Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy											Date: February 2018	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*						**R-1 Program Element (Number/Name)** PE 0304785N *I Tactical Cryptologic Systems*						
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	293.779	34.038	28.311	44.098	-	44.098	47.173	51.929	49.685	58.652	Continuing	Continuing
2134: *Shipboard IW Exploit*	293.779	34.038	28.311	44.098	-	44.098	47.173	51.929	49.685	58.652	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Shipboard Information Warfare (SIW) line includes the Ship's Signal Exploitation Equipment (SSEE) Family of Systems (FoS) which include Increment E, Increment F (and its variants), Spectral and Modifications, as well as the Integrated Communications Data System (ICADS) Increment I and Increment II. These programs are classified Information Warfare (IW) / Electronic Warfare (EW) tactical cryptologic systems supporting Command and Control, Battlespace Awareness, Electromagnetic Maneuver Warfare / Integrated Fires (EMW/IF) modes of global engagement. These systems enable power projection in any environment including communications challenged (referred to as Anti-Access, Area Denial (A2AD)) situations across the globe and provide offensive EW capabilities ensuring surface vessels ability to disrupt, deny, degrade and defeat adversary (state and non-state) use of the radio frequency spectrum while simultaneously providing advanced Information Related Capabilities (IRC) to maritime warfighters. SSEE systems detect adversary radio frequency emissions and use them to provide critical tactical and strategic intelligence, situational awareness, and hostile threat assessment depriving the adversary of enhanced signals exploitation capability and limiting their ability to counter strike.

The systems are incremental acquisition programs designed to pace adversary communications technology development by using Research, Development, Test & Evaluation (RDT&E) funding to rapidly develop and transition new technologies and provide new capabilities as Pre-Planned Product Improvement (P3I) upgrades into the system's hardware/software configuration via a net-centric Service Oriented Architecture (SOA). Funding will focus on developing and delivering expanded offensive IW / EW and future Cyberspace capabilities in accordance with Presidential direction and in support of multiple Operational Plans (OPLANS) and communications challenged scenarios. ICADS Increment II is a mission critical system providing advanced simulation capability for naval platforms as well as back-up communications capabilities. Additional details for these programs are held at a higher classification level.

B. Program Change Summary ($ in Millions)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	36.747	28.311	37.850	-	37.850
Current President's Budget	34.038	28.311	44.098	-	44.098
Total Adjustments	-2.709	0.000	6.248	-	6.248
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.009	0.000			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	5.637	-	5.637
• Rate/Misc Adjustments	0.000	0.000	0.611	-	0.611

Exhibit R-2, **RDT&E Budget Item Justification:** PB 2019 Navy		**Date:** February 2018
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0304785N *I Tactical Cryptologic Systems*	

• Congressional Directed Reductions Adjustments	-2.700	-	-	-	-

Change Summary Explanation

The FY 2019 funding request was reduced by $5.50 million to account for the availability of prior year execution balances.

The increase in funding from FY18 to FY19 is provided to develop capabilities to enable advanced National / Tactical Integration with the United States (U.S.) Navy Surface Cryptologic Systems as well as develop, test and integrate advanced, targeted maritime Information Warfare (IW)capabilities and techniques in support of the Deputy Secretary of Defense Management Action Group (DMAG) Asia-Pacific Security Initiatives (APSI) into the SSEE Family of Systems (FoS). Deploying NSAnet aboard afloat large-deck platforms, while simultaneously adhering to national cybersecurity initiatives, it brings advanced inter-strike group network capabilities to operate in any environment. This brings special Signals Intelligence (SIGINT) processing capabilities, enterprise services, and a mission data repository allowing automated synchronization with national databases. It also supports development and engineering to integrate Cryptologic systems with shipboard combat systems for tightly coupled Electromagnetic Maneuver Warfare / Integrated Fires (EMW/IF) bringing high-side fusion and battle management aids within the Ship's Signal Exploitation Equipment (SSEE) Family of Systems (FoS). As a result of ongoing Pre-Acquisition activities in conjunction with requirements definition and adaptation of hybrid acquisition models to facilitate and adapt to rapid changes in adversary capabilities across the lifetime of the system, the following change has been made to the schedule: Integrated Communications Data System (ICADS) Increment II Milestone C shifted from Q2FY19 to Q1FY20. $4.6M was realigned from FY19 OPN to RDTE to account for shift in Milestone C.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy											Date: February 2018	
Appropriation/Budget Activity 1319 / 5				**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*					**Project (Number/Name)** 2134 / *Shipboard IW Exploit*			
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
2134: *Shipboard IW Exploit*	293.779	34.038	28.311	44.098	-	44.098	47.173	51.929	49.685	58.652	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The FY 2019 funding request was reduced by $5.50 million to account for the availability of prior year execution balances. The Shipboard Information Warfare (SIW) line includes the Ship's Signal Exploitation Equipment (SSEE) Family of Systems (FoS) (which include SSEE Increment E, SSEE Increment F (and its variants), Spectral and SSEE Modifications), and Integrated Communications Data System (ICADS) (which includes ICADS Increment I and ICADS Increment II). These programs are classified Information Warfare (IW) / Electronic Warfare (EW) tactical cryptologic systems supporting all facets of Assured Command and Control, Battlespace Awareness, Electromagnetic Maneuver Warfare / Integrated Fires (EMW/IF) modes of global engagement. These systems, including their variants, provide battle group and combatant commanders with real-time indications and warnings by acquisition ("Find") and localization ("Fix") of Signals of Interest (SOI) as well as the Surface Fleet's only EW non-kinetic capabilities ("Finish"). The SSEE Increment F variants bring a new dimension of afloat Signals Intelligence (SIGINT) capabilities while providing advanced scalability and modularity for mission planners to execute. As an incremental acquisition program, Research, Development, Test & Evaluation (RDT&E) funding is required to rapidly develop and integrate new technologies and associated new operational capabilities to pace both known and future signal threats and transition as Pre-Planned Product Improvement (P3I) upgrades into the system's hardware / software configuration and deliver to fielded systems via annual build releases. This program's funding incorporates P3I, new Commercial-Off-the-Shelf (COTS) or Government-Off-the-Shelf (GOTS) based technologies and software into the existing systems to address Fleet needed priorities, capability gaps or combat known threats. Funding also focuses on developing and delivering expanded non-kinetic EW capabilities and net-centric Service Oriented Architecture (SOA), as well as meeting intended interoperability objectives through Fleet defined Common Core Architectures (CCA) to enable application hosting services; all in accordance with Presidential direction and strategic objectives while also in support of multiple Operational Plans (OPLANS), Concepts of Operations (CONOPS) and communications challenged (referred to as Anti-Access, Area Denial (A2AD)) scenarios (further details held at a higher classification level). SIW will continue development and integration of communications challenged solutions for the SSEE Increment F and Modifications systems as well as bring enhanced signals exploitation and expanded SOI processing capabilities to fielded systems. Funding supports development and integration efforts to fuse data produced and distributed by Shipboard IW/Information Operations (IO) systems with other intelligence data at multiple classification levels and provided to shipboard combat systems to support kinetic and non-kinetic fires. It can also be used to enable a more complete understanding and more agile and effective exploitation of the electromagnetic spectrum.

FY19 funding for SSEE Increment F (and its variants) will continue to develop, refine, and test new, unexplored and unexploited cyber capabilities. It will begin integration of solutions to incorporate other Navy development investments to enhance the Fleet's ability to dominate and defend cyberspace mediums, insert new technology enhancements via incremental software & hardware upgrades and deliver as annual build release. Specifically, Increment F will continue development and integrate designs in support of software and hardware development for VITA 49 / VPX Next-Generation Chassis modifications to provide enhanced data processing, and greater exposure of existing system services while meeting constricting Space, Weight, Power and Cooling (SWPaC) requirements on ships. It will deliver advanced capabilities in a dynamic environment while integrating hosting services to platforms, bringing an enhanced modular, mission-tailorable system infrastructure specifically required for National/Tactical integration. Funding will also continue development for solutions intended to meet Joint interface and compliance standards (4.X) while creating netted sensor framework strategies and delivering enhanced automation capabilities to expedite sensor tasking and control and ease operator

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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workflows. SSEE Increment F also continues to integrate (A2AD) capabilities into system configuration while developing capabilities to enable advanced National/ Tactical Integration with U.S. Navy Surface Cryptologic Systems by deploying NSAnet afloat aboard large-deck platforms to adhere to national cybersecurity initiatives by bringing advanced inter-strike group network capabilities able to operate in any environment as well as develop, test and integrate advanced, targeted maritime Information Warfare (IW) capabilities and techniques in support of the Deputy Secretary of Defense Management Action Group (DMAG) Asia-Pacific Security Initiatives (APSI). It will begin to integrate Cryptologic systems with shipboard combat systems for tightly coupled Electromagnetic Maneuver Warfare / Integrated Fires (EMW/IF) bringing high-side fusion and battle management aids within the Ship's Signal Exploitation Equipment (SSEE) Family of Systems.

FY19 funding for Spectral will continue acquisition activities, development and engineering of Engineering Design Models (EDMs), logistics, test planning and contracting activities required for Fleet Capability Release - 1 (FCR-1) and in alignment with Build Decision - 1 (BD-1).

FY19 funding for SSEE Modifications supports executing hardware and software development to bring advanced capabilities to the Fleet for simultaneous detection, collection, processing, electronic warfare and display of communication intelligence data from hostile, high threat and adversary platforms in select extended frequency ranges not prosecuted today. It will continue development to integrate designs to bring advanced signal processing to the Next Generation-GRAYWING capability while migrating to meet future industry backplane standards to align with Common Core Architecture (CCA) strategies.

FY19 funding for Integrated Communications and Data Systems Increment II (ICADS Inc. II) will support EDM - 2 development as well as make any necessary engineering changes to EDM - 1 in preparation for the second Integration and Development Test (Operational Assessment) and to support the Low-Rate Initial Production (LRIP) decision. ICADS Inc. II is a mission critical system providing advanced capabilities and back-up communications for naval platforms with additional details held at higher classification to support Commander, U.S. Pacific Fleet (COMPACFLT) requirements outlined in the Capability Production Document.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Ship's Signal Exploitation Equipment Inc F (SSEE Inc F)	16.116	6.487	9.848	0.000	9.848
Articles:	-	-	-	-	-

FY 2018 Plans:
Continue Pre-Planned Product Improvement (P3I) to provide enhanced capabilities into the SSEE Increment F system and its variants. Commencing solutions to meet Joint interface development and compliance standards (4.X) while creating netted sensor framework strategies and delivering enhanced automation capabilities to expedite sensor tasking and control and ease operator workflows.   Develop and deliver Electronic Warfare (EW) capabilities based upon the warfighter identified FY18 Signals of Interest (SOI) threats (annually-updated) for integration into the SSEE Increment F system and deliver into annual build release. Expand SOI Directional Finding (DF), processing, and exploitation capabilities to allow collection of the newest high priority modern technology threat signals across multiple frequency bands for tightly integrated IO / non-kinetic capabilities while opening the SSEE system architecture for enhanced collaborative development and future capability integration. Continuing development of Anti-Access, Area Denial (A2AD) capabilities. Continue on the Next-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134 / *Shipboard IW Exploit*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Generation chassis development and begin integration into the host system. Enhance SSEE Increment F remoting capabilities and usability by providing increased functionality and capabilities along with delivering streamlined user interfaces to remote and local users. Maintain cognizance of current warfighter-identified signal sets and make additions and improvements to the system as required by National and Fleet stakeholders. *FY 2019 Base Plans:* Continue to develop Joint interface compliance standards (4.X) while creating netted sensor framework strategies and delivering enhanced automation capabilities to expedite sensor tasking and control and ease operator workflows. Continue Pre-Planned Product Improvements (P3I) to develop and deliver Electronic Warfare (EW) capabilities based upon the warfighter identified FY19 Signals of Interest (SOI) threats (annually-updated) for integration into the Ship's Signal Exploitation Equipment (SSEE) Increment F system and deliver into annual build release. Develop, refine, and test new, unexplored and unexploited cyber capabilities as well as begin integration solutions to incorporate other Navy development investments to enhance the Fleet's ability to dominate and defend cyberspace mediums and insert new technology enhancements via incremental software and hardware upgrades. Continue software and hardware development for Next-Generation Chassis designs and integrate communications challenged Anti-Access, Area Denial (A2AD) capabilities into this new open architecture framework creating a modular, mission-tailorable capability specifically required for National / Tactical mission integration. Design system interfaces and data flow techniques to enable advanced National / Tactical Integration with U.S. Navy Surface Cryptologic Systems by deploying NSAnet afloat aboard large-deck platforms while adhering to national cybersecurity initiatives by bringing advanced inter-strike group network capabilities able to operate in any environment as well as develop, test and integrate advanced, targeted maritime Information Warfare (IW) capabilities and techniques in support of the Deputy Secretary of Defense Management Action Group (DMAG) Asia-Pacific Security Initiatives (APSI). Begin integration and interoperability of SSEE to the Distributed Data Transfer Service, Cross Domain Systems and Common Tactical Manager as part of the Electromagnetic Maneuver Warfare / Integrated Fires (EMW/IF) concept while developing data fusion capabilities and battle management aids to be hosted on SSEE to publish and subscribe data exchange between SSEE residing on SCI Networks and systems residing on the GENSER Combat Systems network. *FY 2019 OCO Plans:* N/A *FY 2018 to FY 2019 Increase/Decrease Statement:* Increase from FY18 to FY19 increases the U.S. Navy's maritime position to support National Security Strategies specifically the DMAG APSI, while also securing network operations by delivering NSAnet afloat to large-deck					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
platforms, and initiating Fleet Combat Systems integration through EMW/IF development efforts. Additional details are held at a higher classification.					
***Title:* Spectral**	6.818	9.326	18.731	0.000	18.731
Articles:	-	-	2	-	2

FY 2018 Plans:
Achieve programmatic Milestone B decision to progress into the Engineering & Manufacturing Stage. Continue acquisition activities, systems engineering, logistics, test planning (including finalizing the Test & Evaluation Master Plan (TEMP)) and contracting activities in support of the Milestone B decision as well as continue development efforts to create Engineering Design Models (EDMs) and refine requirements, technical data packages and matrices for Requirements Development Plan (RDP) approval and Build Decision - 1 (BD-1). Refine Anti-Access, Area Denial (A2AD) capabilities to be incorporated into future Fleet Capability Release (FCR) baseline releases. Continue afloat combat systems integration and execute studies, analysis and engineering efforts for market research to support Advanced Radio Frequency (RF) aperture development and integration to satisfy Fleet needs for multi-mission antennas and control modules as part of the Spectral requirement while also expanding upon the Information Warfare (IW) / Electronic Warfare (EW) and tactical Cryptologic system capability of exploiting signals throughout the RF spectrum, in addition to focusing new technologies towards new and previously unexplored/unexploited cyber capabilities as we integrate into the Integrated Fires (IF) architecture and develop enhanced interfacing to interoperate with Ship's Combat and Intelligence systems.

FY 2019 Base Plans:
Supports Engineering Design Models EDM development and commence systems engineering, logistics, and training development activities and documentation in support of Limited Deployment Decision. Complete Fleet requirements and engineering reviews supporting Build Decision - 1 (BD - 1) and Build Technical Review - 1 (BTR-1) to solidify requirements and engineering plans associated with Fleet Capability Release -1 (FCR - 1). FCR - 1 establishes the initial software and hardware baseline configurations and common core capabilities associated with the next generation system including enhanced requirements to integrate the systems with Ship's Combat and Intelligence to support Integrated Fires while also integrating A2AD capabilities. Initiate system design to include an expanded mission module hosting environment, advanced Information Warfare (IW) / Electronic Warfare (EW) cyberspace capabilities capable of exploiting signals throughout the RF spectrum. Continue acquisition activities and execute engineering and support activities to develop two EDM systems while completing multiple engineering design reviews and iterative software development cycles

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018	
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
inherent to Fleet Capability Review - 1 (FCR - 1). Initiate test plans to support FCR - 1 Integration Test and Operations Assessments. *FY 2019 OCO Plans:* N/A *FY 2018 to FY 2019 Increase/Decrease Statement:* FY18 to FY19 increase is to support Engineering Design Models (EDM) development for both shore and afloat based systems in alignment with established U.S. Navy cryptologic requirements definition through the established FCR-1 initial software and hardware baseline. Efforts include engineering and design of hardware components, software configuration management, user interfaces, and coordination and planning.					
Title: Integrated Communications and Data Systems Increment II (ICADS Inc II)	5.000	8.000	9.837	0.000	9.837
Articles:	-	1	1	-	1
FY 2018 Plans: Continue acquisition and systems engineering activities including documentation to support milestone decision and contract release. Complete Increment II design reviews including System Requirement Review (SRR), Preliminary Design Review (PDR) and Critical Design Review (CDR) and deliver EDM - 1 for testing cycles and initiate Integrated Testing (IT) B1 as part of the Engineering and Manufacturing Phase. *FY 2019 Base Plans:* Finalize delivery of Engineering Design Models EDM - 2 and make necessary engineering changes to EDM - 1 in preparation for the second Integration and Development Test (IT-B2 / Operational Assessment). Complete all necessary acquisition, systems engineering, logistics, training development activities and documentation in support of the Low-Rate Initial Production (LRIP) / Milestone C decision. Finalize all technical drawings and contractual documentation in preparation for Request for Proposal (RFP) contract release to support production of the ICADS LRIP and Full-Rate Production systems. *FY 2019 OCO Plans:* N/A *FY 2018 to FY 2019 Increase/Decrease Statement:* FY18 to FY19 increase procures hardware and software components including enhanced antennas, positioners, and amplification equipment associated with the development of Engineering Design Models EDM - 2 and					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134 / *Shipboard IW Exploit*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
corrects Software Problem Report (SPR) deficiencies identified in Integration Test (IT-B1) in preparation for the second Integration and Development Test (IT - B2 / Operational Assessment).					
Title: Ship's Signal Exploitation Equipment Modifications (SSEE Modifications)	6.104	4.498	5.682	0.000	5.682
Articles:	-	-	-	-	-

FY 2018 Plans:
Achieve both Full Rate Production (FRP) milestone and Initial Operating Capability (IOC) as defined in the program acquisition strategies. SSEE Modifications will transition to annual Build releases post FRP. Execute hardware and software development to bring advanced capability to the Fleet for simultaneous detection, collection, processing, electronic warfare and display of communication intelligence data from hostile, high threat and adversary platforms in select extended frequency ranges not prosecuted today, as well as further engineering development to bring advanced signal processing to the Next Generation-GRAYWING capability while migrating to meet future industry backplane interconnectivity standards to align with Common Core Architecture (CCA) strategies. Continue development and integration of communications challenged Anti-Access, Area Denial (A2AD) solutions as well as bring enhanced Signals exploitation and expanded Signals of Interest (SOI) processing capabilities to fielded systems.

FY 2019 Base Plans:
Continue to execute hardware and software development via annual software release to bring further advanced capability to the Fleet within the expanded Radio Frequency (RF) ranges such as delivering advanced Directional Finding (DF) algorithms to increase geolocation accuracy and integrating new exploitation techniques to address emerging signal threats, while delivering advanced capability to the Fleet through simultaneous detection, collection, processing, electronic warfare, and geographical display of communication intelligence data from hostile, high threat and adversary platforms. Continue designs to bring advanced signal processing to the Next Generation-GRAYWING capability. Begin engineering development and system designs to meet future industry backplane interconnectivity standards to align with CCA strategies. Continue development and integration of communications challenged A2AD solutions as well as deliver enhanced Signals exploitation and expanded SOI processing capabilities and signal acquisition algorithms to fielded systems. Complete Joint Interoperability Test Center (JITC) certification testing.

FY 2019 OCO Plans:
N/A

FY 2018 to FY 2019 Increase/Decrease Statement:

Exhibit R-2A, **RDT&E Project Justification:** PB 2019 Navy		**Date:** February 2018
Appropriation/Budget Activity 1319 **/** 5	**R-1 Program Element (Number/Name)** PE 0304785N **/** *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134 **/** *Shipboard IW Exploit*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**
Increase from FY18 to FY 19 intends to satisfy unique U.S. Navy needs outlined in their annual FY19 Integrated Priority Lists (IPL) and supports theater operations plans through engineering and development of specific Information Warfare (IW) capabilities able to provide Carrier Strike Group continued operations in communications challenged environments (A2AD). Increase also develops and delivers software builds to bring enhanced capabilities to the Fleet for simultaneous detection, collection, processing, electronic warfare and display of communication intelligence data from hostile, high threat and adversary platforms. Details held at higher classification.					
Accomplishments/Planned Programs Subtotals	34.038	28.311	44.098	0.000	44.098

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPN / 2360: *Shipboard IW Exploit*	169.021	187.007	220.883	-	220.883	225.348	263.170	288.949	299.719	Continuing	Continuing

Remarks

D. Acquisition Strategy

Acquisition, management and contracting strategies support engineering, manufacturing development and production by providing funds to a Prime Contractor and Space & Naval Warfare Systems Command (SPAWAR) Systems Center (SSC) - Atlantic, SPAWAR Systems Center - Pacific and miscellaneous contractors, with management and contract oversight by SPAWAR HQ.

E. Performance Metrics

Ship's Signal Exploitation Equipment (SSEE) Increment F will incorporate pre-planned product improvements to provide enhanced or additional capabilities into the system to increase performance and capability while maximizing value to the Navy. SSEE Increment F improvements along with the addition of the SSEE Modifications and Medusa capabilities will expand signals of interest processing capability to allow collection of the newest high priority modern technology threat signals for tightly integrated IO / non-kinetic capabilities in support of time critical military strike operations and subsequent processing and analysis for timely and accurate situational awareness for force protection.   Paragon is a classified Navy tactical signals intelligence frequency extension capability that will be integrated into Ship's Signal Exploitation Equipment Increment E and F programs. Spectral will expand upon the Information Warfare (IW) / Electronic Warfare (EW) and tactical cryptologic system capability of exploiting signals throughout the Radio Frequency (RF) spectrum, in addition to focusing new technologies towards new and previously unexplored and unexploited cyber capabilities as we integrate into the Electromagnetic Maneuver Warfare (EMW) Integrated Fires (IF) architecture.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018	

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development Prior Years	Various	Various : Various	158.330	0.000		0.000		0.000		-		0.000	0.000	158.330	-
Systems Engineering	C/CPAF	Classified Contract : Classified Contract	8.818	3.500	Dec 2016	2.765	Dec 2017	4.307	Dec 2018	-		4.307	Continuing	Continuing	Continuing
Systems Engineering	WR	SSC PAC : San Diego, CA	4.278	1.125	Oct 2016	0.889	Oct 2017	1.385	Oct 2018	-		1.385	Continuing	Continuing	Continuing
Systems Engineering	WR	SSC LANT : Charleston, SC	5.567	1.300	Oct 2016	1.027	Oct 2017	1.600	Oct 2018	-		1.600	Continuing	Continuing	Continuing
Training Development	C/CPFF	Classified Contracts : Classified Contracts	0.000	0.000		0.265	Dec 2017	0.413	Dec 2018	-		0.413	Continuing	Continuing	Continuing
Configuration Management	WR	SSC LANT : Charleston, SC	0.000	0.000		0.790	Oct 2017	1.231	Oct 2018	-		1.231	Continuing	Continuing	Continuing
Training Development	WR	SSC LANT : Charleston, SC	0.000	0.000		0.224	Oct 2017	0.349	Oct 2018	-		0.349	Continuing	Continuing	Continuing
Integrated Logistic Support	WR	SSC LANT : Charleston, SC	0.000	0.000		0.632	Oct 2017	0.984	Oct 2018	-		0.984	Continuing	Continuing	Continuing
Requirements Analysis	WR	SSC LANT : Charleston, SC	0.000	0.000		0.395	Oct 2017	0.615	Oct 2018	-		0.615	Continuing	Continuing	Continuing
Studies & Design	WR	SSC PAC : Charleston, SC	0.000	0.000		0.790	Oct 2017	1.231	Oct 2018	-		1.231	Continuing	Continuing	Continuing
Requirements Analysis	C/CPFF	Classified Contracts : Classified Contracts	0.000	0.000		1.027	Dec 2017	1.600	Dec 2018	-		1.600	Continuing	Continuing	Continuing
Government Engineering Support	WR	SSC LANT : Charleston, SC	0.000	0.000		0.346	Oct 2017	0.539	Oct 2018	-		0.539	Continuing	Continuing	Continuing
Government Engineering Support	WR	SSC PAC : San Diego, CA	0.000	0.000		0.295	Oct 2017	0.460	Oct 2018	-		0.460	Continuing	Continuing	Continuing
Integration, Assembly & Test (PMP Dev)	WR	SSC PAC : San Diego, CA	3.343	1.300	Oct 2016	1.027	Oct 2017	1.600	Oct 2018	-		1.600	Continuing	Continuing	Continuing
Primary Hardware Development	C/CPFF	Classified Contracts : Classified Contracts	0.000	0.510	Dec 2016	1.026	Dec 2017	1.598	Dec 2018	-		1.598	Continuing	Continuing	Continuing
Hardware/Software Development	WR	NRL : Washington, DC	2.260	0.550	Oct 2016	0.435	Oct 2017	0.678	Oct 2018	-		0.678	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	C/CPAF	Classified Contracts : Classified Contracts	35.419	10.165	Dec 2016	8.933	Dec 2017	13.911	Dec 2018	-		13.911	Continuing	Continuing	Continuing
Software Development	WR	SSC PAC : San Diego, CA	1.580	0.257	Oct 2016	0.203	Oct 2017	0.316	Oct 2018	-		0.316	Continuing	Continuing	Continuing
Integration, Assembly & Test	C/CPAF	Classified Contracts : Classified Contracts	2.871	0.363	Dec 2016	0.287	Dec 2017	0.447	Dec 2018	-		0.447	Continuing	Continuing	Continuing
Software Development	WR	SSC LANT : Charleston, SC	0.146	0.147	Oct 2016	0.116	Oct 2017	0.181	Oct 2018	-		0.181	Continuing	Continuing	Continuing
Integration, Assembly & Test (PMP Dev)	WR	SSC LANT : Charleston, SC	0.923	0.700	Oct 2016	0.553	Oct 2017	0.861	Oct 2018	-		0.861	Continuing	Continuing	Continuing
		Subtotal	223.535	19.917		22.025		34.306		-		34.306	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Prior Years	Various	Various : Various	4.572	0.000		0.000		0.000		-		0.000	0.000	4.572	-
Training Development	C/CPFF	Classified Contract : Classified Contract	1.383	0.335	Dec 2016	0.000		0.000		-		0.000	0.000	1.718	-
Integrated Logistics Support	C/CPFF	Classified Contract : Classified Contract	0.624	0.425	Dec 2016	0.593	Dec 2017	0.924	Dec 2018	-		0.924	Continuing	Continuing	Continuing
Configuration Management	WR	SSC LANT : Charleston, SC	1.960	0.302	Oct 2016	0.000		0.000		-		0.000	0.000	2.262	-
Configuration Management	WR	SSC PAC : San Diego, CA	0.840	0.345	Oct 2016	0.672	Oct 2017	1.047	Oct 2018	-		1.047	Continuing	Continuing	Continuing
Technical Data	WR	SSC PAC : San Diego, CA	2.007	0.500	Oct 2016	0.000		0.000		-		0.000	0.000	2.507	-
Training Development	WR	SSC LANT : Charleston, SC	0.388	0.283	Oct 2016	0.000		0.000		-		0.000	0.000	0.671	-
Integrated Logistic Support	WR	SSC LANT : Charleston, SC	0.704	0.510	Oct 2016	0.000		0.000		-		0.000	0.000	1.214	-

Exhibit R-3, **RDT&E Project Cost Analysis:** PB 2019 Navy | **Date:** February 2018

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0304785N / *Tactical Cryptologic Systems*	Project (Number/Name) 2134 / *Shipboard IW Exploit*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	C/CPFF	Classified Contract : Classified Contract	0.000	0.000		1.822	Dec 2017	2.838	Dec 2018	-		2.838	Continuing	Continuing	Continuing
Requirements Analysis	WR	SSC LANT : Charleston, SC	0.254	0.300	Oct 2016	0.000		0.000		-		0.000	0.000	0.554	-
Studies & Design	WR	SSC PAC : San Diego, CA	0.679	1.000	Oct 2016	0.000		0.000		-		0.000	0.000	1.679	-
Studies & Design	C/CPFF	Classified Contract : Classified Contract	0.726	0.600	Dec 2016	0.474	Dec 2017	0.738	Dec 2018	-		0.738	Continuing	Continuing	Continuing
Requirements Analysis	C/CPFF	Classified Contract : Classified Contract	1.421	1.300	Dec 2016	0.000		0.000		-		0.000	0.000	2.721	-
		Subtotal	15.558	5.900		3.561		5.547		-		5.547	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation Prior Years	Various	Various : Various	15.024	0.000		0.000		0.000		-		0.000	0.000	15.024	-
Developmental Test & Evaluation	WR	SSC PAC : San Diego, CA	3.229	1.100	Oct 2016	0.550	Oct 2017	0.857	Oct 2018	-		0.857	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	SSC LANT : Charleston, SC	1.739	0.421	Oct 2016	0.211	Oct 2017	0.329	Oct 2018	-		0.329	Continuing	Continuing	Continuing
Developmental Test & Evaluation	C/CPFF	Classified Contracts : Classified Contracts	2.021	1.000	Dec 2016	0.500	Dec 2017	0.779	Dec 2018	-		0.779	Continuing	Continuing	Continuing
		Subtotal	22.013	2.521		1.261		1.965		-		1.965	Continuing	Continuing	N/A

Exhibit R-3, **RDT&E Project Cost Analysis:** PB 2019 Navy													**Date:** February 2018	
Appropriation/Budget Activity 1319 / 5						**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*						**Project (Number/Name)** 2134 / *Shipboard IW Exploit*		

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Management Services Prior Years	Various	Various : Various	18.496	0.000		0.000		0.000		-		0.000	0.000	18.496	-
Contractor Engineering Support	C/CPFF	Classified Contract : Classified Contract	4.367	2.306	Dec 2016	0.000		0.000		-		0.000	0.000	6.673	-
Government Engineering Support	WR	SSC LANT : Charleston, SC	1.733	0.438	Oct 2016	0.000		0.000		-		0.000	0.000	2.171	-
Government Engineering Support	WR	SSC PAC : San Diego, CA	2.055	0.374	Oct 2016	0.000		0.000		-		0.000	0.000	2.429	-
Program Management Support	C/CPFF	Classified Contract : Classified Contract	2.227	0.900	Dec 2016	0.711	Dec 2017	1.107	Dec 2018	-		1.107	Continuing	Continuing	Continuing
Program Management Support	WR	SSC LANT : Charleston, SC	0.895	0.497	Oct 2016	0.397	Oct 2017	0.618	Oct 2018	-		0.618	Continuing	Continuing	Continuing
Travel	WR	SPAWAR : San Diego, CA	2.301	0.450	Oct 2016	0.356	Oct 2017	0.555	Oct 2018	-		0.555	Continuing	Continuing	Continuing
Studies & Design	FFRDC	Classified Contracts : Classified Contract	0.599	0.735	Dec 2016	0.000		0.000		-		0.000	0.000	1.334	-
Subtotal			32.673	5.700		1.464		2.280		-		2.280	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	293.779	34.038		28.311		44.098		-		44.098	Continuing	Continuing	N/A

Remarks

Exhibit R-4, **RDT&E Schedule Profile:** PB 2019 Navy		**Date:** February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134 / *Shipboard IW Exploit*

SSEE Inc F

Exhibit R-4, **RDT&E Schedule Profile:** PB 2019 Navy | **Date:** February 2018

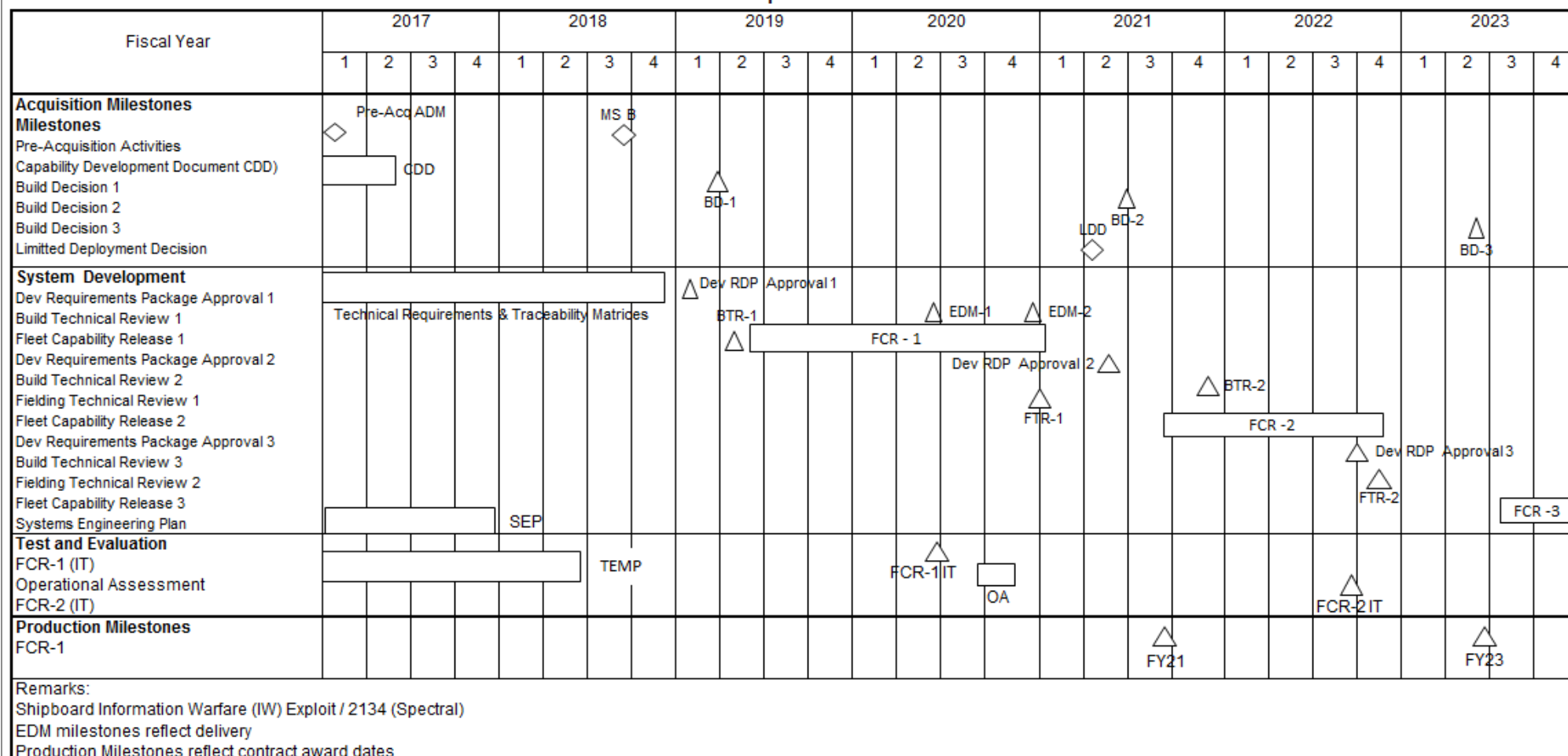| **Appropriation/Budget Activity** 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / Tactical Cryptologic Systems	**Project (Number/Name)** 2134 / Shipboard IW Exploit

Spectral

Schedule chart — Fiscal Year 2017 through 2023 (quarters 1–4 per year).

Acquisition Milestones
- Milestones
- Pre-Acquisition Activities — Pre-Acq ADM, MS B
- Capability Development Document CDD) — CDD
- Build Decision 1 — BD-1
- Build Decision 2 — BD-2
- Build Decision 3 — BD-3
- Limitted Deployment Decision — LDD

System Development
- Dev Requirements Package Approval 1 — Dev RDP Approval 1
- Build Technical Review 1 — Technical Requirements & Traceability Matrices, BTR-1, EDM-1, EDM-2
- Fleet Capability Release 1 — FCR-1
- Dev Requirements Package Approval 2 — Dev RDP Approval 2
- Build Technical Review 2 — BTR-2
- Fielding Technical Review 1 — FTR-1
- Fleet Capability Release 2 — FCR-2
- Dev Requirements Package Approval 3 — Dev RDP Approval 3
- Build Technical Review 3
- Fielding Technical Review 2 — FTR-2
- Fleet Capability Release 3 — FCR-3
- Systems Engineering Plan — SEP

Test and Evaluation
- FCR-1 (IT) — TEMP, FCR-1 IT
- Operational Assessment — OA
- FCR-2 (IT) — FCR-2 IT

Production Milestones
- FCR-1 — FY21, FY23

Remarks:
Shipboard Information Warfare (IW) Exploit / 2134 (Spectral)
EDM milestones reflect delivery
Production Milestones reflect contract award dates

Exhibit R-4, **RDT&E Schedule Profile:** PB 2019 Navy		**Date:** February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134 / *Shipboard IW Exploit*

SSEE Mods

Remarks:
1) Shipboard Information Warfare (IW) Exploit / 2134 (SSEE Mods)
2) Production Milestones reflect contract award dates
3) SSEE MODS Software development integrated and tested inconjunction with SSEE INC F Software builds

Exhibit R-4, **RDT&E Schedule Profile:** PB 2019 Navy		**Date:** February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134 / *Shipboard IW Exploit*

ICADS INC II

Remarks:

1) Shipboard Information Warfare (IW) Exploit / 2134 (ICADS Inc II)

2) Production Milestones reflect contract award dates

PE 0304785N: *Tactical Cryptologic Systems*
Navy

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134 / *Shipboard IW Exploit*

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
SSEE Inc F				
Inc F - Joint Integration Test Command (JITC) Certification (FY20)	4	2020	4	2020
Inc F - Factory Acceptance Test (Inc F Variant)	4	2017	1	2018
Inc F - Follow On Test and Evaluation (FOT&E)	1	2020	1	2020
Inc F - FY17 FRP Production Milestone	2	2017	2	2017
Inc F - FY18 FRP Production Milestone	2	2018	2	2018
Inc F - FY19 FRP Production Milestone	2	2019	2	2019
Inc F - FY20 FRP Production Milestone	2	2020	2	2020
Inc F - FY21 FRP Production Milestone	2	2021	2	2021
Inc F - Software Development (FRP Build 11/12)	1	2017	4	2017
Inc F - Software Development (FRP Build 13)	3	2017	2	2018
Inc F - Software Development (FRP Build 14)	2	2018	2	2019
Inc F - Software Development (FRP Build 15)	2	2019	2	2020
Inc F - Software Development (FRP Build 16)	2	2020	2	2021
Inc F - Software Development (FRP Build 17)	2	2021	2	2022
Inc F - Software Development (FRP Build 18)	2	2022	2	2023
Inc F - Software Development (FRP Build 19)	2	2023	4	2023
Inc F - FY17 SOI Development	1	2017	4	2017
Inc F - FY18 SOI Development	1	2018	4	2018
Inc F - FY19 SOI Development	1	2019	4	2019
Inc F - FY20 SOI Development	1	2020	4	2020
Inc F - FY21 SOI Development	1	2021	4	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy					Date: February 2018

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0304785N / *Tactical Cryptologic Systems*	Project (Number/Name) 2134 / *Shipboard IW Exploit*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Inc F - FY22 SOI Development	1	2022	4	2022
Inc F - FY23 SOI Development	1	2023	4	2023
Inc F - A2AD Capability Development	1	2017	3	2022
Inc F - Joint Interface Development	1	2018	1	2020
Inc F - Next-Gen Chassis Development	1	2017	1	2020
Inc F - EMW/IF & Combat Systems Integration	1	2019	4	2023
Inc F - NSA Afloat (Large Deck Development)	1	2019	4	2023
Inc F - FRP Installation FY17	1	2017	1	2018
Inc F - FRP Installation FY18	2	2018	1	2019
Inc F - FRP Installation FY19	2	2019	1	2020
Inc F - FRP Installation FY20	2	2020	1	2021
Inc F - FRP Installation FY21	2	2021	1	2022
Inc F - FRP Installation FY22	2	2022	1	2023
Inc F - FRP Installation FY23	2	2023	4	2023
Spectral (Increment G)				
Spectral - Milestone B	3	2018	3	2018
Spectral - Pre - Acquisition ADM	1	2017	1	2017
Spectral - Capability Development Document	1	2017	2	2017
Spectral - Build Decision 1	1	2019	1	2019
Spectral - Build Decision 2	2	2021	2	2021
Spectral - Build Decision 3	2	2023	2	2023
Spectral - Limitted Deployment Decision (LDD)	2	2021	2	2021
Spectral - Technical Requirements & Traceability Matrices	1	2017	4	2018
Spectral - Development Requirements Package Approval 1	1	2019	1	2019
Spectral - Development Requirements Package Approval 2	2	2021	2	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy				Date: February 2018	
Appropriation/Budget Activity 1319 / 5		**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*		**Project (Number/Name)** 2134 / *Shipboard IW Exploit*	

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Spectral - Development Requirements Package Approval 3	3	2022	3	2022
Spectral - Build Technical Review 1	2	2019	2	2019
Spectral - Build Technical Review 2	4	2021	4	2021
Spectral - EDM - 1	2	2020	2	2020
Spectral - EDM - 2	4	2020	4	2020
Spectral - Fleet Capability Release 1	2	2019	1	2021
Spectral - Fleet Capability Release 2	3	2021	4	2022
Spectral - Fleet Capability Release 3	3	2023	4	2023
Spectral - Fielding Technical Review 1	4	2020	4	2020
Spectral - Fielding Technical Review 2	4	2022	4	2022
Spectral - Systems Engineering Plan	1	2017	4	2017
Spectral - FCR-1 (IT)	2	2020	2	2020
Spectral - FCR-2 (IT)	3	2022	3	2022
Spectral - Operational Assessment (OA)	3	2020	4	2020
Spectral - Test Evaluation Master Plan	1	2017	2	2018
Spectral - FCR-1 Production Milestone (FY21)	3	2021	3	2021
Spectral - FCR-1 Production Milestone (FY23)	2	2023	2	2023
SSEE Modifications				
SSEE Modifications - ILA	1	2017	1	2017
SSEE Modifications - Fielding Decision (FRP)	3	2018	3	2018
SSEE Modifications - Initial Operating Capability (IOC)	4	2018	4	2018
SSEE Modifications - LRIP Installation FY17	1	2017	4	2017
SSEE Modifications - LRIP Installation FY18	4	2018	1	2019
SSEE Modifications - LRIP/FRP Installation FY19	3	2019	1	2020
SSEE Modifications - FRP Installation FY20	3	2020	1	2021

Exhibit R-4A, **RDT&E Schedule Details:** PB 2019 Navy				**Date:** February 2018		
Appropriation/Budget Activity 1319 / 5		**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*		**Project (Number/Name)** 2134 / *Shipboard IW Exploit*		

Events by Sub Project	**Start**		**End**	
	Quarter	**Year**	**Quarter**	**Year**
SSEE Modifications - FRP Installation FY21	3	2021	1	2022
SSEE Modifications - FRP Installation FY22	3	2022	1	2023
SSEE Modifications - FRP Installation FY23	3	2023	4	2023
SSEE Modifications - Software Development (FRP Build 11/12)	1	2017	4	2017
SSEE Modifications - Software Development (FRP Build 13)	3	2017	2	2018
SSEE Modifications - Software Development (FRP Build 14)	2	2018	2	2019
SSEE Modifications - Software Development (FRP Build 15)	2	2019	2	2020
SSEE Modifications - Software Development (FRP Build 16)	2	2020	2	2021
SSEE Modifications - Software Development (FRP Build 17)	2	2021	2	2022
SSEE Modifications - Software Development (FRP Build 18)	2	2022	2	2023
SSEE Modifications - Software Development (FRP Build 19)	2	2023	4	2023
SSEE Modifications - Next Generation GRAYWING Development	1	2017	4	2021
SSEE Modifications - Development Testing (IT-E1/E2)	4	2017	4	2017
SSEE Modifications - A2AD Capability Development	1	2017	4	2021
SSEE Modifications - Operational Testing (OT-E1)	1	2018	1	2018
SSEE Modifications - Joint Integration Test Command (JITC) Certification FY19	3	2019	3	2019
SSEE Modifications - FY17 LRIP Production Milestone	4	2017	4	2017
SSEE Modifications - FY18 FRP Production Milestone	3	2018	3	2018
SSEE Modifications - FY19 FRP Production Milestone	2	2019	2	2019
SSEE Modifications - FY20 FRP Production Milestone	2	2020	2	2020
SSEE Modifications - FY21 FRP Production Milestone	2	2021	2	2021
SSEE Modifications - FY22 FRP Production Milestone	2	2022	2	2022
SSEE Modifications - FY23 FRP Production Milestone	2	2023	2	2023
ICADS Inc II				
ICADS Inc II - Pre-Acquisition ADM	4	2017	4	2017

Exhibit R-4A, **RDT&E Schedule Details:** PB 2019 Navy				**Date:** February 2018	
Appropriation/Budget Activity 1319 / 5		**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*		**Project (Number/Name)** 2134 / *Shipboard IW Exploit*	

	Start		**End**	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
ICADS Inc II - Milestone C (LRIP)	1	2020	1	2020
ICADS Inc II - Integration Test - B1	4	2018	4	2018
ICADS Inc II - Integration Test - B2	3	2019	3	2019
ICADS Inc II - Systems Engineering Plan (SEP)	4	2017	3	2018
ICADS Inc II - Test Evaluation Master Plan (TEMP)	4	2017	4	2018
ICADS Inc II - Project Description Document (PDD)	1	2017	4	2017
ICADS Inc II - System Requirements Review (SRR)	1	2018	1	2018
ICADS Inc II - OT C1	1	2021	1	2021
ICADS Inc II - Preliminary Design Review (PDR)	2	2018	2	2018
ICADS Inc II - Critical Design Review (CDR)	3	2018	3	2018
ICADS Inc II - Engineering Design Model (EDM) #1	4	2018	4	2018
ICADS Inc II - Engineering Design Model (EDM) #2	3	2019	3	2019
ICADS Inc II - Chief Engineer Integration	4	2017	1	2020
ICADS Inc II - Request for Proposal (RFP)	2	2018	3	2019
ICADS Inc II - RFP Release	3	2019	3	2019
ICADS Inc II - RFP Award	2	2020	2	2020
ICADS Inc II - Low Rate Initial Production (LRIP)	3	2020	3	2020
ICADS Inc II - FY21 FRP Production Milestone	2	2021	2	2021
ICADS Inc II - FY22 FRP Production Milestone	2	2022	2	2022
ICADS Inc II - FY23 FRP Production Milestone	2	2023	2	2023