| Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy | | | | | | | | | | | Date: February 2020 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Appropriation/Budget Activity<br>1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)* | | | | | R-1 Program Element (Number/Name)<br>PE 0304785N *I Tactical Cryptologic Systems* | | | | | | | |
| **COST ($ in Millions)** | **Prior Years** | **FY 2019** | **FY 2020** | **FY 2021 Base** | **FY 2021 OCO** | **FY 2021 Total** | **FY 2022** | **FY 2023** | **FY 2024** | **FY 2025** | **Cost To Complete** | **Total Cost** |
| Total Program Element | 350.579 | 39.385 | 91.091 | 111.434 | - | 111.434 | 115.497 | 121.759 | 122.713 | 124.729 | Continuing | Continuing |
| 2134: *Shipboard IW Exploit* | 350.579 | 39.385 | 43.248 | 53.308 | - | 53.308 | 51.582 | 59.664 | 59.318 | 60.514 | Continuing | Continuing |
| 2174: *Distributed Common Ground System-Navy (DCGS-N)* | 0.000 | 0.000 | 0.583 | 0.592 | - | 0.592 | 0.671 | 0.677 | 0.680 | 0.694 | Continuing | Continuing |
| 2227: *Distributed Common Ground System (DCGS-N) Inc 2* | 0.000 | 0.000 | 42.745 | 26.396 | - | 26.396 | 32.063 | 30.089 | 31.287 | 31.994 | Continuing | Continuing |
| 2351: *MDA* | 0.000 | 0.000 | 0.000 | 4.000 | - | 4.000 | 4.000 | 4.000 | 4.000 | 4.000 | Continuing | Continuing |
| 3091: *Advanced Cryptological Sys Eng (CCOP)* | 0.000 | 0.000 | 4.515 | 4.638 | - | 4.638 | 4.681 | 4.829 | 4.928 | 5.027 | Continuing | Continuing |
| 3786: *Tactical Edge Targeting* | 0.000 | 0.000 | 0.000 | 22.500 | - | 22.500 | 22.500 | 22.500 | 22.500 | 22.500 | Continuing | Continuing |
| **Program MDAP/MAIS Code:**<br>**Project MDAP/MAIS Code(s):** M464 | | | | | | | | | | | | |

**Note**

To ensure resources are aligned to enable rapid capability delivery, funding has been realigned into Program Element (PE) 0304785N (Tactical Cryptologic System) from the following PEs/Projects as part of RDTEN PE Consolidation starting in FY 2020: PE 0305208N (Distributed Common Ground Sys) Project 2174 (Distributed Common Ground System-Navy (DCGS-N)) and Project 2227 (DCGS-N Increment 2), and PE 0204574N (Advanced Cryptologic Systems Engineering) Project 3091 (Advanced Cryptologic Carry On Program (CCOP)). There are no New Starts associated with the PE realignment. Project 2351 Maritime Domain Awareness (MDA) and Project 3786 Tactical Edge Targeting were realigned to this PE in FY21 from other programs.

**A. Mission Description and Budget Item Justification**

Programs will implement digital system-of-systems engineering by using tools such as Model Based System Engineering (MBSE) and Digital Twins to create adaptable digital models to optimize system engineering from design, development and testing to operations and sustainment. Programs will use Development, Security and Operations (DevSecOps) processes for continuous development, integration, testing and deployment, along with common platform services such as Agile Core Services (ACS), for faster fielding of capability. Overall program development efforts include the investigation of emerging technologies through study, development and associated testing for feasibility of program insertion.

The Shipboard Information Warfare - Exploit (SIW-E) line consisting of Ship's Signal Exploitation Equipment (SSEE) Family of Systems (FoS) which includes Increment E, Increment F (and its variants), Spectral, and Modifications, as well as the Integrated Communications and Data Systems (ICADS) Increment II. These programs are classified Information Warfare/Electronic Warfare (IW/EW) tactical cryptologic systems supporting Command and Control, Battlespace Awareness, Electromagnetic Maneuver Warfare/Integrated Fires (EMW/IF) modes of global engagement. The systems enable power projection at the strategic level, operate in any environment

including communications challenged situations across the globe, and provide offensive Electronic Warfare (EW) capabilities at the tactical level, 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. Ship's Signal Exploitation Equipment (SSEE) FoS 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 managed as incremental acquisition programs designed to pace adversary communications technology development by using Research, Development, Test and 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. They focus on developing and delivering expanded offensive Information Warfare/Electronic Warfare (IW/EW) and future Cyberspace capabilities in accordance with Presidential direction and in support of multiple Operational Plans (OPLANS). Integrated Communication and Data Systems (ICADS) is a mission critical system providing advanced simulation capability for naval platforms as well as back-up communications capabilities. Additional details for these programs held at a higher classification level.

The Distributed Common Ground System (DCGS) is a cooperative effort between the services, agencies, and the Department of Defense (DoD) to provide systems capable of receiving, processing, exploiting, and disseminating data from airborne and national reconnaissance platforms. DCGS - Navy (DCGS-N) is the Navy instance of the Under Secretary of Defense, Intelligence (USD (I)) DCGS Family of Systems (FoS). The DoD has defined a DCGS architecture that will be compatible and interoperable across all of the Services Intelligence, Surveillance, and Reconnaissance (ISR) systems and operations to enable information sharing. The Distributed Common Ground System (DCGS) accesses and ingests data from space borne, airborne, subsurface, and surface ISR collection assets, intelligence databases and intelligence producers. DCGS FoS supports Joint Task Force (JTF)-level and below combat operations with critical intelligence for battle management and information dominance to maintain a tactical advantage over adversaries.

Distributed Common Ground System-Navy (DCGS-N) fulfills a critical mission set Afloat and Ashore. DCGS-N processes and exploits tactical and Imagery Intelligence (IMINT) and Signal Intelligence (SIGINT), facilitates precision target geopositioning, mensuration, and imagery capabilities, integrates national IMINT requirements and processing capabilities from the National Geospatial-Intelligence Agency (NGA), and shares Intelligence, Surveillance, Reconnaissance, and Targeting (ISR&T) and Command and Control information via enterprise repositories using Net-Centric Enterprise Services (NCES) standards with a wide range of customers. The DCGS-N program conducts research and assessments of tactically relevant, emerging technologies for insertion to ensure superiority in the intelligence domain.

The DCGS-N Enterprise Node (DEN), which incorporates current DCGS-N requirements, standards and policy, facilitates interoperability and data sharing among the DCGS FoS. DCGS-N complies with the DoD DCGS network architecture.

DCGS-N Increment 1 is the Navy's current fielded DCGS ISR&T program of record. The system is actively used by Navy force level ships and shore sites in support of the mission.

DCGS-N Increment 2 will integrate emergent, transformational Commercial Off-the-Shelf (COTS) and Government Off-the-Shelf (GOTS) technologies in order to streamline Sailor's analytical efforts and improve targeting solutions for the operator, optimizing and compressing the kill chain. DCGS-N Increment 2 will deliver all source fusion and analytical capabilities and integrate Tasking, Collection, Processing, Exploitation, and Dissemination (TCPED) capabilities to optimize the use and analysis of sensor and platform data. DCGS-N Increment 2 leverages enterprise solutions to share information across commands, services, and agencies to promote

shared situational awareness. DCGS-N Increment 2 consists of multiple capability releases that iteratively build up over time and allow for ongoing fleet feedback as the software matures. Each Fleet Capability Release (FCR), enhances afloat ISR capabilities by providing a set of software centric tools to include Multi-INT fusion and analysis, behavior prediction and intelligent knowledge management designed to operate in disconnected or denied communications environment. DCGS-N Increment 2 will insert technology enhancements via incremental software upgrades. Continued development of follow-on releases/Capability Drops (CD's) will be based upon on prioritized Fleet requirements.

Intelligence Carry-On Program (ICOP) provides Indications and Warnings (I&W), battlespace awareness/visualization and Intelligence Surveillance and Reconnaissance (ISR) Processing, Exploitation and Dissemination (PED) capabilities in support of Navy surface and expeditionary operations. The ICOP system includes a three-eyed ruggedized workstation that serves as a powerful afloat edge computing device that is capable of operating on all three security domains (Non-Secure Internet Protocol Router (NIPR), Secure Internet Protocol Router (SIPR) and Joint Worldwide Intelligence Communications System (JWICS)) and an antenna/receiver set (called Communications Module 3 - CM3) that is used to ingest, process and exploit airborne sensor data. In addition to supporting multi-intelligence capabilities, ICOP and CM3 provides an end-to-end ISR Processing, Exploitation and Dissemination (PED) architecture that includes processing organic shipboard camera systems to support Navy-wide Operational Task (OPTASK) Visual Information (Strategic Communications - "First to the Truth," pattern of life analysis and use of force/rules of engagement decisions). In addition, the ICOP system supports the ability to process and correlate Electronic Intelligence (ELINT) and external Communications Intelligence (COMINT Externals). It integrates mature Commercial Off-the-Shelf (COTS) and Government Off-the-Shelf (GOTS) applications with robust storage, processing and computing capability. ICOP adheres to the USD(I) interoperability mandates and federates with other Joint Distributed Common Ground System (DCGS) users via the DCGS Integrated Backbone (DIB). ICOP data is pushed to the shore-based DCGS Enterprise Node (DEN) for discovery, retrieve, and data enrichment. ICOP enables Unit-level ships and expeditionary customers to become part of the larger Intelligence Community (IC) enterprise.

The Maritime Domain Awareness (MDA) portfolio contains capabilities which provide worldwide over-the-horizon vessel tracking and vessel data to the IC, Interagency, Combatant Commanders, Distributed Common Ground System-Navy, Navy Tactical Data Manager (NTDM), and foreign partner nations.
On the classified data fabric, MDA capabilities are centered around SeaLink Advanced Analysis (S2A) which provides a correlated and fused surface track picture from IC sources known as the National All Source Fused Track Service (NAFTS) data feed via the Integrated Broadcast Service (IBS), which provides a track picture to IC systems including Fusion Analysis and Development Effort (FADE) Multi-Intelligence Spatial Temporal (MIST) and THRESHER Maritime. S2A also provides a web interface where users can visualize tracks and run analytics to show track histories, find anomalous vessel behavior, or patterns of life such as rendezvous at sea. S2A began as a Joint Capability Technology Demonstration at Naval Research Laboratory (NRL) and transitioned in FY21 to the MDA Program of Record.
On the commercial unclassified internet, the Navy partnered with the Department of Transportation to leverage the Maritime Safety and Security Information System (MSSIS) to create SeaVision, a non-Public Key Infrastructure (PKI) information sharing tool used by United States Indo-Pacific Command (INDOPACOM), European Command (EUCOM), and Africa Command (AFRICOM) nations to increase maritime security by sharing information. SeaVision's track picture is founded on commercially procured Automated Information System (AIS) data, with additional data from commercial geospatial data, and data contributed by partners such as costal AIS and costal radar. SeaVision is primarily accessed through a web front end where users can visualize tracks, and run a growing set of analytics. SeaVision also has Application Programming Interfaces (APIs) for machine-to-machine data exchange with authorized systems. SeaVision was initiated by the Executive Agent for MDA office, which has since disestablished.

| Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy | Date: February 2020 |
|---|---|
| **Appropriation/Budget Activity**<br>1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)* | **R-1 Program Element (Number/Name)**<br>PE 0304785N *I Tactical Cryptologic Systems* |

The Cryptologic Carry-on Program (CCOP) rapidly develops augmented Signals Intelligence (SIGINT) capabilities in response to Combatant Command requirements by fielding quick-reaction surface, subsurface, and airborne cryptologic carry-on capabilities. There are ~124 cryptologic capable surface ships and shore sites in the current Navy inventory; each of these is a potential user of this carry-on equipment, depending on deployment schedules and tempo of operations. In addition, numerous other Naval and Coast Guard platforms serve as other potential users.

Tactical Edge Targeting is a series of existing National Technical Means (NTM) sensors that are fused and disseminated through existing networks in real-time to enable and enhanced real-time tracking and targeting capability. The Army, Navy and Air Force are developing longer range weapons that will require reliable and accurate targeting data to detect, classify, identify, and target adversaries. Leverages existing large sensor investments across the U.S. Government (USG). Enhance tracking against hard targets in denied environments and maintains ability to securely communicate with these sensors in real-time. The United States Navy (USN) plans to leverage existing NTM and planned new sensors and integrate them with existing service architecture to provide a low-cost, survivable real-time tracking and targeting capability to supplement existing sensors. Due to the nature of these projects, specific applications and detailed plans are available at a higher classification level.

In FY 2021, Ship's Signal Exploitation Equipment SSEE Increment F (and its variants) will continue to develop, refine, and test new, unexplored and unexploited signal and cyber capabilities in accordance with Department of Defense (DoD) and Navy priorities. SSEE Increment F integrates solutions to incorporate developed capabilities via incremental software and hardware upgrades to enhance the Fleet's ability to dominate and defend cyberspace mediums including developing advanced MEDUSA applications and techniques through added signal processing capacity and data flows (details held at higher classification). Increment F will finalize software and hardware development for VITA 49 / VPX Next-Generation Chassis and posture delivery for advanced capabilities in a dynamic environment to integrate hosting services to platforms, bringing an enhanced modular, mission-tailorable system infrastructure specifically required for National/Tactical integration. SSEE Increment F also continues to integrate classified capabilities able to operate in communications challenged environments into the system configuration and design system interfaces and data flow techniques to enable advanced National/Tactical Integration with U.S. Navy Surface Cryptologic Systems by deploying NSAnet afloat to adhere to national cybersecurity initiatives by bringing advanced inter-strike group network capabilities.

In FY 2021, Spectral will continue acquisition, logistics, test planning, and contracting activities to support Milestone B acquisition decision, while continuing development and engineering of advanced Information Warfare/Electronic Warfare (IW/EW) capabilities. This enables immediate U.S. Navy integration and exercise of front-loaded, prioritized-developed capabilities, and system designs, including Next-Generation MEDUSA development to counter specifically identified Signals of Interest, adaptive mission tailoring, system scalability and interfaces and subsystems to reach Engineering Design Models (EDMs) or release capability for fielding via system capability drops.

In FY 2021 SSEE Modifications funding supports continued 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 bringing advanced signal processing to the Next Generation-Graywing capability enabling emergent signal threat acquisition and exploitation while migrating the design to meet future industry backplane standards to align with Common Core Architecture (CCA) strategies.

| Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy | Date: February 2020 |
|---|---|
| **Appropriation/Budget Activity**<br>1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)* | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* |

In FY 2021, Integrated Communications and Data Systems (ICADS) Increment II, as a Middle Tier Acquisition (MTA) Radiotyping Program, will complete EDM development, testing and demonstration of system capability running in accordance with Commander, U.S. Pacific Fleet (COMPACFLT) requirements. ICADS Increment II will continue baseline system development, refinement and capability enhancements to pace known and future threats.

In FY 2021, Distributed Common Ground System-Navy (DCGS-N) Increment 1 will continue modernization, integration and regression testing required to remain aligned with emerging national imagery standards for tech refreshes and End-of-Life Upgrades.

In FY 2021, Intelligence Carry-On Program (ICOP) will continue development, integration and testing efforts of the ICOP mission module concept and will target a Fleet demonstration/exercise such as NAVY TACTICAL GRID or TRIDENT WARRIOR to test a prototype system. In addition, integration testing with future Navy/ Joint technologies to include both airborne and surface platforms will continue. Integration testing will occur on both the Secure Internet Protocol Router (SIPR) Secret and Joint Worldwide Intelligence Communications System (JWICS) Sensitive Compartmented Information (SCI) domains to ensure that the ICOP program is properly aligned to future Navy technologies.

In FY 2021, Distributed Common Ground System-Navy (DCGS-N) Increment 2 efforts will focus on continuation of software integration efforts toward completion of features on a periodic basis. Increasing the frequency of fleet releases is the intended pathway to incrementally deliver capability to the fleet. This methodology increases the number of required test events and Fielding Decisions. DCGS-N Increment 2 will continue development and integration efforts to support Developmental Test and Evaluation (DT&E) and Initial Operational Test and Evaluation (IOT&E), as appropriate, that aligns to the completion of features, capability improvements, and technology insertion. Funding supports development and integration efforts to fuse Intelligence, Surveillance, Reconnaissance, and Targeting (ISR&T) data collected, exploited and disseminated by Intelligence Surveillance and Reconnaissance (ISR) systems with other intelligence data to support kinetic (bombs, missiles, bullets) and non-kinetic fires (electronic attack, cyber-attack) to improve exploitation of the electromagnetic spectrum.

In FY 2021, MDA efforts focus on modernization and testing of both capabilities and continuing collaboration with the Intelligence Community (IC) to leverage Intelligence Community investments in situational awareness tools like THRESHER Maritime. MDA was previously funded under multiple Navy Program Elements (PEs).

In FY 2021, Cryptologic Carry-On Program (CCOP) will continue to integrate, test, and document identified Commercial Off The Shelf (COTS) and Government Off the Shelf (GOTS) technologies and subsystems to meet emergent and on-going Fleet requirements as specified in the Signal of Interest (SOI) and target threat lists, as well as continue to develop upgrades to existing systems and subsystems according to Fleet requirements. Funds aid the development of new signal processing algorithms and software based solutions to enable rapid transition of augmented capability to permanently installed Ship's Signal Exploitation Space (SSES) systems including Ship's Signal Exploitation Equipment (SSEE) Family of Systems (FoS) and its variants. Funds also support research of self-contained, small form factor systems for small units such as Patrol Craft, and the research of Adaptive Mission Modules for rapid insertion to counter specific threats or provide intelligence in specific areas of operation. More details are available at higher classification.

In FY 2021, Tactical Edge Targeting funding will support the continued research, development, integration, and test of a robust Systems of Systems (SoS) capabilities mission contexts. The Tactical Edge Targeting effort will conduct a series of spiral exercises (Spirals 37-48) derived from SoS mission engineering analyses. These

exercise spirals incrementally implement distributed lethality using High Side Fusion (HSF), National Tactical Integration (NTI), and Combat System integration (CSI) in Naval operational contexts. Funding supports development of new capabilities and integration of existing capabilities to fuse ISR data with other intelligence data to support Distributed Maritime Operations (DMO). In FY 2021, Tactical Edge Targeting will work closely with governmental and non-governmental agencies and organizations in order to match fleet requirements with capabilities across the SoS enterprise. Additional details are held at a higher classification level. Tactical edge targeting was previously funded at the Strategic Capabilities Office (SCO) at a classified level.

| B. Program Change Summary ($ in Millions) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| Previous President's Budget | 42.398 | 101.339 | 99.347 | - | 99.347 |
| Current President's Budget | 39.385 | 91.091 | 111.434 | - | 111.434 |
| Total Adjustments | -3.013 | -10.248 | 12.087 | - | 12.087 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | -10.248 | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | -3.013 | 0.000 | | | |
| • SBIR/STTR Transfer | - | - | | | |
| • Program Adjustments | 0.000 | 0.000 | 11.154 | - | 11.154 |
| • Rate/Misc Adjustments | 0.000 | 0.000 | 0.933 | - | 0.933 |

**Change Summary Explanation**

SCHEDULE:

SSEE Increment F - Next-Chassis Development end date shift from QTR 1 FY2021 to QTR 2 FY2021; NSA Afloat (large deck development) end date shift from QTR 4 FY2023 to QTR4 FY2024.

Spectral - With finalized Spectral requirements and specifications, changes were made to the schedule including shifting Milestone B decision from QTR 3 FY 2020 to QTR 1 FY 2021, and Fleet Capability Release (FCR) 2 Integration Test from QTR 4 FY 2023 to QTR 2 FY 2024. However, to bring unique, matured capability delivery to the Fleet Production Representative/Engineering Design Model (EDM) development began in QTR 4 FY 2019.

ICADS Increment II - Revised requirements for ICADS Increment II coupled with the transition to a Middle Tier Acquisition (MTA) Rapid Prototyping pathway. The ICADS Increment II schedule has been revised to reflect the MTA paradigm with associated changes to each of the functional areas.

FUNDING:

The FY 2021 funding request was reduced by $3.841 million to account for the availability of prior year execution balances.

| Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy | Date: February 2020 |
|---|---|
| **Appropriation/Budget Activity**<br>1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)* | **R-1 Program Element (Number/Name)**<br>PE 0304785N *I Tactical Cryptologic Systems* |

Overall Program Element (PE) funding increase from FY20 to FY21 is a result a funding transfer for Tactical Edge Targeting. Funding was transferred from the Office of the Secretary of Defense (OSD) Strategic Capabilities Office (SCO) beginning in FY21.

DCGS-N Increment 2 funding decrease from FY 2020 to FY 2021 of $16.349M is attributed to the transition from Research, Development, Testing, and Evaluation Navy (RDTEN) efforts to production and installation as well as a funding transfer of $4.0 million to Maritime Domain Awareness (MDA) and $1.164M reduction in order to fund higher Navy priorities.

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | | Date: February 2020 |
|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 5 | R-1 Program Element (Number/Name)<br>PE 0304785N / *Tactical Cryptologic Systems* | Project (Number/Name)<br>2134 / *Shipboard IW Exploit* | |

| COST ($ in Millions) | Prior Years | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total | FY 2022 | FY 2023 | FY 2024 | FY 2025 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2134: *Shipboard IW Exploit* | 350.579 | 39.385 | 43.248 | 53.308 | - | 53.308 | 51.582 | 59.664 | 59.318 | 60.514 | Continuing | Continuing |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

**A. Mission Description and Budget Item Justification**

These programs are classified Information Warfare/Electronic Warfare (IW/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 and provide both carrier strike and amphibious expeditionary group combatant commanders with real-time indications and warnings through acquisition ("Find") and localization ("Fix") of Signals of Interest (SOIs) as well as provide the Surface Fleet's only EW non-kinetic capabilities ("Finish").

As an incremental acquisition program, Research, Development, Test and 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 as required to satisfy Fleet needs. Program 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 scenarios (previously known as Anti-Access Area Denial) (further details held at a higher classification level). Ship's Signal Exploitation Equipment (SSEE) Family of Systems (FoS) will continue development and integration of capabilities able to operate in communication challenged environments to provide solutions for the SSEE Increment F, SSEE Modifications, and Spectral systems. Additionally, will also 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 within the electromagnetic spectrum.

SSEE Increment F (and its variants) is the primary, currently fielded system providing full-scope, simultaneous capability, while system variants bring a new dimension of afloat Signals Intelligence (SIGINT) capabilities by providing advanced scalability and modularity for mission planners to execute.

SSEE Modifications is a classified tactical signals intelligence frequency extension capability integrating and interoperating with the SSEE Increment F host system and is broken into two major components: Paragon which provides simultaneous detection, collection, processing, IO and display of communication intelligence data from hostile, high threat and adversary platforms in select frequency ranges not prosecuted or countered with the host system, and the Graywing subsystem which is an advanced common data link system with SSEE Increment F systems.

Spectral is the Navy's next-generation SIGINT, Electromagnetic Maneuver Warfare (EMW), and IO weapons system providing scalable, mission configurable, and modular capabilities using a common user interface through an open software architecture to allow rapid integration and deployment of special use capabilities satisfying

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

Navy and Joint maritime intelligence requirements beyond what existing systems can provide. Spectral will rapidly deliver enhancements in spectrum coverage, advanced scalability and capability arbitration, advances in antenna technologies, and improvements in integration with other Radio Frequency (RF) systems, combat systems, and other data interfaces to bring together a comprehensive integrated cryptologic intelligence picture.

Integrated Communications and Data Systems (ICADS) Increment II is a backup communications and data system developed to respond to a Fleet need for robust Command and Control in a Denied or Degraded Environment (C2D2E). ICADS Increment II has a number of different communications and data systems across the spectrum including satellite, line of sight, and high frequency communications. ICADS uses a modular approach that enables fielding aboard multiple hull types, including destroyers and unmanned surface vehicles.

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| ***Title:*** Ship's Signal Exploitation Equipment Inc F (SSEE Inc F) | 8.148 | 10.888 | 7.982 | 0.000 | 7.982 |
| ***Articles:*** | - | - | - | - | - |
| ***FY 2020 Plans:***<br>Continue Pre-Planned Product Improvement (P3I) by providing enhanced capabilities into the SSEE Increment F system and its variants by developing, refining, and testing of new, unexplored and unexploited cyber capabilities. In addition, finalize integration solutions to incorporate other Navy development investments to enhance the Fleet's ability to dominate and defend cyberspace mediums including newly created signal descriptor files, advanced software defined radio applications and insert them as new technology enhancements via incremental software and hardware upgrade process. Intent is to transition from annual software builds to delivering incremental software updates as required to maximize Fleet readiness and its cybersecurity posture. Finalize Joint interface development and compliance standards (4.X) and create the base for a netted sensor framework by delivering enhanced automation capabilities to expedite sensor tasking and control to ease operator workflows. Develop and deliver Electronic Warfare (EW) capabilities based upon the warfighter identified FY 2020 Signals of Interest (SOI) threats (annually updated) for integration into the SSEE Increment F systems (including variants) and deliver as required to meet Fleet requirements. Continue VITA 49 / VPX Next-Generation Chassis development by completing deign reviews to include 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. Also, continue to integrate specialized signal processing capabilities into the new architecture to both modernize and increase performance as a means to posture for future Signal Intelligence (SIGINT) threats, maximizing hosting environment utility. Continue to develop the architecture, network performance specifications, and hosting environment to bring National Security Association (NSA) net afloat through the Navy Tactical Data Network (NTDN). Develop system requirements for the Carrier Strike Group operability to bring inter-strike group network capabilities able to operate in any environment while continuing to integrate Cryptologic systems with shipboard combat systems for | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| tightly coupled mission execution. In addition, continue to bring high-side data fusion and battle management aids within the SSEE Family of Systems (FoS). Begin necessary documentation for system/network testing, production and installation for designated CVN installation while taking ownership of initial prototypes. Continue development and integration of capabilities able to operate in communications challenged environments to maintain cognizance of current warfighter-identified signal sets and make both additions and improvements to the system as required by National and Fleet stakeholders. Build a framework for increased Sensitive Compartmented Information (SCI) compute power within the Ship's Signal Exploitation Space (SSES), the only SCI accredited space within most ships, bringing high-side fusion and battle management aids within the SSEE FoS Hosting Environment. | | | | | |
| ***FY 2021 Base Plans:***<br>Continue Pre-Planned Product Improvement (P3I) to provide enhanced capabilities into the Ship's Signal Exploitation Equipment (SSEE) Increment F system and its variants by continuing to develop, refine, and test new, unexplored and unexploited cyber capabilities including advanced MEDUSA applications and techniques through added signal processing capacity and data flows (details held at higher classification). Finalize 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. Develop and deliver electronic warfare (EW) capabilities based upon the warfighter identified FY 2021 Signals of Interest (SOIs) threats (annually updated) for integration into the SSEE Increment F systems (including its variants) and deliver as required to meet Fleet requirements. Finalize testing for the VITA 49 / VPX Next-Generation Chassis and accept delivery of the final technical data packages and apply the framework to advance the Anti-Access Area Denial (A2AD), capability development to continue to integrate specialized signal processing capabilities (including MEDUSA, ACES and SILK THREAD functionality). Continue to develop and refine the architecture, network performance specifications, and hosting environment to bring NSAnet afloat by deploying Navy Tactical Data Network (NTDN). Apply national cybersecurity standards and initiatives to bring advanced inter-strike group network capabilities able to operate in any environment while continuing to integrate cryptologic systems with shipboard combat systems for tightly coupled mission execution. Continue to bring high-side fusion and battle management aids within the SSEE Family of Systems (FoS). Continue to develop documentation for system/network testing, production and installation for designated CVN installation while taking ownership of initial prototypes. Continue development and integration capabilities able to operate in communications challenged environments to maintain cognizance of current warfighter-identified signal sets and make necessary additions and improvements to the system as required by National and Fleet stakeholders. Continue to bring increased Sensitive Compartmented Information (SCI) compute power within | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| the Ship's Signal Exploitation Space (SSES), the only SCI accredited space within most ships, bringing high-side fusion and battle management aids within the SSEE FoS Hosting Environment.<br>***FY 2021 OCO Plans:***<br>N/A<br>***FY 2020 to FY 2021 Increase/Decrease Statement:***<br>The funding decrease from FY 2020 to FY 2021 results from the completion of variant system testing and Joint Interface Development in FY 2020, and ending Next-Generation Chassis development early in FY 2021. | | | | | |
| ***Title:*** Spectral | 16.717 | 18.732 | 34.609 | 0.000 | 34.609 |
| ***Articles:*** | - | - | - | - | - |
| ***FY 2020 Plans:***<br>Complete documentation and acquisition activity to achieve a programmatic Milestone B decision and award the prime system integrator and development contract towards delivering a Engineering Design Model (EDM) Ashore. Obtain prioritized EDM hardware for below-deck equipment; continue to build, assemble, and integrate hardware as well as procure prioritized developmental equipment to support the necessary lab-based and Development Operations (DEVOPS) environments to quickly engineer and integrate capability into the software baseline as well as develop advanced or next-generation Signal Intelligence (SIGINT), cyber, Information Operations (IO), or Electronic Warfare (EW) capabilities beyond, or in excess of, performance requirements of currently fielded systems. This includes having virtual software development environment for enhanced configuration management through Web-based services and applications for a robust, open, modular development environment. Continue limited EDM and Capability Drop development focusing on engineering efforts outlined in Fleet Integrated Priority and Integrated Priority Capability lists. EDM development 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 Systems to support Integrated Fires and Electromagnetic Maneuver Warfare and the capabilities able to operate in communications challenged environments in the operating frequency bands outside that of fielded systems. As those capabilities mature and become available, they are made available to be immediately fielded via Capability Drops to satisfy any prioritized Fleet requirement. Initiate system design to include an expanded mission module hosting environment, advanced Information Warfare (IW) / EW cyberspace capabilities capable of exploiting signals throughout the Advanced Radio Frequency (RF) spectrum. Initiate test plans to support Developmental and Operations Assessments against the EDM systems. With finalized afloat combat systems integration studies, analysis, and engineering efforts to support RF aperture development and | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| integration complete, Advanced RF Aperture Development effort to match the expanded capability is required to meet future Signals of Interest (SOI) threats. Engineering and design in topside maritime antennas enables execution of full functionality and scope of Spectral requirements. | | | | | |
| ***FY 2021 Base Plans:***<br>Spectral will initiate development of new topside multifunction multi-purpose apertures to realize expanded capability to the overall Spectral system. Spectral will continue acquisition, logistics, test planning, and contracting activities and achieve its Milestone B acquisition decision, while continuing development and engineering of advanced IW/EW capabilities. This enables immediate Navy integration and exercise of front-loaded, prioritized capabilities including Next-Generation MEDUSA development to counter specifically identified Signals of Interest, adaptive mission tailoring, system scalability and interfaces and subsystems to reach EDMs or release capability for fielding via system capability drops as well as continue to develop below-deck host open system architectures and interfaces (including VPX and VITA 49.2 standards implementation) and mission module integration to solve modern signal sets (e.g. more complex wider bandwidth, shorter duration, low probability of detect/low probability of intercept), automation to improve operator and maintainer workflows and well as improve overall installation efficiencies. Continue to build, assemble, and integrate hardware to support the necessary lab-based and Development Operations environments that will quickly engineer and integrate capability into the software baseline as well as develop advanced or next-generation Signals Intelligence (SIGINT), Cyber, Information Operations (IO), or Electronic Warfare (EW) capabilities beyond or in excess of performance requirements scope of currently fielded systems. This includes having virtual software development environment for enhanced configuration management through Web-based services and applications for a robust, open, modular development environment. Continue Engineering Design Models (EDM) and Capability Drop development focusing on engineering efforts outlined in Fleet Integrated Priority and Integrated Priority Capability lists. The EDM will establish 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 Systems to support Integrated Fires and Electromagnetic Maneuver Warfare and the capabilities able to operate in communications challenged environments in the operating frequency bands outside that of fielded systems. | | | | | |
| ***FY 2021 OCO Plans:***<br>N/A | | | | | |
| ***FY 2020 to FY 2021 Increase/Decrease Statement:*** | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| The $16M increase from FY 2020 to FY 2021 supports multiple Radio Frequency (RF)aperture development and interface efforts as well as topside antenna development to solve multi-function / multi-purpose usage, shore and ship testing, research and experimentation to realize increased frequency band operability. In addition, funds will be used to procure additional EDM equipment and up front, long-lead item topside components for four base EDM base systems. Lastly, the increase funding will focus on developing Next-Generation MEDUSA capability and other Fleet Integrated Priorities (details held at higher classification). | | | | | |
| ***Title:*** Ship's Signal Exploitation Equipment Modifications (SSEE Modifications) | 5.682 | 5.328 | 4.286 | 0.000 | 4.286 |
| ***Articles:*** | - | - | - | - | - |
| ***FY 2020 Plans:***<br>Continue to execute hardware and software development via annual software release. This brings advanced capability to the Fleet within the expanded RF ranges and integrate 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. Restore any hardware or software discrepancies or system bugs stemming from Initial Operational Test & Evaluation test reports. Continue engineering to bring advanced signal processing to the Next Generation-Graywing capability to be integrated into the SSEE Family of Systems (FoS) hosting environments. Continue engineering development and system designs to meet future industry backplane interconnectivity standards to align with Common Core Architecture (CCA) strategies. Continue development and integration of capabilities able to operate in communications challenged environments as well as deliver enhanced Signals exploitation and expanded Signals of Interest (SOI) processing capabilities and signal acquisition algorithms to fielded systems. | | | | | |
| ***FY 2021 Base Plans:***<br>Continue 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. Continue development to integrate designs bringing advanced signal processing to the Next Generation-Graywing capability enabling emergent signal threat acquisition and exploitation while migrating the design to meet future industry backplane standards to align with CCA strategies. | | | | | |
| ***FY 2021 OCO Plans:***<br>N/A | | | | | |
| ***FY 2020 to FY 2021 Increase/Decrease Statement:*** | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| The $1.042M decrease in funding from FY 2020 to FY 2021 results from the decreasing labor hours associated with Anti-Access Area Denial (A2AD) and Next-Generation Graywing capability experimentation, engineering and development, and testing and integration of each capability into the host system. | | | | | |
| ***Title:*** Integrated Communications and Data Systems Increment II (ICADS Inc II) | 8.838 | 8.300 | 6.431 | 0.000 | 6.431 |
| ***Articles:*** | - | - | - | - | - |
| ***FY 2020 Plans:***<br>Continue with the design and development of ICADS Increment II Engineering Design Model (EDM). Complete Critical Design Review (CDR), develop the Master Test Strategy (MTS) and continue with all necessary acquisition, systems, engineering and logistics development via the Middle Tier Acquisition Rapid Prototyping program. | | | | | |
| ***FY 2021 Base Plans:***<br>ICADS Increment II will finalize preparations for the Development Test (DT) and Operational Assessment (OA) event, take receipt of the initial EDM and conduct the DT/OA events. Perform the initial and critical Program Technical Reviews (PTR) for the Production Representative Systems (PRS). Continue with all necessary acquisition, systems engineering, and logistics development via the Middle Tier Acquisition program. | | | | | |
| ***FY 2021 OCO Plans:***<br>N/A | | | | | |
| ***FY 2020 to FY 2021 Increase/Decrease Statement:***<br>The decrease in funding from FY 2020 to FY 2021 is attributed to completion of material purchases associated with Engineering Design Model (EDM) development. | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 39.385 | 43.248 | 53.308 | 0.000 | 53.308 |

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

| Line Item | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total | FY 2022 | FY 2023 | FY 2024 | FY 2025 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • OPN / 2360: *Shipboard IW Exploit* | 218.103 | 188.486 | 235.744 | - | 235.744 | 281.875 | 331.882 | 298.990 | 300.260 | Continuing | Continuing |

**Remarks**

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

**D. Acquisition Strategy**

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

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy | | | Date: February 2020 |
|---|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* | |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 13.988 | 4.307 | Dec 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 18.295 | - |
| Systems Engineering | WR | NIWC PAC : San Diego, CA | 6.292 | 1.385 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 7.677 | - |
| Systems Engineering | WR | NIWC LANT : Charleston, SC | 7.483 | 1.600 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 9.083 | - |
| Training Development | C/CPFF | Classified Contracts : Classified Contracts | 0.265 | 0.413 | Dec 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 0.678 | - |
| Configuration Management | WR | NIWC LANT : Charleston, SC | 0.316 | 1.231 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 1.547 | - |
| Training Development | WR | NIWC LANT : Charleston, SC | 0.168 | 0.349 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 0.517 | - |
| Integrated Logistic Support | WR | NIWC LANT : Charleston, SC | 0.442 | 0.984 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 1.426 | - |
| Requirements Analysis | WR | NIWC LANT : Charleston, SC | 0.395 | 0.615 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 1.010 | - |
| Studies & Design | WR | NIWC PAC : Charleston, SC | 0.553 | 1.231 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 1.784 | - |
| Requirements Analysis | C/CPFF | Classified Contracts : Classified Contracts | 0.616 | 1.600 | Dec 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 2.216 | - |
| Government Engineering Support | WR | NIWC LANT : Charleston, SC | 0.218 | 0.539 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 0.757 | - |
| Government Engineering Support | WR | NIWC PAC : San Diego, CA | 0.295 | 0.460 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 0.755 | - |
| Integration, Assembly & Test (PMP Dev) | WR | NIWC PAC : San Diego, CA | 5.670 | 1.600 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 7.270 | - |
| Primary Hardware Development | C/CPFF | Classified Contracts : Classified Contracts | 1.536 | 1.598 | Dec 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 3.134 | - |
| Hardware/Software Development | WR | NRL : Washington, DC | 3.245 | 0.678 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 3.923 | - |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy | | | Date: February 2020 |
|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 5 | R-1 Program Element (Number/Name)<br>PE 0304785N / *Tactical Cryptologic Systems* | Project (Number/Name)<br>2134 / *Shipboard IW Exploit* | |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Software Development | C/CPAF | Classified Contracts : Classified Contracts | 54.510 | 9.198 | Dec 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 63.708 | - |
| Software Development | WR | NIWC PAC : San Diego, CA | 2.040 | 0.316 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 2.356 | - |
| Integration, Assembly & Test | C/CPAF | Classified Contracts : Classified Contracts | 3.464 | 0.447 | Dec 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 3.911 | - |
| Software Development | WR | NIWC LANT : Charleston, SC | 0.316 | 0.181 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 0.497 | Continuing |
| Integration, Assembly & Test (PMP Dev) | WR | NIWC LANT : Charleston, SC | 1.761 | 0.861 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 2.622 | Continuing |
| Software Development SSEE | C/CPFF | Classified Contracts : Classified Contracts | 0.000 | 0.000 | | 8.971 | Dec 2019 | 7.105 | Dec 2020 | - | | 7.105 | Continuing | Continuing | Continuing |
| System Engineering SSEE | C/CPFF | Classified Contracts : Classified Contracts | 0.000 | 0.000 | | 0.943 | Dec 2019 | 0.940 | Dec 2020 | - | | 0.940 | Continuing | Continuing | Continuing |
| Software Development SSEE | WR | NIWC PAC : San Diego, CA | 0.000 | 0.000 | | 0.734 | Nov 2019 | 0.530 | Oct 2020 | - | | 0.530 | Continuing | Continuing | Continuing |
| Hardware Development SSEE | WR | NIWC PAC : San Diego, CA | 0.000 | 0.000 | | 0.569 | Nov 2019 | 0.405 | Oct 2020 | - | | 0.405 | Continuing | Continuing | Continuing |
| Software Development SSEE | WR | NRL : Washington, DC | 0.000 | 0.000 | | 2.698 | Nov 2019 | 1.683 | Oct 2020 | - | | 1.683 | Continuing | Continuing | Continuing |
| Primary Hardware Development Spectral | C/CPFF | Classified Contracts : Classified Contracts | 0.000 | 0.000 | | 8.033 | Dec 2019 | 21.235 | Dec 2020 | - | | 21.235 | Continuing | Continuing | Continuing |
| Software Development Spectral | C/CPAF | Classified Contracts : Classified Contracts | 0.000 | 0.000 | | 1.685 | Dec 2019 | 3.451 | Dec 2020 | - | | 3.451 | Continuing | Continuing | Continuing |
| System Engineering Spectral | WR | NIWC PAC : San Diego, CA | 0.000 | 0.000 | | 3.322 | Nov 2019 | 4.115 | Oct 2020 | - | | 4.115 | Continuing | Continuing | Continuing |
| Requirements Analysis Spectral | C/CPFF | Classified Contracts : Classified Contracts | 0.000 | 0.000 | | 0.418 | Dec 2019 | 0.426 | Dec 2020 | - | | 0.426 | Continuing | Continuing | Continuing |
| System Engineering Spectral | C/CPFF | Classified Contracts : Classified Contracts | 0.000 | 0.000 | | 3.802 | Dec 2019 | 3.878 | Dec 2020 | - | | 3.878 | Continuing | Continuing | Continuing |
| Primary Hardware Development ICADS | C/CPFF | Classified Contracts : Classified Contracts | 0.000 | 0.000 | | 5.190 | Dec 2019 | 3.355 | Dec 2020 | - | | 3.355 | Continuing | Continuing | Continuing |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Software Development ICADS | WR | NIWC LANT : Charleston, SC | 0.000 | 0.000 | | 1.250 | Dec 2019 | 1.237 | Oct 2020 | - | | 1.237 | Continuing | Continuing | Continuing |
| System Engineering ICADS | C/CPFF | Classified Contracts : Classified Contracts | 0.000 | 0.000 | | 1.460 | Dec 2019 | 1.486 | Dec 2020 | - | | 1.486 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 261.903 | 29.593 | | 39.075 | | 49.846 | | - | | 49.846 | Continuing | Continuing | N/A |

**Remarks**

Increase in FY21 attributed to additional Spectral development, and redistribution of cost based on the program office estimate work breakdown structure.

**Support ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Support Prior Years | Various | Various : Various | 17.898 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 17.898 | - |
| Integrated Logistics Support | C/CPFF | Classified Contract : Classified Contract | 1.642 | 0.924 | Dec 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 2.566 | - |
| Configuration Management | WR | NIWC PAC : San Diego, CA | 1.689 | 1.047 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 2.736 | - |
| Contractor Engineering Support | C/CPFF | Classified Contract : Classified Contract | 1.093 | 2.838 | Dec 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 3.931 | - |
| Studies and Design | C/CPFF | Classified Contract : Classified Contract | 1.705 | 0.738 | Dec 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 2.443 | - |
| System Eng Mgmt SSEE | C/CPFF | NIWC LANT/PAC : Various | 0.000 | 0.000 | | 0.296 | Dec 2019 | 0.303 | Oct 2020 | - | | 0.303 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 24.027 | 5.547 | | 0.296 | | 0.303 | | - | | 0.303 | Continuing | Continuing | N/A |

**Remarks**

Decrease in FY19 to FY20 due to distribution of cost to product development in accordance with the program office estimates work breakdown structure.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

**Test and Evaluation ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 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 | NIWC PAC : San Diego, CA | 4.879 | 0.857 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 5.736 | - |
| Developmental Test & Evaluation | WR | NIWC LANT : Charleston, SC | 2.318 | 0.329 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 2.647 | - |
| Developmental Test & Evaluation | C/CPFF | Classified Contracts : Classified Contracts | 3.396 | 0.779 | Dec 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 4.175 | - |
| Developmental Test & Evaluation ICADS | C/BA | NIWC LANT/PAC : Various | 0.000 | 0.000 | | 0.400 | Nov 2019 | 0.357 | Oct 2020 | - | | 0.357 | Continuing | Continuing | Continuing |
| Developmental Test & Evaluation SSEE | C/CPFF | Classified Contracts : Classified Contracts | 0.000 | 0.000 | | 0.795 | Dec 2019 | 0.516 | Dec 2020 | - | | 0.516 | Continuing | Continuing | Continuing |
| Developmental Test & Evaluation SSEE | WR | NIWC LANT/PAC : Various | 0.000 | 0.000 | | 1.210 | Nov 2019 | 0.785 | Oct 2020 | - | | 0.785 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 25.617 | 1.965 | | 2.405 | | 1.658 | | - | | 1.658 | Continuing | Continuing | N/A |

**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Management Services Prior Years | Various | Various : Various | 31.103 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 31.103 | - |
| Program Management Support | C/CPFF | Classified Contract : Classified Contract | 3.340 | 1.107 | Dec 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 4.447 | - |
| Program Management Support | WR | NIWC LANT : Charleston, SC | 1.482 | 0.618 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 2.100 | - |
| Travel | WR | NAVWAR : San Diego, CA | 3.107 | 0.555 | Oct 2018 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 3.662 | - |
| Program Management Spectral | C/CPFF | BAH : San Diego, CA | 0.000 | 0.000 | | 1.472 | Nov 2019 | 1.501 | Oct 2020 | - | | 1.501 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 39.032 | 2.280 | | 1.472 | | 1.501 | | - | | 1.501 | Continuing | Continuing | N/A |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy | | | Date: February 2020 |
|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 5 | R-1 Program Element (Number/Name)<br>PE 0304785N / *Tactical Cryptologic Systems* | Project (Number/Name)<br>2134 / *Shipboard IW Exploit* | |

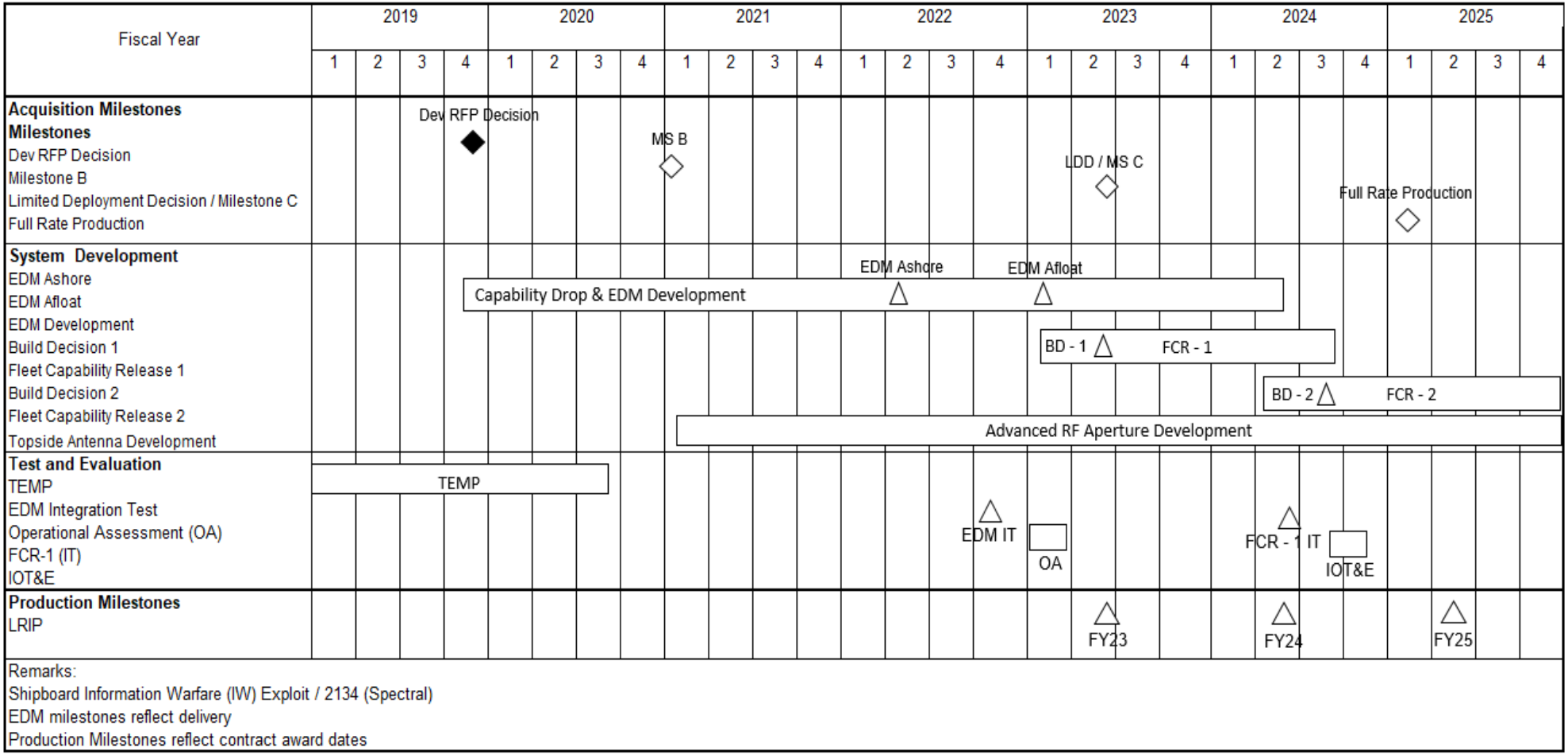
| | Prior Years | FY 2019 | | FY 2020 | | FY 2021 Base | | FY 2021 OCO | | FY 2021 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 350.579 | 39.385 | | 43.248 | | 53.308 | | - | | 53.308 | Continuing | Continuing | N/A |

**Remarks**

FY20 and FY21 reflects cost categories by program (SSEE (Inc. F and MODS); Spectral, ICADS to increase level of detail.

| Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

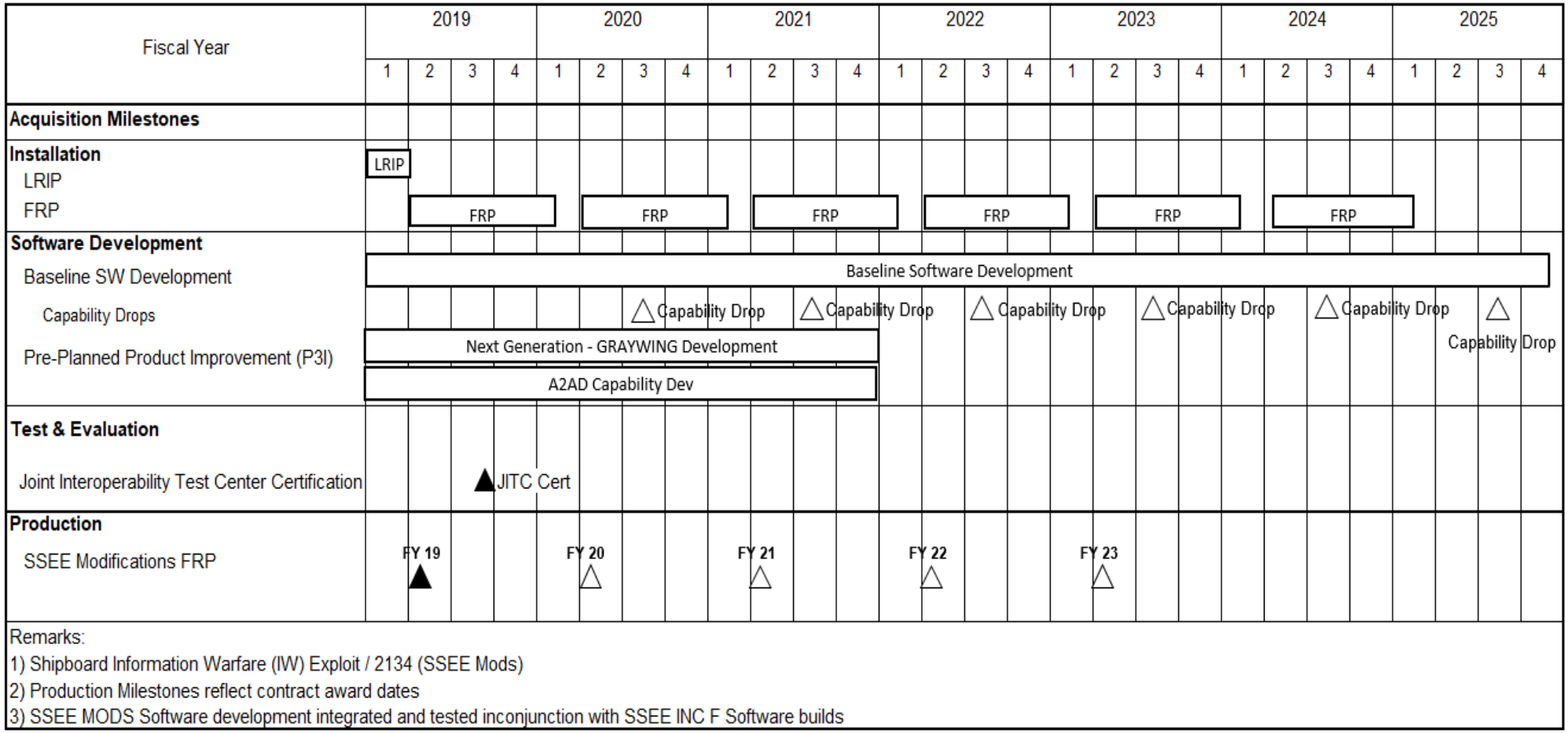
**Spectral**




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 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

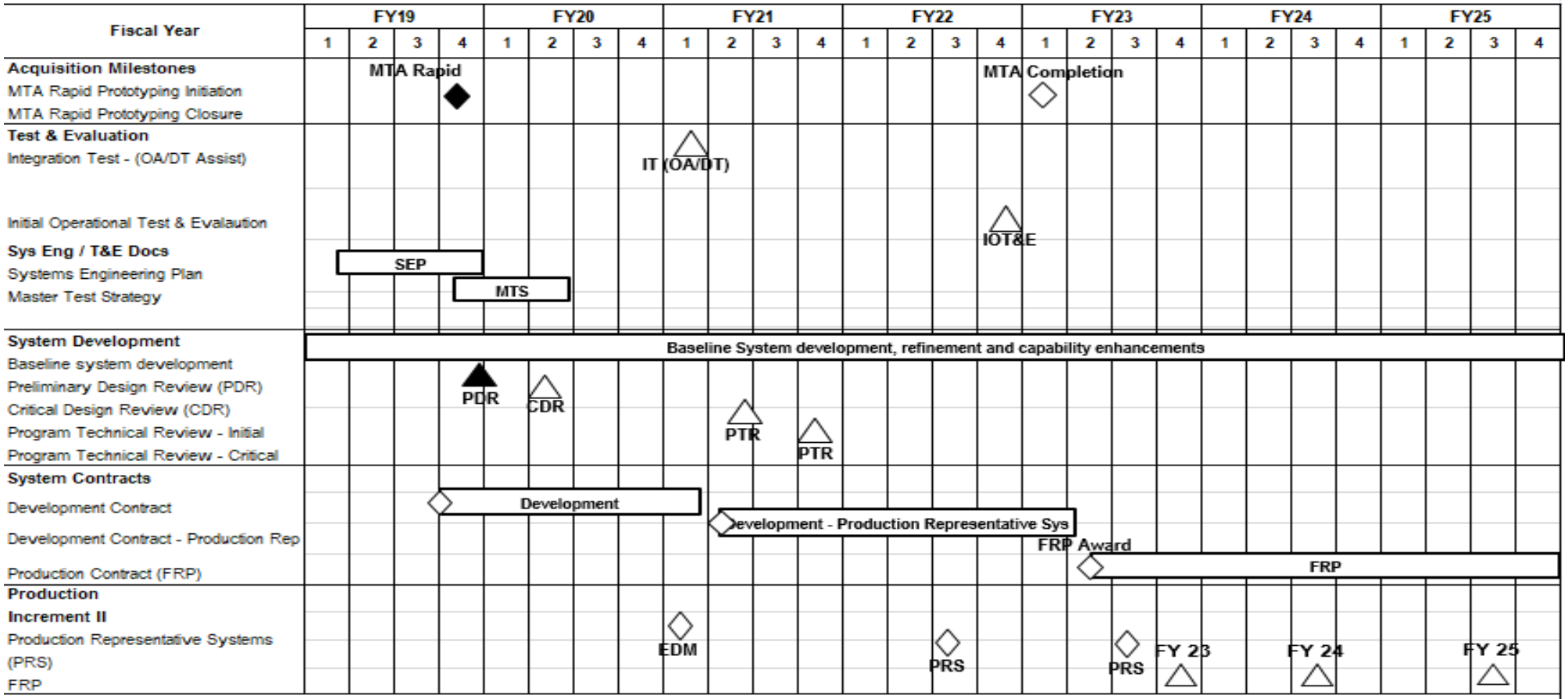
## SSEE Modifications




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 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

**ICADS INC II**

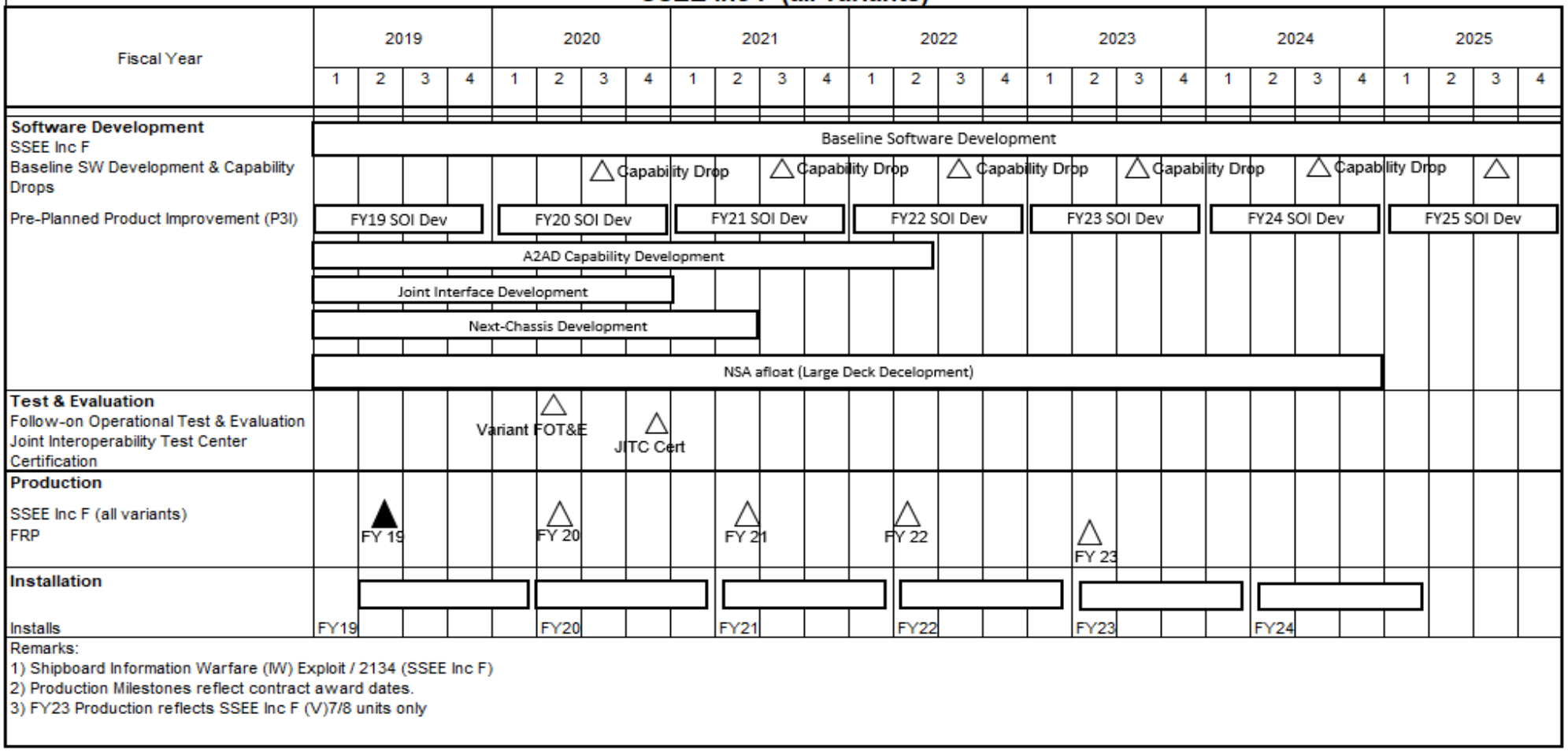



**Remarks:**

1) Shipboard Information Warfare (IW) Exploit / 2134 (ICADS Inc II)
2) Production Milestones reflect contract award dates

| Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

## SSEE Inc F (all variants)




Remarks:
1) Shipboard Information Warfare (IW) Exploit / 2134 (SSEE Inc F)
2) Production Milestones reflect contract award dates.
3) FY23 Production reflects SSEE Inc F (V)7/8 units only

| Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***SSEE Inc F*** | | | | |
| Test & Evaluation: Inc F - Joint Integration Test Command (JITC) Certification (FY20) | 4 | 2020 | 4 | 2020 |
| Test & Evaluation: Inc F - Follow On Test and Evaluation (FOT&E) | 2 | 2020 | 2 | 2020 |
| Production: Inc F - FY19 FRP Production Milestone | 2 | 2019 | 2 | 2019 |
| Production: Inc F - FY20 FRP Production Milestone | 2 | 2020 | 2 | 2020 |
| Production: Inc F - FY21 FRP Production Milestone | 2 | 2021 | 2 | 2021 |
| Production: Inc F - FY22 FRP Production Milestone | 2 | 2022 | 2 | 2022 |
| Production: Inc F - FY23 FRP Production Milestone | 2 | 2023 | 2 | 2023 |
| Software Development: Inc F - Baseline Software Development | 1 | 2019 | 4 | 2025 |
| Software Development: Inc F - FY20 Capability Drop | 3 | 2020 | 3 | 2020 |
| Software Development: Inc F - FY21 Capability Drop | 3 | 2021 | 3 | 2021 |
| Software Development: Inc F - FY22 Capability Drop | 3 | 2022 | 3 | 2022 |
| Software Development: Inc F - FY23 Capability Drop | 3 | 2023 | 3 | 2023 |
| Software Development: Inc F - FY24 Capability Drop | 3 | 2024 | 3 | 2024 |
| Software Development: Inc F - FY25 Capability Drop | 3 | 2025 | 3 | 2025 |
| Software Development: Inc F - FY19 SOI Development | 1 | 2019 | 4 | 2019 |
| Software Development: Inc F - FY20 SOI Development | 1 | 2020 | 4 | 2020 |
| Software Development: Inc F - FY21 SOI Development | 1 | 2021 | 4 | 2021 |
| Software Development: Inc F - FY22 SOI Development | 1 | 2022 | 4 | 2022 |
| Software Development: Inc F - FY23 SOI Development | 1 | 2023 | 4 | 2023 |
| Software Development: Inc F - FY24 SOI Development | 1 | 2024 | 4 | 2024 |
| Software Development: Inc F - FY25 SOI Development | 1 | 2025 | 4 | 2025 |

| Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| Software Development: Inc F - A2AD Capability Development | 1 | 2019 | 2 | 2022 |
| Software Development: Inc F - Joint Interface Development | 1 | 2019 | 4 | 2020 |
| Software Development: Inc F - Next-Gen Chassis Development | 1 | 2019 | 2 | 2021 |
| Software Development: Inc F - NSA Afloat (Large Deck Development | 1 | 2019 | 4 | 2024 |
| Installation: Inc F - FRP Installation FY19 | 2 | 2019 | 1 | 2020 |
| Installation: Inc F - FRP Installation FY20 | 2 | 2020 | 1 | 2021 |
| Installation: Inc F - FRP Installation FY21 | 2 | 2021 | 1 | 2022 |
| Installation: Inc F - FRP Installation FY22 | 2 | 2022 | 1 | 2023 |
| Installation: Inc F - FRP Installation FY23 | 2 | 2023 | 1 | 2024 |
| Installation: Inc F - FRP Installation FY24 | 2 | 2024 | 1 | 2025 |
| ***Spectral*** | | | | |
| Spectral - Dev RFP Decision | 4 | 2019 | 4 | 2019 |
| Spectral - Milestone B | 1 | 2021 | 1 | 2021 |
| Spectral - Build Decision (BD) 1 | 2 | 2023 | 2 | 2023 |
| Spectral - Build Decision (BD) 2 | 3 | 2024 | 3 | 2024 |
| Spectral - Limited Deployment Decision (LDD)/ Milestone C | 2 | 2023 | 2 | 2023 |
| Spectral - Full Rate Production | 1 | 2025 | 1 | 2025 |
| Spectral - Engieering Design Models (EDM) Ashore | 2 | 2022 | 2 | 2022 |
| Spectral - EDM Afloat | 1 | 2023 | 1 | 2023 |
| Spectral - EDM Development | 4 | 2019 | 2 | 2024 |
| Spectral - Capability Drop | 4 | 2019 | 2 | 2024 |
| Spectral - Advanced RF Aperture Development | 1 | 2021 | 4 | 2025 |
| Spectral - Fleet Capability Release 1 | 1 | 2023 | 3 | 2024 |
| Spectral - Fleet Capability Release 2 | 2 | 2024 | 4 | 2025 |
| Spectral - Test Evaluation Master Plan (TEMP) | 1 | 2019 | 3 | 2020 |

| Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| Spectral - EDM Integration Test (EDM IT) | 4 | 2022 | 4 | 2022 |
| Spectral - FCR-1 (IT) | 2 | 2024 | 2 | 2024 |
| Spectral - Initial Operational Test & Evaluation (IOT&E) | 3 | 2024 | 4 | 2024 |
| Spectral - Operational Assessment (OA) | 1 | 2023 | 1 | 2023 |
| Spectral - Low Rate Initial Production (LRIP) FY23 | 2 | 2023 | 2 | 2023 |
| Spectral - Low Rate Initial Production (LRIP) FY24 | 2 | 2024 | 2 | 2024 |
| Spectral - Low Rate Initial Production (LRIP) FY25 | 2 | 2025 | 2 | 2025 |
| ***SSEE Modifications*** | | | | |
| SSEE Modifications - LRIP Installation FY18 | 1 | 2019 | 1 | 2019 |
| SSEE Modifications - FRP Installation FY19 | 2 | 2019 | 1 | 2020 |
| SSEE Modifications - FRP Installation FY20 | 2 | 2020 | 1 | 2021 |
| SSEE Modifications - FRP Installation FY21 | 2 | 2021 | 1 | 2022 |
| SSEE Modifications - FRP Installation FY22 | 2 | 2022 | 1 | 2023 |
| SSEE Modifications - FRP Installation FY23 | 2 | 2023 | 1 | 2024 |
| SSEE Modifications - FRP Installation FY24 | 2 | 2024 | 1 | 2025 |
| SSEE Modifications - Baseline Software Development | 1 | 2019 | 4 | 2025 |
| SSEE Modifications - FY20 Capability Drop | 3 | 2020 | 3 | 2020 |
| SSEE Modifications - FY21 Capability Drop | 3 | 2021 | 3 | 2021 |
| SSEE Modifications - FY22 Capability Drop | 3 | 2022 | 3 | 2022 |
| SSEE Modifications - FY23 Capability Drop | 3 | 2023 | 3 | 2023 |
| SSEE Modifications - FY24 Capability Drop | 3 | 2024 | 3 | 2024 |
| SSEE Modifications - FY25 Capability Drop | 3 | 2025 | 3 | 2025 |
| SSEE Modifications - Next Generation - Graywing Development | 1 | 2019 | 4 | 2021 |
| SSEE Modifications - A2AD Capability Development | 1 | 2019 | 4 | 2021 |
| SSEE Modifications - Joint Interoperability Test Center Certification (JITC Cert) | 3 | 2019 | 3 | 2019 |

| Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| SSEE Modifications - FY19 FRP Production Modification | 2 | 2019 | 2 | 2019 |
| SSEE Modifications - FY20 FRP Production Modification | 2 | 2020 | 2 | 2020 |
| SSEE Modifications - FY21 FRP Production Modification | 2 | 2021 | 2 | 2021 |
| SSEE Modifications - FY22 FRP Production Modification | 2 | 2022 | 2 | 2022 |
| SSEE Modifications - FY23 FRP Production Modification | 2 | 2023 | 2 | 2023 |
| ***ICADS Inc II*** | | | | |
| Acquisition milestones: MTA Rapid Prototyping Initiation | 4 | 2019 | 4 | 2019 |
| Acquisition milestones: MTA Completion | 1 | 2023 | 1 | 2023 |
| Test & Evaluation: Integration Test - (OA/DT Assist) | 1 | 2021 | 1 | 2021 |
| Test & Evaluation: Initial Operational Test & Evaluation (IOT&E) | 4 | 2022 | 4 | 2022 |
| Test & Evaluation: System Engineering Plan (SEP) | 1 | 2019 | 4 | 2019 |
| Test & Evaluation: Master Test Strategy (MTS) | 4 | 2019 | 2 | 2020 |
| Sys Eng / T&E Docs: Baseline System Development, Refinement and Capability Enhancements | 1 | 2019 | 1 | 2025 |
| Sys Eng / T&E Docs: Preliminary Design Review (PDR) | 4 | 2019 | 4 | 2019 |
| Sys Eng / T&E Docs: Critical Design Review (CDR) | 2 | 2020 | 2 | 2020 |
| Sys Eng / T&E Docs: Program Technical Review - Initial (PTR) | 2 | 2021 | 2 | 2021 |
| Sys Eng / T&E Docs: Program Technical Review - Critical (PTR) | 4 | 2021 | 4 | 2021 |
| System Contracts: Development Contract | 4 | 2019 | 1 | 2021 |
| System Contracts: Development Contract - Production Representative System | 2 | 2021 | 2 | 2023 |
| System Contracts: FRP Award | 2 | 2023 | 2 | 2023 |
| System Contracts: Production Contract (FRP) | 2 | 2023 | 4 | 2025 |
| Production Increment II: EDM | 1 | 2021 | 1 | 2021 |
| Production Increment II: Production Representative Systems (PRS) 1 | 3 | 2022 | 3 | 2022 |
| Production Increment II: Production Representative Systems (PRS) 2 | 3 | 2023 | 3 | 2023 |
| Production Increment II: FY23 FRP | 4 | 2023 | 4 | 2023 |

| Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2134 / *Shipboard IW Exploit* |

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| Production Increment II: FY24 FRP | 3 | 2024 | 3 | 2024 |
| Production Increment II: FY25 FRP | 3 | 2025 | 3 | 2025 |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | | | | | | | | | | Date: February 2020 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 5 | | | | | R-1 Program Element (Number/Name)<br>PE 0304785N / *Tactical Cryptologic Systems* | | | | Project (Number/Name)<br>2174 / *Distributed Common Ground System-Navy (DCGS-N)* | | | |
| **COST ($ in Millions)** | **Prior Years** | **FY 2019** | **FY 2020** | **FY 2021 Base** | **FY 2021 OCO** | **FY 2021 Total** | **FY 2022** | **FY 2023** | **FY 2024** | **FY 2025** | **Cost To Complete** | **Total Cost** |
| 2174: *Distributed Common Ground System-Navy (DCGS-N)* | 0.000 | 0.000 | 0.583 | 0.592 | - | 0.592 | 0.671 | 0.677 | 0.680 | 0.694 | Continuing | Continuing |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

**Note**

Funding has been realigned into PE 0304785N (Tactical Cryptologic Systems) from PE 0305208N (Distributed Common Ground Sys) Project 2174 (Distributed Common Ground Systems (DCGS)) as part of RDTEN PE Consolidation starting in FY 2020. There are no New Starts associated with this realignment. All budgeted efforts have been previously approved.

**A. Mission Description and Budget Item Justification**

DCGS is a cooperative effort between the services, agencies, and the Department of Defense (DoD) to provide systems capable of receiving, processing, exploiting, and disseminating data from airborne and national reconnaissance platforms. DCGS - Navy (DCGS-N) is the Navy instance of the Under Secretary of Defense, Intelligence (USD (I)) DCGS Family of Systems (FoS). The DoD has defined a DCGS architecture that will be compatible and interoperable across all of the Services Intelligence, Surveillance, and Reconnaissance (ISR) systems and operations. DCGS accesses and ingests data from space borne, airborne, subsurface, and surface ISR collection assets, intelligence databases and intelligence producers. The DCGS Integrated Backbone (DIB) shares data collected across the joint enterprise. Further integration with Defense Intelligence Information Enterprise (DI2E) will enhance access and sharing of ISR information across Joint forces using common enterprise standards and services. DCGS FoS supports Joint Task Force (JTF)-level and below combat operations with critical intelligence for battle management and information dominance to maintain a tactical advantage over adversaries.

DCGS-N system fulfills a critical mission set Afloat and Ashore. DCGS-N processes and exploits tactical and Imagery Intelligence (IMINT) and Signal Intelligence (SIGINT), facilitates precision target geopositioning, mensuration, and imagery capabilities, integrates national IMINT requirements and processing capabilities from the National Geospatial-Intelligence Agency (NGA), and shares Intelligence, Surveillance, Reconnaissance, and Targeting (ISR&T) and Command and Control information via the DIB, DI2E, and Net-Centric Enterprise Services (NCES) standards with a wide range of customers. The DCGS-N program conducts research and assessments of tactically relevant, emerging technologies program insertion to ensure superiority in the intelligence domain.

The DCGS-N Enterprise Node (DEN), which incorporates current DIB standards and DI2E policy, facilitates interoperability and data sharing among the DCGS FoS. DCGS-N complies with the DoD DCGS network architecture. The DCGS-N Analytics Node (DAN) is a cloud based instantiation of the DEN, and is the foundation for DCGS-N to transform DCGS-N into a modernized data environment.

DCGS-N Increment 1 is the Navy's current fielded DCGS ISR&T program of record. The system is actively used by Navy force level ships and shore sites in support of the mission.

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2174 / *Distributed Common Ground System-Navy (DCGS-N)* |

Intelligence Carry-On Program (ICOP) provides Indications and Warnings (I&W), battlespace awareness/visualization and ISR Processing, Exploitation and Dissemination (PED) capabilities in support of Navy surface and expeditionary operations. The ICOP system includes a three-eyed ruggedized workstation that serves as a powerful afloat edge computing device that is capable of operating on all three security domains (Non-Secure Internet Protocol Router (NIPR), Secure Internet Protocol Router (SIPR) and Joint Worldwide Intelligence Communications System (JWICS)) and an antenna/receiver set (called Communications Module 3 - CM3) that is used to ingest, process and exploit airborne sensor data. In addition to supporting multi-intelligence capabilities, Intelligence Carry-On Program (ICOP/CM3 provides an end-to-end Intelligence, Surveillance, and Reconnaissance (ISR) Processing, Exploitation and Dissemination (PED) architecture that includes processing organic shipboard camera systems to support Navy-wide Operational Task (OPTASK) Visual Information (Strategic Communications - "First to the Truth," pattern of life analysis and use of force/rules of engagement decisions). In addition, the ICOP system supports the ability to process and correlate Electronic Intelligence (ELINT) and external Communications Intelligence (COMINT Externals). It integrates mature Commercial Off-the-Shelf (COTS) and Government Off-the-Shelf (GOTS) applications with robust storage, processing and computing capability. ICOP adheres to the Under Secretary of Defense, Intelligence (USD (I)) interoperability mandates and federates with other Joint Distributed Common Ground System (DCGS) users via the DCGS Integrated Backbone (DIB). ICOP data is pushed to the shore-based DCGS Enterprise Node (DEN) for discovery, retrieve, and data enrichment. ICOP enables Unit-level ships and expeditionary customers to become part of the larger Intelligence Community (IC) enterprise.

In FY 2021, DCGS-N Increment 1 will continue modernization, integration and regression testing required to remain aligned with emerging national imagery standards for tech refreshes and End-of-Life Upgrades.

In FY 2021, ICOP will continue development, integration and testing efforts of the ICOP mission module concept and will target a Fleet demonstration/exercise such as NAVY TACTICAL GRID or TRIDENT WARRIOR to test a prototype system. In addition, integration testing with future Navy/Joint technologies to include both airborne and surface platforms will continue. Integration testing will occur on both the SIPR Secret and JWICS Sensitive Compartmented Information (SCI) domains to ensure that the ICOP program is properly aligned to future Navy technologies.

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| ***Title:*** Distributed Common Ground System-Navy (DCGS-N) Increment 1 | 0.000 | 0.133 | 0.141 | 0.000 | 0.141 |
| ***Articles:*** | - | - | - | - | - |
| ***FY 2020 Plans:***<br>In FY 2020, DCGS-N Increment 1 will continue modernization, integration and regression testing required to remain aligned with national imagery standards to be incorporated into technology refreshes for Windows 10 (WIN 10) upgrades | | | | | |
| ***FY 2021 Base Plans:***<br>In FY 2021, DCGS-N Increment 1 will continue modernization, integration and regression testing required to remain aligned with emerging national imagery standards for tech refreshes and End-of-Life Upgrades. | | | | | |
| ***FY 2021 OCO Plans:*** | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2174 / *Distributed Common Ground System-Navy (DCGS-N)* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| N/A<br><br>***FY 2020 to FY 2021 Increase/Decrease Statement:***<br>There is no significant change from FY 2020 to FY 2021. | | | | | |
| ***Title:*** Intelligence Carry-On Program (ICOP) | 0.000 | 0.450 | 0.451 | 0.000 | 0.451 |
| ***Articles:*** | - | - | - | - | - |
| ***FY 2020 Plans:***<br>In FY 2020, ICOP will commence development of a mission module concept to provide the ICOP capability in a shipboard hosted networking server rack. This will potentially allow multiple shipboard users to access the ICOP capability via a shipboard thick/thin client. In addition, ICOP will commence integration and testing with future Navy/Joint technologies to include Project Maven, Minotaur Mission Management System, and future airborne sensors to include but not limited to F-35B Interim FMV capability, P-8 Poseidon, MQ-25 Stingray, MQ-9 Reaper, RQ-21 Black Jack, MQ-4C Triton, and new ship class platforms such as FFG(X), LCS and DDG 1000. All Research, Development, Testing & Evaluation (RDT&E) efforts align to Chief of Naval Operations concepts such as Fleet Design, Navy Tactical Grid, Integrated Fires (IF), Distributed Maritime Operations and Electromagnetic Warfare (EMW).<br><br>***FY 2021 Base Plans:***<br>In FY 2021, ICOP will continue development, integration and testing efforts of the ICOP mission module concept and will target a Fleet demonstration/exercise such as NAVY TACTICAL GRID or TRIDENT WARRIOR to test a prototype system. In addition, integration testing with future Navy/Joint technologies to include both airborne and surface platforms will continue. Integration testing will occur on both the Secure Internet Protocol Router (SIPR)Secret and Joint Worldwide Intelligence Communications System (JWICS) Sensitive Compartmented Information (SCI) domains to ensure that the ICOP program is properly aligned to future Navy technologies.<br><br>***FY 2021 OCO Plans:***<br>N/A<br><br>***FY 2020 to FY 2021 Increase/Decrease Statement:***<br>There is no significant change from FY 2020 to FY 2021. | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 0.000 | 0.583 | 0.592 | 0.000 | 0.592 |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2174 / *Distributed Common Ground System-Navy (DCGS-N)* |

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

| Line Item | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total | FY 2022 | FY 2023 | FY 2024 | FY 2025 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • OPN/2914: *Distributed Common Ground System-Navy (DCGS-N)* | 10.219 | 18.677 | 18.872 | - | 18.872 | 17.457 | 17.720 | 18.118 | 18.483 | 209.073 | 603.757 |
| • RDTEN/0305208N/2174: *Distributed Common Ground System-Navy (DCGS-N)* | 0.222 | 0.000 | 0.000 | - | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 207.388 |

**Remarks**

**D. Acquisition Strategy**

Distributed Common Ground System-Navy(DCGS-N) programs utilize mature Commercial-Off-The-Shelf (COTS) and Governmental-Off-The-Shelf (GOTS) capabilities. The Navy adapts and integrates these capabilities and ensures interoperability with the DCGS Integration Backbone (DIB) standards and Defense Intelligence Information Enterprise (DI2E) policies. Integration of DCGS-N Increment 1 components has transitioned from Government-led to Industry-led based on the award of DCGS-N Increment 1 Prime Mission Product (PMP) contract.

Intelligence Carry-On Program (ICOP) implements a cross-decking methodology that incorporates a two phased delivery, a permanent foundation kit which supports carry-on equipment to include workstation and Communications Module 3 (CM3) antenna / receiver set. This methodology supports speed-to-fleet principles.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy | | | Date: February 2020 |
|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 5 | R-1 Program Element (Number/Name)<br>PE 0304785N / *Tactical Cryptologic Systems* | Project (Number/Name)<br>2174 / *Distributed Common Ground System-Navy (DCGS-N)* | |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Systems Engineering (ICOP) | WR | NIWC PAC : San Diego, CA | 0.000 | 0.000 | | 0.450 | Oct 2019 | 0.451 | Oct 2020 | - | | 0.451 | Continuing | Continuing | Continuing |
| Integration Assembly & Test (Inc 1) | C/CPFF | NSWC China Lake : China Lake, CA | 0.000 | 0.000 | | 0.120 | Jan 2020 | 0.125 | Jan 2021 | - | | 0.125 | Continuing | Continuing | Continuing |
| Government Technical Oversight (Dev) (Inc 1) | WR | NIWC LANT : Charleston, SC | 0.000 | 0.000 | | 0.013 | Jan 2020 | 0.016 | Jan 2021 | - | | 0.016 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 0.000 | 0.000 | | 0.583 | | 0.592 | | - | | 0.592 | Continuing | Continuing | N/A |

**Remarks**

All Prior Year and FY19 cost data is provided under PE 0305208N Project 2174.

| | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 0.000 | 0.000 | | 0.583 | | 0.592 | | - | | 0.592 | Continuing | Continuing | N/A |

**Remarks**

All Prior Year and FY19 cost data is provided under PE 0305208N Project 2174.

| Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2174 / *Distributed Common Ground System-Navy (DCGS-N)* |

CLASSIFICATION:

EXHIBIT R4, Schedule Profile

APPROPRIATION/BUDGET ACTIVITY

**RDT&E, N / BA-5**

| Fiscal Year | 2020 | | | | 2021 | | | | 2022 | | | | 2023 | | | | 2024 | | | | 2025 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2174 DCGS-N | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| **DCGS-N Increment 1 Tech Refresh** | ▲ | | | | FOL/ECP/FC As Req | | | | | | | | | | | | | | | | | | | |
| **ICOP Systems Engineering** | ▲ | Engineering and Test Activities | | | | | | | | | | | | | | | | | | | | | | |

| Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2174 / *Distributed Common Ground System-Navy (DCGS-N)* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***Proj 2174*** | | | | |
| DCGS-N Increment 1 Studies and Design | 1 | 2020 | 4 | 2025 |
| ICOP Systems Engineering and Test Activities | 1 | 2020 | 4 | 2025 |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | | | | | | | | | | Date: February 2020 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 5 | | | | | R-1 Program Element (Number/Name)<br>PE 0304785N / *Tactical Cryptologic Systems* | | | | Project (Number/Name)<br>*2227 / Distributed Common Ground System (DCGS-N) Inc 2* | | | |
| **COST ($ in Millions)** | **Prior Years** | **FY 2019** | **FY 2020** | **FY 2021 Base** | **FY 2021 OCO** | **FY 2021 Total** | **FY 2022** | **FY 2023** | **FY 2024** | **FY 2025** | **Cost To Complete** | **Total Cost** |
| 2227: *Distributed Common Ground System (DCGS-N) Inc 2* | 0.000 | 0.000 | 42.745 | 26.396 | - | 26.396 | 32.063 | 30.089 | 31.287 | 31.994 | Continuing | Continuing |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

**Project MDAP/MAIS Code:** M464

**Note**

Funding has been realigned into PE 0304785N (Tactical Cryptologic Systems) from PE 0305208N (Distributed Common Ground Sys) Project 2227 (Distributed Common Ground System - Navy (DCGS-N) Inc 2) as part of RDTEN Program Element (PE) Consolidation starting in FY 2020. There are no New Starts associated with this realignment. All budgeted efforts have been previously approved.

Cost-To-Complete reflects DCGS-N Increment 2 only. DCGS-N Increment 2 reflects Department of Navy Component Cost Position (CCP).

**A. Mission Description and Budget Item Justification**

The Distributed Common Ground System (DCGS) is a cooperative effort between the services, agencies, and the Department of Defense (DoD) to provide systems capable of receiving, processing, exploiting, and disseminating data from airborne and national reconnaissance platforms. DCGS - Navy (DCGS-N) is the Navy instance of the Under Secretary of Defense, Intelligence (USD (I)) DCGS Family of Systems (FoS). The DoD has defined a DCGS architecture that will be compatible and interoperable across all of the Services Intelligence, Surveillance, and Reconnaissance (ISR) systems and operations to enable information sharing. The DCGS accesses and ingests data from space borne, airborne, subsurface, and surface ISR collection assets, intelligence databases and intelligence producers. DCGS FoS supports Joint Task Force (JTF)-level and below combat operations with critical intelligence for battle management and information dominance to maintain a tactical advantage over adversaries.

DCGS-N fulfills a critical mission set Afloat and Ashore. DCGS-N processes and exploits tactical and Imagery Intelligence (IMINT) and Signal Intelligence (SIGINT), facilitates precision target geopositioning, mensuration, and imagery capabilities, integrates national IMINT requirements and processing capabilities from the National Geospatial-Intelligence Agency (NGA), and shares Intelligence, Surveillance, Reconnaissance, and Targeting (ISR&T) and Command and Control information via enterprise repositories using Net-Centric Enterprise Services (NCES) standards with a wide range of customers. The DCGS-N program conducts research and assessments of tactically relevant, emerging technologies for insertion to ensure superiority in the intelligence domain.

The DCGS-N Enterprise Node (DEN), which incorporates current DCGS-N requirements, standards and policy, facilitates interoperability and data sharing among the DCGS FoS. DCGS-N complies with the DoD DCGS network architecture.
DCGS-N Increment 2 will integrate emergent, transformational Commercial Off-the-Shelf (COTS) and Government Off-the-Shelf (GOTS) technologies in order to streamline Sailor's analytical efforts and improve targeting solutions for the operator, optimizing and compressing the kill chain. DCGS-N Increment 2 will deliver all source fusion and analytical capabilities and integrate Tasking, Collection, Processing, Exploitation, and Dissemination (TCPED) capabilities to optimize the use and analysis of sensor and platform data. DCGS-N Increment 2 leverages enterprise solutions to share information across commands, services, and agencies to promote

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>*2227 / Distributed Common Ground System (DCGS-N) Inc 2* |

shared situational awareness. DCGS-N Increment 2 consists of multiple capability releases that iteratively build up over time and allow for ongoing fleet feedback as the software matures. Each Fleet Capability Release (FCR), enhances afloat ISR capabilities by providing a set of software centric tools to include Multi-INT fusion and analysis, behavior prediction and intelligent knowledge management designed to operate in disconnected or denied communications environment. DCGS-N Increment 2 will insert technology enhancements via incremental software upgrades. Continued development of follow-on releases/Capability Drops (CD's) will be based upon on prioritized Fleet requirements.

DCGS-N Increment 2 will perform technical analyses and engineering efforts associated with implementation of technology to enable rapid introduction of mature, innovative products and technology to address obsolescence and end of support issues.

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| ***Title:*** Distributed Common Ground System-Navy (DCGS-N) Increment 2 | 0.000 | 42.745 | 26.396 | 0.000 | 26.396 |
| ***Articles:*** | - | - | - | - | - |

***FY 2020 Plans:***
In FY 2020, DCGS-N Increment 2 will continue integration, assembly and test of commercial items, Commercial Off-the-Shelf (COTS), and Government Off-the-Shelf (GOTS) components procured for the DCGS-N Increment 2 baseline. Currently this support is provided on several task orders on several contract vehicles. DCGS-N will continue integration of capabilities to ensure DCGS-N Increment 2 interoperability with the multi-service and Intelligence Community DCGS Family of Systems (FoS) and the Consolidated Afloat Networks and Enterprise Services (CANES) system. DCGS-N Increment 2 will install one (1) unit for Initial Operational Test and Evaluation (IOT&E).

DCGS-N Increment 2 will complete integration of a Fleet Capability Release (FCR) and conduct an In Progress Test Review and Integrated Test of the FCR build including rigorous cyber security testing. DCGS-N Increment 2 will continue to integrate a standard software baseline for the DCGS FoS. DCGS-N Increment 2 will begin planning for the next FCR including developing the Requirements Definition Package (RDP), preparing for the Build Technical Review and Build Decision. DCGS-N Increment 2 will continue Passive Targeting Efforts leveraging Office of Naval Research (ONR) Electromagnetic Battle Management (EMBM) Future Naval Capabilities (FNC) to network and fuse Passive Targeting Data. Intelligence Surveillance and Reconnaissance (ISR) funding supports development and integration efforts to fuse Intelligence, Surveillance, Reconnaissance, and Targeting (ISR&T) data collected, exploited and disseminated by ISR systems with other intelligence data and automatically provide to shipboard combat systems to support kinetic (bombs, mortars, missiles, bullets) and non-kinetic fires (electronic attack, lasers, cyber-attack) and more effective exploitation of the electromagnetic

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>*2227 / Distributed Common Ground System (DCGS-N) Inc 2* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| spectrum. ISR systems will play key roles in enabling the national-to-tactical integration necessary for an integrated maritime targeting capability in support of kinetic and non-kinetic fires.<br><br>***FY 2021 Base Plans:***<br>In FY 2021, DCGS-N Increment 2 efforts will focus on continuation of software integration and improvements during individual software sprints resulting in capability drops that are ready for testing/fielding. Funding supports development and integration efforts to fuse Intelligence, Surveillance, Reconnaissance, and Targeting (ISR&T) data collected, exploited and disseminated by ISR systems with other intelligence data to support kinetic (bombs, missiles, bullets) and non-kinetic fires (electronic attack, cyber-attack) to improve exploitation of the electromagnetic spectrum. Using an agile software development model, efforts will focus on completion of features via multiple releases. Additional FY 2021 efforts will include the development and integration of automated testing. The use of automated testing is an integral component of software integration, as it allows for implementation of ongoing, formalized testing that is extremely time intensive to implement manually. Test automation provides reliable and consistent testing of code to allow for continuous delivery and analysis. However, this methodology also increases the number of required developmental and operational test events, and Fielding Decisions. FY 2021 funding will also support these increased test events and reviews. Distributed Common Ground System-Navy (DCGS-N) Increment 2 will continue development and integration efforts to support Risk Assessment Level Of Test (RALOT) events to inform the scope of Developmental Test and Evaluation (DT&E) and Initial Operational Test and Evaluation (IOT&E) aligning to the completion of features, capability improvements, and technology insertion.<br><br>DCGS-N Increment 2 also anticipates commencing transition of developmental capabilities, such as Navy Tactical Data Manager (NTDM), among others in order to address emergent threats. The importance of continual technology assessment cannot be understated, particularly as it relates to the development of plans to conduct future integration of advanced algorithms and analytics that advance the concept of operations for the intelligence community. In FY 2021, DCGS-N will continue to work closely with governmental and non-governmental agencies and organizations in order to align fleet requirements with capabilities across various Technology Readiness Levels (TRLs). Those capabilities will be mapped into the DCGS-N Increment 2 technology insertion plan.<br><br>***FY 2021 OCO Plans:***<br>N/A<br><br>***FY 2020 to FY 2021 Increase/Decrease Statement:*** | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>*2227 / Distributed Common Ground System (DCGS-N) Inc 2* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| The funding decrease from FY 2020 to FY 2021 of $16.349M is attributed to the transition from RDTEN efforts to production and installation. | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 0.000 | 42.745 | 26.396 | 0.000 | 26.396 |

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

| Line Item | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total | FY 2022 | FY 2023 | FY 2024 | FY 2025 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • OPN/2914: *Distributed Common Ground System-Navy (DCGS-N)* | 10.219 | 18.677 | 18.872 | - | 18.872 | 17.457 | 17.720 | 18.118 | 18.483 | 209.073 | 603.757 |
| • RDTEN/0305208N/2227: *Distributed Common Ground System (DCGS-N) Inc 2* | 45.116 | 0.000 | 0.000 | - | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 130.708 | 280.002 |

**Remarks**

**D. Acquisition Strategy**

The DCGS-N Increment 2 acquisition is based on the Department of Defense Instruction (DODI) 5000.02, Model 3, for incrementally fielded software intensive programs.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy | | | Date: February 2020 |
|---|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>*2227 / Distributed Common Ground System (DCGS-N) Inc 2* | |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Integration Assembly & Test | WR | NIWC PAC : San Diego, CA | 0.000 | 0.000 | | 5.580 | Oct 2019 | 6.601 | Oct 2020 | - | | 6.601 | Continuing | Continuing | Continuing |
| Primary Hardware Development | WR | NIWC PAC : San Diego, CA | 0.000 | 0.000 | | 2.727 | Oct 2019 | 0.000 | Oct 2020 | - | | 0.000 | Continuing | Continuing | Continuing |
| Integration Assembly Test & Eval | C/CPFF | NIWC PAC : San Diego, CA | 0.000 | 0.000 | | 25.356 | Nov 2019 | 11.865 | Nov 2020 | - | | 11.865 | Continuing | Continuing | Continuing |
| Integration Assembly & Test | C/CPFF | NIWC LANT : Charleston, SC | 0.000 | 0.000 | | 1.762 | Nov 2019 | 1.460 | Nov 2020 | - | | 1.460 | Continuing | Continuing | Continuing |
| Government Technical Oversite (Dev) | WR | NIWC LANT : Charleston, SC | 0.000 | 0.000 | | 1.493 | Oct 2019 | 1.319 | Oct 2020 | - | | 1.319 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 0.000 | 0.000 | | 36.918 | | 21.245 | | - | | 21.245 | Continuing | Continuing | N/A |

**Remarks**

FY19 cost data is provided under PE 0305208N Project 2227.

**Support ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Development Support | C/CPFF | SAIC : Columbia, MD | 0.000 | 0.000 | | 1.745 | Feb 2020 | 1.265 | Feb 2021 | - | | 1.265 | Continuing | Continuing | Continuing |
| Development Support | WR | NIWC LANT : Charleston, SC | 0.000 | 0.000 | | 0.171 | Oct 2019 | 0.151 | Oct 2020 | - | | 0.151 | Continuing | Continuing | Continuing |
| Integrated Logistics Support | WR | NIWC LANT : Charleston, SC | 0.000 | 0.000 | | 0.053 | Oct 2019 | 0.053 | Oct 2020 | - | | 0.053 | Continuing | Continuing | Continuing |
| Integrated Logistics Support | C/CPFF | SAIC : Columbia, MD | 0.000 | 0.000 | | 0.330 | Feb 2020 | 0.330 | Feb 2021 | - | | 0.330 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 0.000 | 0.000 | | 2.299 | | 1.799 | | - | | 1.799 | Continuing | Continuing | N/A |

**Remarks**

FY19 cost data is provided under PE 0305208N Project 2227.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>*2227 / Distributed Common Ground System (DCGS-N) Inc 2* |

**Test and Evaluation ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Developmental Test & Evaluation | C/CPFF | SAIC : Columbia, MD | 0.000 | 0.000 | | 0.265 | Feb 2020 | 0.315 | Feb 2021 | - | | 0.315 | Continuing | Continuing | Continuing |
| Developmental Test & Evaluation | WR | NIWC LANT : Charleston, SC | 0.000 | 0.000 | | 0.451 | Oct 2019 | 0.486 | Oct 2020 | - | | 0.486 | Continuing | Continuing | Continuing |
| Developmental Test & Evaluation | C/CPFF | JITC : Fort Meade, MD | 0.000 | 0.000 | | 0.209 | Dec 2019 | 0.238 | Dec 2020 | - | | 0.238 | Continuing | Continuing | Continuing |
| Developmental Test & Evaluation | C/CPFF | COTF : Norfolk, VA | 0.000 | 0.000 | | 0.420 | Nov 2019 | 0.455 | Nov 2020 | - | | 0.455 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 0.000 | 0.000 | | 1.345 | | 1.494 | | - | | 1.494 | Continuing | Continuing | N/A |

**Remarks**

FY19 cost data is provided under PE 0305208N Project 2227.

**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Travel | Allot | NAVWAR : San Diego, CA | 0.000 | 0.000 | | 0.241 | Nov 2019 | 0.260 | Nov 2020 | - | | 0.260 | Continuing | Continuing | Continuing |
| Government Engineering Support | WR | NIWC LANT : Charleston, SC | 0.000 | 0.000 | | 0.200 | Nov 2019 | 0.150 | Nov 2020 | - | | 0.150 | Continuing | Continuing | Continuing |
| Program Management Support | C/CPFF | BAH : San Diego, CA | 0.000 | 0.000 | | 1.159 | Nov 2019 | 0.950 | Nov 2020 | - | | 0.950 | Continuing | Continuing | Continuing |
| Program Management Support | WR | NIWC LANT : Charleston, SC | 0.000 | 0.000 | | 0.290 | Oct 2019 | 0.248 | Oct 2020 | - | | 0.248 | Continuing | Continuing | Continuing |
| Program Management Support | WR | NIWC PAC : San Diego, CA | 0.000 | 0.000 | | 0.293 | Oct 2019 | 0.250 | Oct 2020 | - | | 0.250 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 0.000 | 0.000 | | 2.183 | | 1.858 | | - | | 1.858 | Continuing | Continuing | N/A |

**Remarks**

FY19 cost data is provided under PE 0305208N Project 2227.

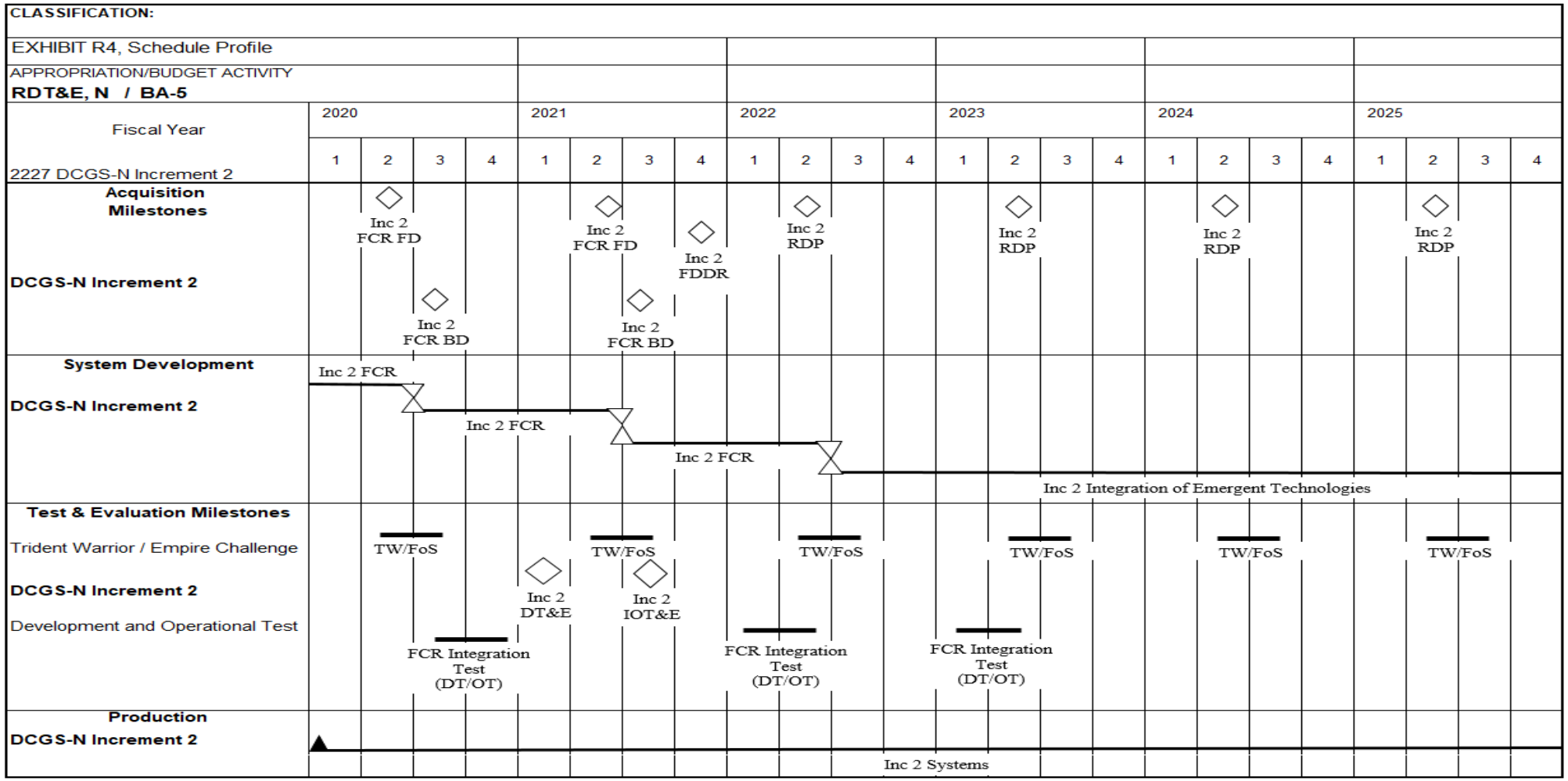
| Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy | | | Date: February 2020 |
|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 5 | R-1 Program Element (Number/Name)<br>PE 0304785N / *Tactical Cryptologic Systems* | Project (Number/Name)<br>*2227 / Distributed Common Ground System (DCGS-N) Inc 2* | |

| | Prior Years | FY 2019 | | FY 2020 | | FY 2021 Base | | FY 2021 OCO | | FY 2021 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 0.000 | 0.000 | | 42.745 | | 26.396 | | - | | 26.396 | Continuing | Continuing | N/A |

**Remarks**

FY19 cost data is provided under PE 0305208N Project 2227.

| Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>*2227 / Distributed Common Ground System (DCGS-N) Inc 2* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>*2227 / Distributed Common Ground System (DCGS-N) Inc 2* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***Proj 2227*** | | | | |
| DCGS-N Inc 2 FCR Fielding Decision (FD) FY20 | 2 | 2020 | 2 | 2020 |
| DCGS-N Inc 2 FCR Build Decision (BD) FY20 | 3 | 2020 | 3 | 2020 |
| DCGS-N Inc 2 FCR Fielding Decision (FD) FY21 | 2 | 2021 | 2 | 2021 |
| DCGS-N Inc 2 FCR Build Decision (BD) FY21 | 3 | 2021 | 3 | 2021 |
| DCGS-N Inc 2 FDDR | 4 | 2021 | 4 | 2021 |
| DCGS-N Inc 2 Requirements Definition Package (RDP) FY22 | 2 | 2022 | 2 | 2022 |
| DCGS-N Inc 2 Requirements Definition Package (RDP) FY23 | 2 | 2023 | 2 | 2023 |
| DCGS-N Inc 2 Requirements Definition Package (RDP) FY24 | 2 | 2024 | 2 | 2024 |
| DCGS-N Inc 2 Requirements Definition Package (RDP) FY25 | 2 | 2025 | 2 | 2025 |
| DCGS-N Inc 2 FCR Development FY20 | 1 | 2020 | 2 | 2020 |
| DCGS-N Inc 2 FCR Development FY21 | 2 | 2020 | 2 | 2021 |
| DCGS-N Inc 2 FCR Development FY22 | 2 | 2021 | 2 | 2022 |
| DCGS-N Inc 2 Integration of Emergent Technologies | 2 | 2022 | 4 | 2025 |
| Trident Warrior/DCGS Family of Systems (FoS) 2020 | 2 | 2020 | 3 | 2020 |
| DCGS-N Inc 2 FCR Integrated Test (DT/OT) FY20 | 3 | 2020 | 4 | 2020 |
| DCGS-N Inc 2 DT&E | 1 | 2021 | 1 | 2021 |
| Trident Warrior/DCGS Family of Systems (FoS) 2021 | 2 | 2021 | 3 | 2021 |
| DCGS-N Inc 2 IOT&E | 3 | 2021 | 3 | 2021 |
| DCGS-N Inc 2 FCR Integrated Test (DT/OT) FY22 | 1 | 2022 | 2 | 2022 |
| Trident Warrior/DCGS Family of Systems (FoS) 2022 | 2 | 2022 | 3 | 2022 |
| DCGS-N Inc 2 FCR Integrated Test (DT/OT) FY23 | 1 | 2023 | 2 | 2023 |

| Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>*2227 / Distributed Common Ground System (DCGS-N) Inc 2* |

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| Trident Warrior/DCGS Family of Systems (FoS) 2023 | 2 | 2023 | 3 | 2023 |
| Trident Warrior/DCGS Family of Systems (FoS) 2024 | 2 | 2024 | 3 | 2024 |
| Trident Warrior/DCGS Family of Systems (FoS) 2025 | 2 | 2025 | 3 | 2025 |
| DCGS-N Inc 2 Procurement | 1 | 2020 | 4 | 2025 |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | | Date: February 2020 |
|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 5 | R-1 Program Element (Number/Name)<br>PE 0304785N / *Tactical Cryptologic Systems* | Project (Number/Name)<br>2351 / *MDA* | |

| COST ($ in Millions) | Prior Years | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total | FY 2022 | FY 2023 | FY 2024 | FY 2025 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2351: *MDA* | 0.000 | 0.000 | 0.000 | 4.000 | - | 4.000 | 4.000 | 4.000 | 4.000 | 4.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

**A. Mission Description and Budget Item Justification**

The Maritime Domain Awareness (MDA) Program of Record portfolio contains capabilities which provide worldwide over-the-horizon vessel tracking and vessel data to the Intelligence Community (IC), Interagency, Combatant Commanders, Distributed Common Ground System-Navy DCGS-N), Navy Tactical Data Manager (NTDM), and foreign partner nations.

On the classified data fabric, MDA capabilities are centered around SeaLink Advanced Analysis (S2A) which provides a correlated and fused surface track picture from IC sources known as the National All Source Fused Track Service (NAFTS) data feed via the Integrated Broadcast Service (IBS), which provides a track picture to IC systems including Fusion Analysis and Development Effort (FADE) Multi-Intelligence Spatial Temporal (MIST) and THRESHER Maritime. S2A also provides a web interface where users can visualize tracks and run analytics to show track histories, find anomalous vessel behavior, or patterns of life such as rendezvous at sea. S2A began as a Joint Capability Technology Demonstration at Naval Research Laboratory (NRL) and is transitioning in FY20 to the MDA PoR.

On the commercial unclassified internet, the Navy partnered with the Department of Transportation to leverage the Maritime Safety and Security Information System (MSSIS) to create SeaVision, a non-public key infrastructure (PKI) information sharing tool used by the United States Indo-Pacific Command(INDOPACOM), European Command (EUCOM), and Africa Command (AFRICOM) nations to increase maritime security by sharing information. SeaVision's track picture is founded on commercially procured Automated Information System (AIS) data, with additional data from commercial geospatial data, and data contributed by partners such as costal AIS and costal radar. SeaVision is primarily accessed through a web front end where users can visualize tracks, and run a growing set of analytics. SeaVision also has Application Programming Interfaces (APIs) for machine-to-machine data exchange with authorized systems. SeaVision was initiated by the Executive Agent for MDA office, which has since disestablished.

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| ***Title:*** Maritime Domain Awareness | 0.000 | 0.000 | 4.000 | 0.000 | 4.000 |
| ***Articles:*** | - | - | - | - | - |
| ***FY 2020 Plans:***<br>N/A | | | | | |
| ***FY 2021 Base Plans:***<br>The FY21 funding supports the modernization of SeaLink Advanced Analysis (S2A) (from Oracle to Postgres, with increased capabilities) and adds streaming capability to the correlator. Funds will be used for development in SeaVision and Maritime Safety and Security Information System (MSSIS) which are separate, interdependent | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2351 / *MDA* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| systems, as well as development for THRESHER Maritime to satisfy Navy requirements to track and edit Intelligence Broadcast System (IBS) data feed production.<br>***FY 2021 OCO Plans:***<br>N/A<br>***FY 2020 to FY 2021 Increase/Decrease Statement:***<br>FY 2021 funding for MDA will focus on modernization and testing of both capabilities and continuing collaboration with the Intelligence Community (IC) to leverage investments in situational awareness tools like THRESHER Maritime. | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 0.000 | 0.000 | 4.000 | 0.000 | 4.000 |

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

N/A

**Remarks**

**D. Acquisition Strategy**

Maritime Domain Awareness (MDA) will be a sustainment and modernization effort of the Program Executive Office for Command, Control, Communications, Computers, Intelligence, and Space (PEO C4I and Space) instruction for non-ACAT projects.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2351 / *MDA* |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Systems Engineering (MDA) | WR | NRL : Washington, DC | 0.000 | 0.000 | | 0.000 | | 0.600 | Oct 2020 | - | | 0.600 | Continuing | Continuing | Continuing |
| Government Technical Oversight (MDA) | WR | NIWC PAC : San Diego, CA | 0.000 | 0.000 | | 0.000 | | 1.000 | Oct 2020 | - | | 1.000 | 0.000 | 1.000 | - |
| Systems Engineering (MDA) | MIPR | DOT Volpe Center : Cambridge, MA | 0.000 | 0.000 | | 0.000 | | 1.000 | Oct 2020 | - | | 1.000 | 0.000 | 1.000 | - |
| Product Development | MIPR | Classified Contracts : Classified Contracts | 0.000 | 0.000 | | 0.000 | | 1.400 | Oct 2020 | - | | 1.400 | 0.000 | 1.400 | - |
| | | **Subtotal** | 0.000 | 0.000 | | 0.000 | | 4.000 | | - | | 4.000 | Continuing | Continuing | N/A |

| | Prior Years | FY 2019 | | FY 2020 | | FY 2021 Base | | FY 2021 OCO | | FY 2021 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 0.000 | 0.000 | | 0.000 | | 4.000 | | - | | 4.000 | Continuing | Continuing | N/A |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2351 / *MDA* |

CLASSIFICATION: UNCLASSIFIED

EXHIBIT R4, Schedule Profile

APPROPRIATION/BUDGET ACTIVITY

**RDT&E, N / BA-5**

| Fiscal Year | 2020 | | | | 2021 | | | | 2022 | | | | 2023 | | | | 2024 | | | | 2025 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2351 MDA | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| **MDA Systems Engineering Development** | | | | | △ | | | | | | | | | | | | | | | | | | | |

| Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>2351 / *MDA* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***Proj 2351*** | | | | |
| MDA Engineering and Development | 1 | 2021 | 1 | 2025 |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | | Date: February 2020 |
|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 5 | R-1 Program Element (Number/Name)<br>PE 0304785N / *Tactical Cryptologic Systems* | Project (Number/Name)<br>3091 / *Advanced Cryptological Sys Eng (CCOP)* | |

| COST ($ in Millions) | Prior Years | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total | FY 2022 | FY 2023 | FY 2024 | FY 2025 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3091: *Advanced Cryptological Sys Eng (CCOP)* | 0.000 | 0.000 | 4.515 | 4.638 | - | 4.638 | 4.681 | 4.829 | 4.928 | 5.027 | Continuing | Continuing |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

**Note**

Funding has been realigned into PE 0304785N (Tactical Cryptologic Systems) from PE 0204574N (Advanced Cryptologic Systems Engineering) Project 3091 (Cryptologic Carry On Program (CCOP)) as part of RDTEN PE Consolidation starting in FY 2020. There are no New Starts associated with this realignment. All budgeted efforts have been previous approved.

**A. Mission Description and Budget Item Justification**

The Advanced Cryptologic Systems Engineering - CCOP rapidly develops and fields state-of-the-art signal acquisition capabilities in response to Combatant Command requirements to provide augmentable, quick-reaction surface, subsurface and airborne cryptologic carry-on capabilities. There are approximately 124 cryptologic capable surface ships and shore sites in the current Naval inventory; each is a potential user of this carry-on equipment, depending on deployment schedules and the tempo of operations. In addition, there are other numerous Naval platforms (including U.S. Coast Guard and USNS) that could serve as potential users. This funding line provides resources to enable rapid transition of available Commercial Off-The-Shelf (COTS) and Government Off -The-Shelf (GOTS) technologies that apply to Fleet requirements for carry-on system functionalities. These technologies typically require various levels of integration to leverage on-board systems providing system and mission management, product reporting, and data analysis. COTS / GOTS system documentation and training materials require adaptation or modification to meet fleet operator requirements, or entirely new training materials may need to be developed. Prior to operational deployment, systems must be systematically tested to ensure suitable and reliable operation, tested for network vulnerabilities if connected to shipboard Local Area Networks, and tested relative to interoperability requirements. Certification testing is conducted to meet Office of Naval Intelligence security requirements, and network testing is conducted in accordance with Information Technology (IT) requirements to allow connection to Navy networks. Funding will also provide resources to address rapid deployment of enhancements or improvements to the common hardware and/or software baseline of all other carry-on subsystems to meet emergent requirements. Funding will support 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 which is then provided to shipboard combat systems to support kinetic (bombs, mortars, missiles, bullets, etc.) and non-kinetic fires (electronic attack, lasers, cyber) in order to enable a more agile, effective and complete exploitation of the electromagnetic spectrum.

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| ***Title:*** Advanced Cryptological Sys Eng - CCOP | 0.000 | 4.515 | 4.638 | 0.000 | 4.638 |
| ***Articles:*** | - | - | - | - | - |
| ***FY 2020 Plans:*** | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>3091 / *Advanced Cryptological Sys Eng (CCOP)* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| Continue to integrate, test, and document identified COTS and GOTS technologies and subsystems to meet emergent and on-going Fleet requirements as specified in the Signal of Interest (SOI) and target threat list. Continue to develop upgrades to existing systems and subsystems according to FY20 Fleet requirements and Integrated Fleet Priority lists. Funds aided the development of new signal processing algorithms and software based solutions to enable rapid transition of capability to permanently installed Ship's Signal Exploitation Space (SSES) systems, including SSEE Family of Systems (FoS) and its variants. Continue to research and develop Adaptive Mission Modules for rapid insertion to counter specific threats or provide intelligence in specific areas of operation. Continue engineering and software development of the next generation Red Falcon capabilities using common data formatting and hardware backplane standards. More details are available at higher classification.<br>***FY 2021 Base Plans:***<br>In FY 2021, Cryptologic Carry On Program (CCOP) will continue to integrate, test, and document identified Commercial Off the Shelf (COTS) and Government Off the Shelf (GOTS) augmentable technologies and subsystems to meet emergent Fleet requirements as specified in the Signal of Interest (SOI) and target threat lists. Continue to develop upgrades to existing systems and subsystems according to Fleet requirements and Integrated Fleet Priority lists. Continue to develop new signal processing algorithms and software based solutions to continue enabling rapid transition of capability to permanently installed SSES systems, including SSEE FoS and its variants. Continue research and development of Adaptive Mission Modules for rapid insertion to counter specific threats or provide intelligence in specific areas of operation. More details are available at higher classification.<br>***FY 2021 OCO Plans:***<br>N/A<br>***FY 2020 to FY 2021 Increase/Decrease Statement:***<br>The funding increase from FY2020 to FY2021 supports additional security architecture requirements and testing of emergent developed capabilities. | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 0.000 | 4.515 | 4.638 | 0.000 | 4.638 |

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

| Line Item | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total | FY 2022 | FY 2023 | FY 2024 | FY 2025 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • OPN/3501: *Cryptologic Communications Equip* | 29.141 | 9.510 | 10.063 | - | 10.063 | 11.169 | 11.435 | 11.671 | 11.907 | 0.000 | 213.792 |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>3091 / *Advanced Cryptological Sys Eng (CCOP)* |

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

| Line Item | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total | FY 2022 | FY 2023 | FY 2024 | FY 2025 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • RDTEN/0204574N/3091: *Advanced Cryptological Sys Eng (CCOP)* | 4.244 | 0.000 | 0.000 | - | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 29.390 |

**Remarks**

**D. Acquisition Strategy**

Acquisition, management, and contracting strategies support engineering and manufacturing development by providing funds to Naval Information Warfare Center (NIWC) Atlantic and Pacific, and miscellaneous contractors with management oversight by Naval Information Warfare Systems Command (NAVWAR).

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>3091 / *Advanced Cryptological Sys Eng (CCOP)* |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Software Development | C/CPFF | Classified Contract : Classified Contract | 0.000 | 0.000 | | 2.838 | Jan 2020 | 2.917 | Jan 2021 | - | | 2.917 | Continuing | Continuing | Continuing |
| Software Development | WR | NIWC PAC : San Diego, CA | 0.000 | 0.000 | | 0.556 | Nov 2019 | 0.572 | Nov 2020 | - | | 0.572 | Continuing | Continuing | Continuing |
| Software Development | WR | NIWC LANT : Charleston, SC | 0.000 | 0.000 | | 0.287 | Nov 2019 | 0.295 | Nov 2020 | - | | 0.295 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 0.000 | 0.000 | | 3.681 | | 3.784 | | - | | 3.784 | Continuing | Continuing | N/A |

**Remarks**

FY19 cost data is provided under PE 0204574N Project 3091

**Support ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Systems Engineering | C/CPFF | Classified Contract : Classified Contract | 0.000 | 0.000 | | 0.441 | Jan 2020 | 0.450 | Jan 2021 | - | | 0.450 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 0.000 | 0.000 | | 0.441 | | 0.450 | | - | | 0.450 | Continuing | Continuing | N/A |

**Remarks**

FY19 cost data is provided under PE 0204574N Project 3091

**Test and Evaluation ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Developmental Test & Evaluation | WR | NIWC LANT : Charleston, SC | 0.000 | 0.000 | | 0.182 | Nov 2019 | 0.187 | Nov 2020 | - | | 0.187 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 0.000 | 0.000 | | 0.182 | | 0.187 | | - | | 0.187 | Continuing | Continuing | N/A |

**Remarks**

FY19 cost data is provided under PE 0204574N Project 3091

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>3091 / *Advanced Cryptological Sys Eng (CCOP)* |

**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Program Management Support | WR | NIWC PAC : San Diego, CA | 0.000 | 0.000 | | 0.211 | Nov 2019 | 0.217 | Nov 2020 | - | | 0.217 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 0.000 | 0.000 | | 0.211 | | 0.217 | | - | | 0.217 | Continuing | Continuing | N/A |

**Remarks**

FY19 cost data is provided under PE 0204574N Project 3091

| | Prior Years | FY 2019 | | FY 2020 | | FY 2021 Base | | FY 2021 OCO | | FY 2021 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 0.000 | 0.000 | | 4.515 | | 4.638 | | - | | 4.638 | Continuing | Continuing | N/A |

**Remarks**

FY19 cost data is provided under PE 0204574N Project 3091

| **Exhibit R-4**, **RDT&E Schedule Profile:** PB 2021 Navy | | **Date:** February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>3091 / *Advanced Cryptological Sys Eng (CCOP)* |

**Exhibit R-4, RDT&E Program Schedule Profile**

| Appropriation/Budget Activity | Program Element Name and Number | Project Name and Number |
|---|---|---|
| RDT&E,N / BA 05 | 0304785N Cryptologic Direct Support | Advanced Cryptologic Systems Engineering (CCOP) / 3091 |

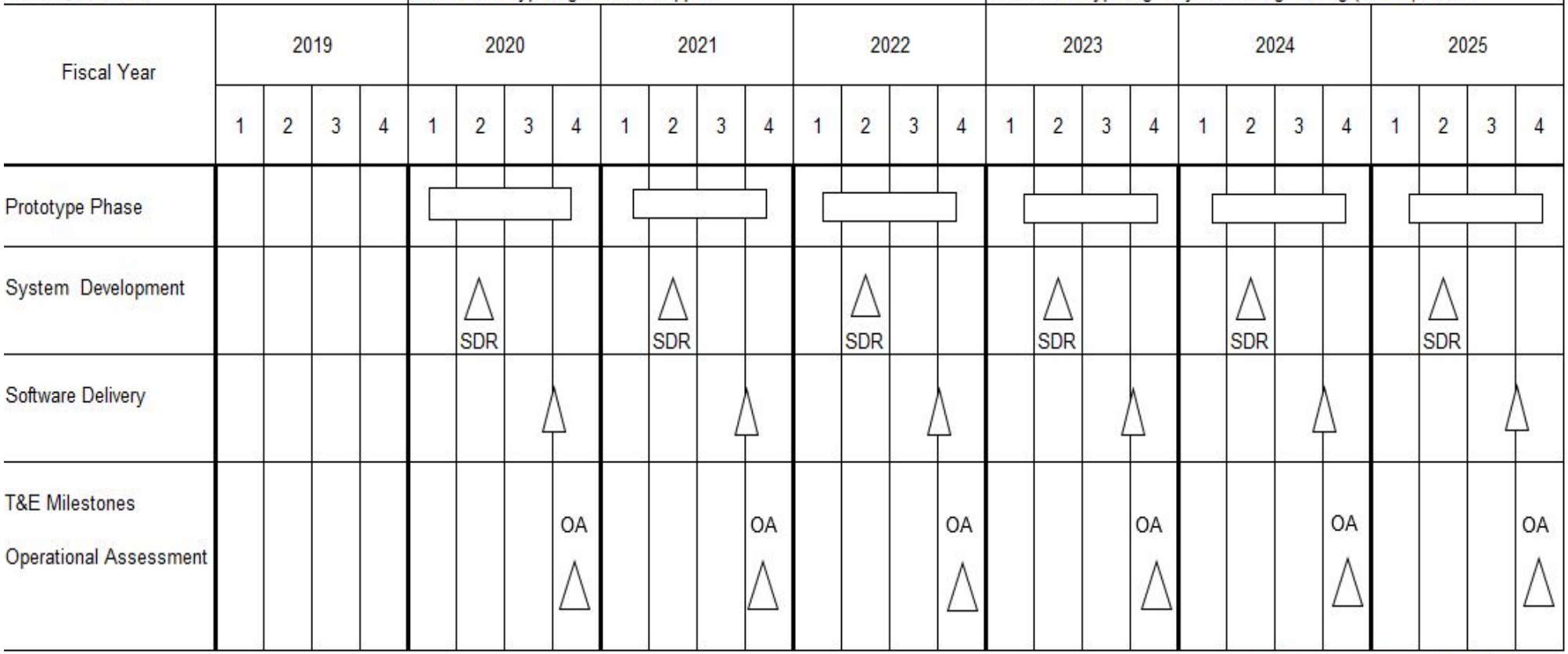



Exhibit R-4, Program Schedule Profile

| Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>3091 / *Advanced Cryptological Sys Eng (CCOP)* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***Proj 3091*** | | | | |
| Prototype Phase - 2020 | 1 | 2020 | 4 | 2020 |
| Prototype Phase - 2021 | 1 | 2021 | 4 | 2021 |
| Prototype Phase - 2022 | 1 | 2022 | 4 | 2022 |
| Prototype Phase - 2023 | 1 | 2023 | 4 | 2023 |
| Prototype Phase -2024 | 1 | 2024 | 4 | 2024 |
| Prototype Phase -2025 | 1 | 2025 | 4 | 2025 |
| System Design Review (SDR) - 2020 | 2 | 2020 | 2 | 2020 |
| System Design Review (SDR) - 2021 | 2 | 2021 | 2 | 2021 |
| System Design Review (SDR) - 2022 | 2 | 2022 | 2 | 2022 |
| System Design Review (SDR) - 2023 | 2 | 2023 | 2 | 2023 |
| System Design Review (SDR) - 2024 | 2 | 2024 | 2 | 2024 |
| System Design Review (SDR) - 2025 | 2 | 2025 | 2 | 2025 |
| Software Delivery - 2020 | 3 | 2020 | 4 | 2020 |
| Software Delivery - 2021 | 3 | 2021 | 4 | 2021 |
| Software Delivery - 2022 | 3 | 2022 | 4 | 2022 |
| Software Delivery - 2023 | 3 | 2023 | 4 | 2023 |
| Software Delivery - 2024 | 3 | 2024 | 4 | 2024 |
| Software Delivery - 2025 | 3 | 2025 | 4 | 2025 |
| Operational Assessment (OA) - 2020 | 4 | 2020 | 4 | 2020 |
| Operational Assessment (OA) - 2021 | 4 | 2021 | 4 | 2021 |
| Operational Assessment (OA) - 2022 | 4 | 2022 | 4 | 2022 |

| Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>3091 / *Advanced Cryptological Sys Eng (CCOP)* |

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| Operational Assessment (OA) - 2023 | 4 | 2023 | 4 | 2023 |
| Operational Assessment (OA) - 2024 | 4 | 2024 | 4 | 2024 |
| Operational Assessment (OA) - 2025 | 4 | 2025 | 4 | 2025 |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | | Date: February 2020 |
|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 5 | R-1 Program Element (Number/Name)<br>PE 0304785N / *Tactical Cryptologic Systems* | Project (Number/Name)<br>3786 / *Tactical Edge Targeting* | |

| COST ($ in Millions) | Prior Years | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total | FY 2022 | FY 2023 | FY 2024 | FY 2025 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3786: *Tactical Edge Targeting* | 0.000 | 0.000 | 0.000 | 22.500 | - | 22.500 | 22.500 | 22.500 | 22.500 | 22.500 | Continuing | Continuing |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

**Note**

Funding for Tactical Edge Targeting was transferred from the Office of the Secretary of Defense (OSD) Strategic Capabilities Office (SCO) beginning in FY21. This was previously funded in a classified budget.

**A. Mission Description and Budget Item Justification**

Tactical Edge Targeting is a series of existing National Technical Means (NTM) sensors that are fused and disseminated through existing networks in real-time to enable and enhanced real-time tracking and targeting capability. The Army, Navy and Air Force are developing longer range weapons that will require reliable and accurate targeting data to detect, classify, identify, and target adversaries. Leverages existing large sensor investments across the U.S. Government (USG). Enhance tracking against hard targets in denied environments and maintains ability to securely communicate with these sensors in real-time. The United States Navy (USN) to leverage existing NTM and planned new sensors and integrate them with existing service architecture to provide a low-cost, survivable real-time tracking and targeting capability to supplement existing sensors. Due to the nature of these projects, specific applications and detailed plans are available at a higher classification level.

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| ***Title:*** Tactical Edge Targeting | 0.000 | 0.000 | 22.500 | 0.000 | 22.500 |
| ***Articles:*** | - | - | - | - | - |
| ***FY 2020 Plans:***<br>FY 2020 funding was executed by the Office of the Secretary of Defense (OSD) Strategic Capabilities Office (SCO) at a higher classification level. | | | | | |
| ***FY 2021 Base Plans:***<br>FY 2021 funding will support the continued research, development, integration, and test of a robust Systems of Systems (SoS) capabilities mission contexts. The Tactical Edge Targeting effort will conduct a series of spiral exercises (Spirals 37-48) derived from SoS mission engineering analyses. These exercise spirals incrementally implement distributed lethality using High Side Fusion (HSF), National Tactical Integration (NTI), and Combat System integration (CSI) in Naval operational contexts. Funding supports development of new capabilities and integration of existing capabilities to fuse Intelligence, Surveillance, Reconnaissance (ISR) data with other intelligence data to support Distributed Maritime Operations (DMO). In FY 2021, Tactical Edge Targeting will work closely with governmental and non-governmental agencies and organizations in order to match fleet | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>3786 / *Tactical Edge Targeting* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2019 | FY 2020 | FY 2021 Base | FY 2021 OCO | FY 2021 Total |
|---|---|---|---|---|---|
| requirements with capabilities across the SoS enterprise. Additional details are held at a higher classification level.<br>***FY 2021 OCO Plans:***<br>N/A<br>***FY 2020 to FY 2021 Increase/Decrease Statement:***<br>Funding for Tactical Edge Targeting was transferred from the Office of the Secretary of Defense (OSD) Strategic Capabilities Office (SCO) beginning in FY21. | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 0.000 | 0.000 | 22.500 | 0.000 | 22.500 |

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

N/A

**Remarks**

**D. Acquisition Strategy**

Program management, acquisition, and contracting strategy development that supports engineering, software development, system integration, and sustainment activities to maintain operational relevance of the capability against evolving threats. Support activities involved with selecting and managing funds to Prime Contractor, Naval Information Warfare Systems Command (NAVWAR) Naval Information Warfare Centers and their associated performers.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>3786 / *Tactical Edge Targeting* |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hardware/Software Development | TBD | Unknown : Unknown | 0.000 | 0.000 | | 0.000 | | 5.655 | Mar 2021 | - | | 5.655 | Continuing | Continuing | Continuing |
| Hardware/Software Development | C/CPFF | JHU APL : Laurel, MD | 0.000 | 0.000 | | 0.000 | | 1.890 | Dec 2020 | - | | 1.890 | Continuing | Continuing | Continuing |
| Hardware/Software Development | WR | NIWC-Pacific : San Diego, CA | 0.000 | 0.000 | | 0.000 | | 0.100 | Oct 2020 | - | | 0.100 | Continuing | Continuing | Continuing |
| Hardware/Software Development | WR | NSWC PCD : Panama City, FL | 0.000 | 0.000 | | 0.000 | | 4.145 | Dec 2020 | - | | 4.145 | Continuing | Continuing | Continuing |
| Hardware/Software Development | C/CPFF | MIT LL : Lexington, MA | 0.000 | 0.000 | | 0.000 | | 1.200 | Mar 2021 | - | | 1.200 | Continuing | Continuing | Continuing |
| Primary Software Development | C/CPFF | Parsons : Colorado Springs, CO | 0.000 | 0.000 | | 0.000 | | 2.000 | Mar 2021 | - | | 2.000 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 0.000 | 0.000 | | 0.000 | | 14.990 | | - | | 14.990 | Continuing | Continuing | N/A |

**Support ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Technical Support | TBD | Unknown : Unknown | 0.000 | 0.000 | | 0.000 | | 0.400 | Mar 2021 | - | | 0.400 | Continuing | Continuing | Continuing |
| Developmental Test and Evaluation Support | MIPR | NRL : Denver, CO | 0.000 | 0.000 | | 0.000 | | 0.150 | Oct 2020 | - | | 0.150 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 0.000 | 0.000 | | 0.000 | | 0.550 | | - | | 0.550 | Continuing | Continuing | N/A |

**Test and Evaluation ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Developmental Test and Evaluation | C/CPFF | METRON : San Diego, CA | 0.000 | 0.000 | | 0.000 | | 0.360 | Dec 2020 | - | | 0.360 | Continuing | Continuing | Continuing |
| Primary Hardware Development | MIPR | Atlantic Test Range : Patuxent River, MD | 0.000 | 0.000 | | 0.000 | | 0.200 | Oct 2020 | - | | 0.200 | Continuing | Continuing | Continuing |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>3786 / *Tactical Edge Targeting* |

**Test and Evaluation ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Primary Hardware Development | MIPR | NRL : Washington, DC | 0.000 | 0.000 | | 0.000 | | 0.200 | Oct 2020 | - | | 0.200 | Continuing | Continuing | Continuing |
| Integration Assembly and Test | MIPR | JITC : Fort Huachuca, AZ | 0.000 | 0.000 | | 0.000 | | 0.050 | Oct 2020 | - | | 0.050 | Continuing | Continuing | Continuing |
| Developmental Test and Evaluation | C/CPFF | METRON : Denver, CO | 0.000 | 0.000 | | 0.000 | | 3.675 | Oct 2020 | - | | 3.675 | 0.000 | 3.675 | - |
| | | **Subtotal** | 0.000 | 0.000 | | 0.000 | | 4.485 | | - | | 4.485 | Continuing | Continuing | N/A |

**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2019 Cost | FY 2019 Award Date | FY 2020 Cost | FY 2020 Award Date | FY 2021 Base Cost | FY 2021 Base Award Date | FY 2021 OCO Cost | FY 2021 OCO Award Date | FY 2021 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Government Engineering Support | WR | NIWC-Pacific : San Diego, CA | 0.000 | 0.000 | | 0.000 | | 0.200 | Oct 2020 | - | | 0.200 | Continuing | Continuing | Continuing |
| Contractor Engineering Support | C/CPFF | NIWC-Pacific : San Diego, CA | 0.000 | 0.000 | | 0.000 | | 0.950 | Dec 2020 | - | | 0.950 | Continuing | Continuing | Continuing |
| Program Management Support | C/CPFF | METRON : Washington, DC | 0.000 | 0.000 | | 0.000 | | 1.325 | Dec 2020 | - | | 1.325 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 0.000 | 0.000 | | 0.000 | | 2.475 | | - | | 2.475 | Continuing | Continuing | N/A |

| | Prior Years | FY 2019 | | FY 2020 | | FY 2021 Base | | FY 2021 OCO | | FY 2021 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 0.000 | 0.000 | | 0.000 | | 22.500 | | - | | 22.500 | Continuing | Continuing | N/A |

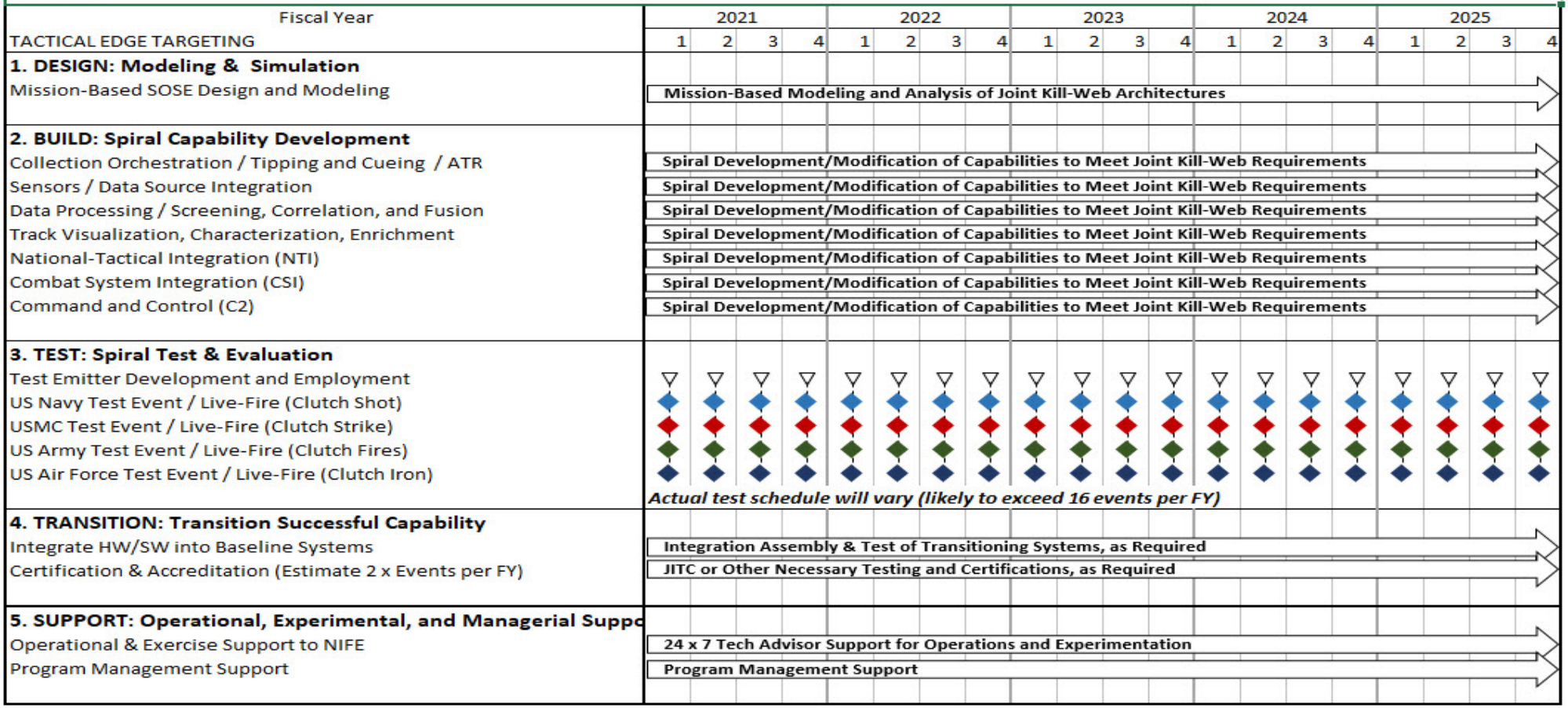
**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>3786 / *Tactical Edge Targeting* |

EXHIBIT R-4, SCHEDULE PROFILE

APPROPRIATION/BUDGET ACTIVITY

**RDT&E, 05**



| Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy | | Date: February 2020 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0304785N / *Tactical Cryptologic Systems* | **Project (Number/Name)**<br>3786 / *Tactical Edge Targeting* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***Proj 3786*** | | | | |
| Mission-Based SOSE Design and Modeling | 1 | 2021 | 4 | 2025 |
| Collection Orchestration/Tipping and Cueing/ATR | 1 | 2021 | 4 | 2025 |
| Sensors/Data Source Integration | 1 | 2021 | 4 | 2025 |
| Data Processing/Screening, Correlation, and Fusion | 1 | 2021 | 4 | 2025 |
| Track Visualization, Characterization, Enrichment | 1 | 2021 | 4 | 2025 |
| National Tactical Integration (NTI) | 1 | 2021 | 4 | 2025 |
| Platform/Combat Systems Integration (CSI) | 1 | 2021 | 4 | 2025 |
| Combat and Control (C2) | 1 | 2021 | 4 | 2025 |
| Spiral Test & Evaluation | 1 | 2021 | 4 | 2025 |
| Transition | 1 | 2021 | 4 | 2025 |
| Support: Operational, Experimental and Managerial Support | 1 | 2021 | 4 | 2025 |