monthly Baseline (12/Year)(63 BLs planned)	1	2018	4	2018
C5IMP: FY18 NCMC - 1	1	2018	4	2018
C5IMP: FY18 NCMC - 2	3	2018	3	2018
C5IMP: FY18 PNA Reviews (12/Year) (Supports Approx 74 ship availabilities with total 49 PNAs planned)	1	2018	4	2018
C5IMP: FY19 C5IMP Monthly Baseline (12/Year)	1	2019	4	2019
C5IMP: FY19 NCMC - 1	1	2019	1	2019
C5IMP: FY19 NCMC - 2	3	2019	3	2019
C5IMP: FY19 PNA Reviews (12/Year) (71 Ships)	1	2019	4	2019
C5IMP: FY20 C5IMP Monthly Baseline (12/Year)	1	2020	4	2020
C5IMP: FY20 NCMC - 1	1	2020	1	2020
C5IMP: FY20 NCMC - 2	3	2020	3	2020
C5IMP: FY20 PNA Reviews (12/Year) (70 Ships)	1	2020	4	2020
C5IMP: FY21 C5IMP Monthly Baseline (12/Year)	1	2021	4	2021
C5IMP: FY21 NCMC - 1	1	2021	1	2021
C5IMP: FY21 NCMC - 2	3	2021	3	2021
C5IMP: FY21 PNA Reviews (12/Year) (69 Ships)	1	2021	4	2021
C5IMP: FY22 C5IMP Monthly Baseline (12/Year)	1	2022	4	2022
C5IMP: FY22 NCMC - 1	1	2022	1	2022
C5IMP: FY22 NCMC - 2	3	2022	3	2022
C5IMP: FY22 PNA Reviews (12/Year) (69 ships)	1	2022	4	2022
Interoperability Certification & Assessments: FY16 BL 9C1 Interoperability Assessment (16-1)	1	2016	1	2016

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy			Date: May 2017	
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603582N / <i>Combat System Integration</i>		Project (Number/Name) 0164 / <i>Combat System Integration</i>	
	Start		End	
Events by Sub Project	Quarter	Year	Quarter	Year
Interoperability Certification & Assessments: FY16 Interoperability Certification/ Developmental Tests (16-2)	2	2016	2	2016
Interoperability Certification & Assessments: FY16 Interoperability Certification/ Developmental Tests (16-3)	3	2016	3	2016
Interoperability Certification & Assessments: FY17 BL 9C2 Interoperability Certification/ Development Tests (17-1)	1	2017	1	2017
Interoperability Certification & Assessments: FY17 BL 9C2 Interoperability Certification/ Development Tests (17-2)	2	2017	2	2017
Interoperability Certification & Assessments: FY17 Interoperability Certification/ Development Tests (17-3)	3	2017	3	2017
Interoperability Certification & Assessments: FY18 Interoperability Certification/ Developmental Tests (18-1)	1	2018	1	2018
Interoperability Certification & Assessments: FY18 Interoperability Certification/ Developmental Tests (18-2)	2	2018	2	2018
Interoperability Certification & Assessments: FY18 Interoperability Certification/ Developmental Tests (18-3)	3	2018	3	2018
Interoperability Certification & Assessments: FY19 Interoperability Development/ Certification Test (19-1)	1	2019	1	2019
Interoperability Certification & Assessments: FY19 Interoperability Development/ Certification Test (19-2)	2	2019	2	2019
Interoperability Certification & Assessments: FY19 Interoperability Development/ Certification Test (19-3)	3	2019	3	2019
Interoperability Certification & Assessments: FY19 Interoperability Development/ Certification Test (19-4)	4	2019	4	2019
Interoperability Certification & Assessments: FY20 Interoperability Development/ Certification Test (20-1)	1	2020	1	2020
Interoperability Certification & Assessments: FY 20 FY20 Interoperability Development/ Certification Test (20-2)	2	2020	2	2020
Interoperability Certification & Assessments: FY 20 FY20 Interoperability Development/ Certification Test (20-3)	3	2020	3	2020

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy			Date: May 2017	
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603582N / <i>Combat System Integration</i>		Project (Number/Name) 0164 / <i>Combat System Integration</i>	
Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Interoperability Certification & Assessments: FY 20 FY20 Interoperability Development/ Certification Test (20-4)	4	2020	4	2020
Interoperability Certification & Assessments: FY 21 Interoperability Certification & Assessments: FY21 Event (21-1)	1	2021	1	2021
Interoperability Certification & Assessments: FY 21 nteroperability Certification & Assessments: FY21 Event (21-2)	2	2021	2	2021
Interoperability Certification & Assessments: FY 21 Interoperability Certification & Assessments: FY21 Event (21-3)	3	2021	3	2021
Interoperability Certification & Assessments: FY 21 FY21 Interoperability Development/ Certification Test (21-4)	4	2021	4	2021
Interoperability Certification & Assessments: FY 22 Interoperability Certification & Assessments: FY22 Event (22-1)	1	2022	1	2022
Interoperability Certification & Assessments: FY 22 Interoperability Certification & Assessments: FY22 Event (22-2)	2	2022	2	2022
Interoperability Certification & Assessments: FY 22 Interoperability Certification & Assessments: FY22 Event (22-3)	3	2022	3	2022
Interoperability Certification & Assessments: FY 22 Interoperability Certification & Assessments: FY22 Event (22-4)	4	2022	4	2022
Warfare Systems Certification: FY16 Warfare Systems Cert (74 events + 3 WSCPs)	1	2016	4	2016
Warfare Systems Certification: FY17 Warfare Systems Cert (145 events + 50 WSCPs)	1	2017	4	2017
Warfare Systems Certification: FY18 Warfare Systems Cert (163 events + 56 WSCPs)	1	2018	4	2018
Warfare Systems Certification: FY19 Warfare Systems Cert (146 events + 0 WSCPs)	1	2019	4	2019
Warfare Systems Certification: FY 20 Warfare Systems Cert (146 events + 0 WSCPs)	1	2020	4	2020
Warfare Systems Certification: FY21 Warfare Systems Cert (146 events + 0 WSCPs)	1	2021	4	2022
Warfare Systems Certification: FY22 Warfare Systems Cert (146 events + 0 WSCPs)	1	2022	4	2022
Warfare Systems Cybersecurity: Warfare Systems Cybersecurity	1	2016	4	2018
Warfare Systems Cybersecurity: Assessment development, codification, and refinement (metrics & methodology)	1	2016	4	2016

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy			Date: May 2017		
Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603582N / <i>Combat System Integration</i>		Project (Number/Name) 0164 / <i>Combat System Integration</i>	
		Start		End	
Events by Sub Project		Quarter	Year	Quarter	Year
Warfare Systems Cybersecurity: Pilot with DIIAC & SFI Testing		3	2016	4	2016
Warfare Systems Cybersecurity: Follow-on Testing Event		4	2016	4	2016
Warfare Systems Cybersecurity: Assessment refinement and maintenance (metrics & methodology)		1	2017	4	2018
Warfare Systems Cybersecurity: FY17 Testing Events (2)		1	2017	4	2017

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy										Date: May 2017		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603582N / <i>Combat System Integration</i>				Project (Number/Name) 3312 / <i>MTMD-Maritime Theater Missile Defense Forum</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3312: <i>MTMD-Maritime Theater Missile Defense Forum</i>	23.793	8.735	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	32.528
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project funds participation in Maritime Integrated Air and Missile Defense projects with other nations. Included is participation in the Maritime Missile Defense Projects Framework Memorandum of Understanding of 2004 (as amended 2009). Known as the Maritime Theater Missile Defense (MTMD) forum, it promotes interoperability with the Navies of ten participating nations (Australia, Canada, France, Germany, Italy, Netherlands, Norway, Spain, United Kingdom and the United States). This project funds participation in several Project Arrangements and includes maritime contribution to the NATO Active Layered Theater Ballistic Missile Defense (ALTBMD) project, now known as NATO Ballistic Missile Defense (BMD). Engineering analysis and recommendations from MTMD activities are provided to European, Pacific and Central Combatant Commands to influence present day operations. Specifically, the MTMD Forum is addressing challenges with "Maritime Allied Air Defense in Support of Ballistic Missile Defense Operations" that face the Combatant Commanders during present day operations.

The MTMD forum provides protection against the proliferation of short, medium and long-range Ballistic Missile (BM) and Advanced Anti-Ship Cruise Missile (ASCM) threats through the creation of an interoperable sea-based Integrated Air and Missile Defense (IAMD) capability among coalition nations. This includes protection across the full spectrum of these threats through the enhanced utilization of existing sea-based systems to protect against current threats while progressively improving and developing systems and system-of- systems to effectively counter evolving threats.

This project supports USN participation in several Maritime IAMD related Project Arrangements and Working Groups including:

- (1) Battle Management Command, Control, Communications, Computers, and Intelligence (BMC4I) to define and develop architectures as well as to perform engineering to address coalition capability gaps.
- (2) Modeling & Simulation (M&S) to establish and maintain a maritime coalition M&S testbed and to perform legacy and future systems simulation testing.
- (3) Coalition Distributed Engineering Plant (CDEP) to establish and maintain a maritime coalition Hardware-in-the-Loop Testbed and to conduct CDEP testing.
- (4) Open Architecture (OA) to develop Interface Standards and Data Models.
- (5) Test Planning and Execution (TPEX) to develop Test Plans, oversee exercise participation and conduct post event data analysis and reporting.
- (6) Operational Requirements (OR) to develop a Coalition Maritime Missile Defense Operational Concept Document and to identify operational constraints and tactical constructs surrounding coalition maritime missile defense activities.
- (7) Reciprocal Use of Test Facilities agreements with other nations to support Maritime IAMD and MTMD related demonstrations.

Starting in FY17 and through the out-years, the MTMD project moves to Program Element 0605853N under Project Unit 3312: MTMD-Maritime Theater Missile Defense Forum.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy				Date: May 2017		
Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603582N / Combat System Integration		Project (Number/Name) 3312 / MTMD-Maritime Theater Missile Defense Forum		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Maritime Theater Missile Defense Forum (MTMD)		8.735	0.000	0.000	0.000	0.000
Articles:		-	-	-	-	-
Description: This project funds participation in Maritime IAMD to promote interoperability with other nations. This project funds participation in Modeling and Simulation (M&S), Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I), Coalition Distributed Engineering Plant (CDEP), Test Planning and Execution (TPEX), Open Architecture (OA), and Operational Requirements (OR) activities.						
FY 2016 Accomplishments: (1) BMC4I continued engineering analysis and multi-national interoperability gap assessment from Target Architecture test results and developed Target Architectures based on requests for information input from member nations. BMC4I evaluated Recommended Point Solutions and provided recommendations for the implementation in correcting coalition interoperability gaps. BMC4I finalized information exchange requirements in preparation for at-sea demonstrations. BMC4I updated MTMD Coalition Capabilities and Interoperability (CCI) and Systems Tactical Data Links Interoperability (STIR) Reports. (2) M&S continued analysis of Target Architectures and provided assessments and recommendations to improve information exchange requirements identified by BMC4I. M&S modeled Target Architectures and provided training in support of the 2016 At-Sea-Demonstration. (3) CDEP conducted hardware-in-the-loop tests and provided assessments and recommendations to improve information exchanges required to conduct at-sea demonstrations. CDEP evaluated at-sea demonstration architecture risks, and updated the Capabilities & Limitations (C&L) document to support the at-sea demonstrations 2015 and 2016. (4) Open Architecture completed the Open Architecture Radar Interface Standard (OARIS). OARIS was formally adopted by the Object Management Group (OMG) commercial standards body. The OAWG also began the development of the Force Level Open Architecture Technical Standards (FLOATS) by forming the FLOATS Expert Group (FEG). The FEG has held several meetings, including a kick off meeting, to develop the Force Data Model requirements. The OAWG collaborates with BMC4I to ensure alignment with the Target Architecture. (5) TPEX finalized preparations for MTMD participation as part of at-sea test events occurring in October 2015 and July 2016. The 2016 At-Sea Demonstration included live tracking events and a combination of live and simulated engagements. Integrated Air Defense and Ballistic Missile Defense test scenarios among the nations were conducted held in conjunction with RIMPAC 2016. TPEX also supported preparations of a fleet exercise proposal Formidable Shield 2017 as a follow up to the At Sea Demo held in October 2015.						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy				Date: May 2017	
Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603582N / <i>Combat System Integration</i>		Project (Number/Name) 3312 / <i>MTMD-Maritime Theater Missile Defense Forum</i>	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>(6) Operational Requirements group continued to provide fleet inputs and operator oversight to test and evaluation events.</p> <p>FY 2017 Plans: Starting in FY17 and through the out-years, the MTMD project moves to Program Element 0605853N under Project Unit 3312: MTMD-Maritime Theater Missile Defense Forum.</p> <p>FY17 plans stated under the new Program Element.</p> <p>FY 2018 Base Plans: N/A</p> <p>FY 2018 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	8.735	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• 0605853N: <i>PU 0149 INTERNATIONAL COOP MANAGEMENT, TECHNICAL AND INTL SUPT</i>	1.425	2.257	3.638	-	3.638	3.423	3.526	3.652	0.000	Continuing	Continuing
Remarks											
D. Acquisition Strategy N/A											
E. Performance Metrics Quarterly Program Reviews and Baseline Assessments											

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy										Date: May 2017		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603582N / <i>Combat System Integration</i>				Project (Number/Name) 3425 / <i>Digital Warfare Office (DWO) MBE&DT Development</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3425: <i>Digital Warfare Office (DWO) MBE&DT Development</i>	0.000	0.000	0.000	4.400	-	4.400	5.500	7.000	7.700	7.700	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

New Project: Digital Warfare Office

The Chief of Naval Operations concurred with the Task Force Netted Navy recommendation to stand up the Digital Warfare Office (DWO) to set requirements, prioritize resources, and lead efforts on information interoperability and human/machine teaming.

NAVAIR, NAVSEA, SPAWAR, associated Program Executive Offices, warfare and system centers and University Affiliated Research Centers/Federally Funded Research and Development Centers will support the Model Based Engineering, Technical Design, and Requirements branches in the new DWO under OPNAV N2N6. In order to develop capability from the top down, the DWO will develop requirements for the system of systems to include all of the associated interoperability requirements. Due to the complexity of this work, the DWO will evolve the traditional requirements development methodology to a model based systems engineering environment that will include associated model extensions, reports, views, configuration management, help desk support, and documentation. This work will be completed by a series of teams, each focused on a separate threat domain, and made up of system modelers, fleet representatives, program of record representatives, architecture and interoperability experts, etc. The products generated by these teams will include data technical baselines for domain areas with individual profiles for each program of record, coordinated requirements recommendations, and potential areas for S&T and experimentation to fill gaps. The DWO will also explore emerging digital technologies including human/machine teaming.

Each SYSCOM will be involved in creating Data Technical Baseline (DTB) profiles specific for each program of record. DTBs may consist of interfaces, protocols, content, information quality, architectural aspects, and knowledge base frameworks. SYSCOMs will exercise technical authority to assess Program of Record compliance to DTBs and Key Performance Parameters in support of gate reviews and system engineering technical reviews.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: SYSCOM/PEO DWO Support	0.000	0.000	4.400	0.000	4.400
Articles:	-	-	-	-	-
Description: The Digital Warfare Office will develop requirements, prioritize resources, and lead efforts on information interoperability and human/machine teaming in support of evolution to a digital Navy. NAVAIR, NAVSEA, SPAWAR, associated Program Executive Offices, warfare and system centers and university affiliated research centers (UARCs)/federally funded research and development centers (FFRDCs) will support the					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017			
Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603582N / Combat System Integration		Project (Number/Name) 3425 / Digital Warfare Office (DWO) MBE&DT Development		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Model Based Engineering, Technical Design, and Requirements branches in the new Digital Warfare Office (DWO) under OPNAV N2N6. The work scope includes supporting development of a requirements modeling environment to include associated model extensions, reports, views, configuration management, help desk support, and documentation; providing subject matter expert support for mission area model-based engineering teams; development of digital technical baselines for programs as well as associated baselines; exploration of emerging technologies including human/machine teaming; and developing and participating in workforce training in model-based systems engineering.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans: N/A</p> <p>FY 2018 Base Plans: Provide SME support for the domain functional decomposition for prioritized mission areas. Support the analytical agenda from OPNAV N81 and N9I for the specific mission area capabilities. Provide modeling and documentation support for JCIDS, OPNAV POM process, ASN (RD&A) Acquisition Process. Coordinate Program Executive Office (PEO) requirements allocation process.</p> <p>Participate in the definition of MBSE tool functionality and views based on Echelon I stakeholder requirements. Collaboratively develop tool extensions to complement JCIDS and POM processes. Support development of cross-SYSCOM Modeling Standards and Policies for S&T and PoRs. Curate models in the modeling environment.</p> <p>Provide subject matter export support for data science teams in the exploration of data analysis, information and knowledge extraction techniques and application to mission area requirements. Provide engineering inputs to and review NICCs for data architecture consistencies. Explore Machine Learning techniques to support human/machine teaming for decision making.</p> <p>Develop DTBs for PORs under SYSCOM cognizance. Assess DTBs for all SETR events and gate reviews.</p>						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy				Date: May 2017	
Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603582N / <i>Combat System Integration</i>		Project (Number/Name) 3425 / <i>Digital Warfare Office (DWO)</i> <i>MBE&DT Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO
Provide common infrastructure for MBSE and DTB environments, to include access management, configuration management, and help desk support. FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals		0.000	0.000	4.400	0.000
C. Other Program Funding Summary (\$ in Millions) N/A					
Remarks					
D. Acquisition Strategy N/A					
E. Performance Metrics TBD					