Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy											Date: February 2020	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*							
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	480.318	53.110	73.920	97.968	-	97.968	62.901	51.692	45.750	32.938	Continuing	Continuing
0486: *Tactical Support Center*	138.216	4.991	6.092	6.045	-	6.045	5.718	6.131	6.053	6.177	Continuing	Continuing
2343: *Tactical METOC Applications*	0.000	0.000	12.198	12.119	-	12.119	12.635	13.907	14.193	14.478	Continuing	Continuing
2345: *Fleet METOC Equipment*	0.000	0.000	0.148	2.619	-	2.619	0.577	0.487	0.496	0.506	Continuing	Continuing
2363: *Remote Sensing Capability Development*	0.000	0.000	5.651	7.519	-	7.519	4.927	4.808	4.911	5.011	Continuing	Continuing
3050: *Deployable JT Command and Control*	0.000	0.000	3.159	3.291	-	3.291	3.364	3.424	3.494	3.565	Continuing	Continuing
3260: *Naval Operations Business Logistics Enterprise (NOBLE)*	12.656	33.298	35.126	63.633	-	63.633	32.661	19.857	13.464	0.000	0.000	210.695
3323: *Maritime Tactical Command & Control (MTC2)*	72.741	11.706	8.659	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	93.106
3324: *Navy Air Operations Command and Control (NAOC2)*	14.875	0.978	0.708	0.517	-	0.517	0.748	0.763	0.778	0.793	Continuing	Continuing
9123: *FORCEnet*	241.830	2.137	2.179	2.225	-	2.225	2.271	2.315	2.361	2.408	Continuing	Continuing

Note

To ensure resources are aligned to enable rapid capability delivery, funding has been realigned into PE 0604231N from the following Program Elements/Projects as part of the RDTEN PE Consolidation starting in FY20: PE 0604218N Project 2343, Tactical METOC Applications; PE 0604218N Project 2345, Fleet METOC Equipment; PE 0604218N Project 2363, Remote Sensing Capability Development; PE 0607700N Project 3050, Deployable JT Command and Control.

Section 872 of the National Defense Authorization Act (NDAA) for FY 2018 (P.L. 115-91) directed that starting FY 2021, MTC2 budget controls be realigned from Research, Development, Test & Evaluation (RDT&E) PE 0604231N Project Unit 3323 and Operations, Maintenance, Navy (OMN) PE 0204660N AGSAG 1C1C Project Unit 70100 and consolidated into PE 0608231N (A single Software & Digital Technology Pilot Program under a new Budget Activity (BA08).

A. Mission Description and Budget Item Justification

The Tactical Command System upgrades the Navy's Command, Control, Communications, Computer and Intelligence (C4I) systems and processes C4I information for all warfare mission areas including planning, direction and reconstruction of missions for peacetime, wartime and times of crises.

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy	Date: February 2020
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*

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.

(Proj 0486) Tactical Support Center: The Tactical Mobile program provides agile evolutionary systems and equipment upgrades to support the Maritime Patrol and Reconnaissance Force Commanders with the capability to plan, direct and control the tactical operations of Maritime Patrol and Reconnaissance Aircraft and other assigned units within their respective area of responsibility. Looking ahead, TacMobile provides critical mission planning and reach-back capabilities between the Maritime Patrol and Reconnaissance Aircraft, primarily the P-8A/Poseidon, and MQ-4C/Triton, and the Maritime Intelligence Surveillance and Reconnaissance Enterprise. These operations include littoral, open ocean, and over land long-dwell surveillance, anti-surface warfare, over-the-horizon targeting, counter-drug operations, power projection, antisubmarine warfare, mining, search and rescue, indications and warning, realtime full motion video collection and streaming/ dissemination, and special operations. The missions are supported by Tactical Operations Centers, Mobile Tactical Operations Centers, and Fly Away Kits.

(Proj 2343,2345,2363) Tactical METOC Applications; Fleet METOC Equipment, and Remote Sensing Capability Development: The Air/Ocean Equipment Engineering (AOEE) projects provide new capabilities to support naval combat forces. This program engineers and developmentally tests organic and remote sensors, communication interfaces, and processing and display devices. This equipment is engineered to measure, ingest, store, process, distribute and display conditions of the physical environment that are essential to the optimum employment and performance of naval warfare systems. AOEE also engineers capabilities for shipboard and shore-based tactical systems. A major area of focus for the AOEE program is to provide the engineering development of specialized equipment and measurement capabilities that are intended to monitor specific conditions of the physical environment in hostile and remote areas in response to fleet demand signals for increased sensing capability and capacity to support battlespace collections and prediction on short to intermediate time scales. With such capabilities, the war fighters' situational awareness of the operational effects of the physical environment are made more certain. Efforts include investigation of emerging technologies through study, development, and associated testing for feasibility of program insertion.

Major emphasis areas include the Naval Integrated Tactical Environmental System Next Generation (NITES-Next) project (2343), Littoral Battlespace Sensors - Unmanned Undersea Vehicles (LBS-UUV) and the Environmental Satellite Receiver Processor (ESRP) project (2345), and the Remote Sensing Capability Development (RSCD) project (2363).

(Proj 3050) Deployable Joint Command and Control (DJC2) provides a self-contained, standardized, rapidly deployable, modular, scalable, and reconfigurable joint command and control (C2) capability to designated Geographic Combatant Commands (GCCs). DJC2 is the materiel solution to Defense Planning Guidance that called for the development of standing Joint Task Forces (JTFs) with a deployable C2 capability. DJC2 will ensure that Joint Force Commanders (JFC) are equipped, as well as trained and organized, to carry out their C2 responsibilities. DJC2 provides GCCs and JFCs a mission critical, integrated family of systems with which to plan, control, coordinate, execute, and assess operations. It is designed to deploy rapidly, set up within hours, and quickly provide necessary C2 mission and collaboration functionality across the full spectrum of JTF operations. The DJC2 has also been deployed in support of Humanitarian Assistance and Disaster Relief (HA/DR) efforts.

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy	Date: February 2020
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*

The capability is intended for all levels of conflict and will be reconfigurable to meet specific GCC and JTF mission requirements. This capability is interoperable with higher and adjacent echelons of command (to include coalition allies) as well as with supporting elements to include joint forces.

(Proj 3260) The Naval Operational Business Logistics Enterprise (NOBLE) family of systems includes Naval Operational Supply System (NOSS), Naval Aviation Maintenance System (NAMS), and Naval Operational Maintenance Environment (NOME). NOBLE family of programs will provide direct support to warfighter readiness with maintenance, supply, and financial capabilities using an open architecture framework that incorporates business process re-engineering (BPR), allowing for the consolidation of over 23 standalone application systems. These capabilities include enhanced situational awareness, planning, execution, personnel administration, and management of maintenance and supply logistics and business functions to ships/submarines, aviation squadrons, shore operational sites, and expeditionary units with a total user base exceeding 150,000. The NOBLE architecture will meet current and emerging demands for cyber security, enable Financial Improvement and Audit Readiness (FIAR), drive efficiency into Navy logistics and maritime maintenance mission requirements, and eliminate over 700 application/database servers. NOBLE will deploy to the Consolidated Afloat Networks and Enterprise Services (CANES) afloat, and Department of the Navy (DON) commercial cloud computing environments ashore.

(Proj 3323) Maritime Tactical Command and Control (MTC2): is a next generation Command and Control (C2) software program that will deliver Battle Management Aids (BMA) and Maritime Planning Tools (MPT) to dynamically plan, direct, monitor, and assess maritime operations in support of Joint, Multi-Service, and Coalition Force planning. MTC2 will leverage a System of Services (SoServ) to deliver capabilities improving decision speed and dynamic synchronization of forces. BMAs / MPTs are small, capability-focused deliveries that can be rapidly developed, tested, and fielded. MTC2 will engage with the Office of the Chief of Naval Operations (OPNAV)-led and Fleet supported Requirements Governance Board (RGB) to define and prioritize the BMAs and MPTs that MTC2 will deliver and align to the Program Executive Office (PEO) Command, Control, Communications, and Intelligence (C4I) enterprise architecture Consolidated Afloat Network Enterprise Service (CANES), Agile Core Services (ACS) for fielding to all echelons of command (Afloat and Ashore) within the Navy. The program's objective is to provide a suite of maritime applications (BMAs / MPTs) that enable planning, execution, monitoring, and assessment in support of operational and tactical level of war requirements. MTC2 will field BMAs / MPTs designed to provide automated and structured support for tactical and operational planning, decision-making, and execution. MTC2 will incorporate distributed data transfer capability for enhanced operational data exchange between command and control systems, combat systems, logistics, and intelligence systems for timely threat identification, location, and status alongside blue force data. MTC2 is the Navy's only solution to fulfill a portion of the Joint Global Force Management - Data Initiative (GFM-DI) Allocation requirements. GFM-DI is the Department-wide enterprise solution that enables visibility/accessibility/sharing of data applicable to the entire Department of Defense (DoD) force structure.

(Proj 3324) Navy Air Operations Command and Control (NAOC2): NAOC2 integrates and tests Air Force program of record systems that provide an integrated and scalable planning system for standardized, secure, and automated decision support for Air Force, Joint, and Allied commanders worldwide. These programs provide automated air operations planning, execution management and intelligence capabilities at the Force level to include fleet commanders, numbered fleet commanders, Commander Carrier Strike Groups, Commander Expeditionary Strike Groups, Commander Landing Forces, and Joint Task Force Commanders. NAOC2 includes Theater Battle Management Core System (TBMCS) and Kessel Run (Navy). Kessel Run (Navy) aligns with the Compile to Combat (C2C24) construct in providing Rapid, agile delivery of capabilities to the fleet by commercial cloud infrastructure using Development, Security, Operations (DevSecOps) cloud native applications. Kessel Run (Navy) is comprised of multiple tactical software applications that will provide continuous iterate delivery of software to shipboard and shore users. It will also align with the Joint C2 Reference Architecture (JC2RA) such as Consolidated Afloat Networks and Enterprise Services (CANES). Kessel Run (Navy) is not natively

compatible with Navy Information Technology (IT) infrastructure, such as CANES, and requires a significant level of system integration. Continuation of Navy integration and test efforts will significantly enhance the ability of the Joint Force Air Component Commander and Combined Air Operations Center personnel to plan daily air operations including strike, airlift, offensive/defensive air, missile defense, and refueling missions in support of combat operations. Developmental Testing is continuous and operates in parallel with the DevSecOps construct. Kessel Run (Navy) will be continued for new technology insertion into Navy infrastructure network and hardware in support of Naval Air C2 and Net Enabled Weapons system integration. Kessel Run (Navy) addresses the requirement of war fighter distributed planning and execution processes along with significantly improving Joint interoperability. TBMCS continues a hardware transition to CANES. Currently, TBMCS is the key system that is used to conduct real world air planning in the Joint and Navy environments. Kessel Run (Navy) will replace TBMCS while bringing more flexibility to the war fighter.

(Proj 9123) FORCEnet: The mission of this effort is to deliver Information Dominance by (a) making the transformation to a Distributed, Networked force; (b) achieving interoperability based on Architectures and Standards; and (c) experimenting with, evaluating, and employing the enabling technologies. Effort is a non-acquisition program that is the operational instantiation of FORCEnet. The end-state is a distributed network of weapons, sensors, Command and Control (C2), platforms and warriors.

B. Program Change Summary ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	54.300	77.232	73.081	-	73.081
Current President's Budget	53.110	73.920	97.968	-	97.968
Total Adjustments	-1.190	-3.312	24.887	-	24.887
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-3.312			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.422	0.000			
• SBIR/STTR Transfer	-1.612	0.000			
• Program Adjustments	0.000	0.000	24.474	-	24.474
• Rate/Misc Adjustments	0.000	0.000	0.413	-	0.413

Change Summary Explanation

Technical: Not applicable.

SCHEDULE:

Tactical Support Center (Project 0486):
FY2021 funding continues to support Systems Engineering and Primary Hardware Development as TacMobile prepares to conduct Critical Design Review (CDR) for Increment 3, to support ACAT I P-8A Increment 3 Developmental and Integrated Test events beginning in FY21. Specific efforts include integration of design upgrades to TacMobile capabilities for P-8A Applications Based Architecture (ABA) and incorporating design upgrades to the TacMobile Engineering

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy	Date: February 2020
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604231N *I Tactical Command System*

Development Model with appropriate P-8A interfaces to enable Systems Integration Testing of net-ready applications, mission planning and post-flight test threads; Systems Integration Testing of TacMobile interfaces for P-8A Anti-Submarine Warfare (ASW) Signals Intelligence (SIGINT) data dissemination; Systems Integration Testing of Multiple Security Level enclaves, and common solution interoperability with P-8A security interfaces. NAVAIR has assumed lead role for design and development of P-8A Increment 3, and therefore there will be heavy reliance upon TacMobile to align to and be an integral part of Developmental and Integrated test events for P-8A to meet critical aircraft integration and testing milestones.

Naval Operational Business Logistics Enterprise (NOBLE) (Project 3260): Schedules for NOSS, NAMS, NOME Limited Deployment (LD) Acquisition To Proceed (ATP) have shifted one quarter.

Navy Air Operations Command and Control (NAOC2)(Project 3324):
C2AOS-C2IS was the scheduled replacement for TBMCS. USAF acquisition strategy shifted from C2AOS-C2IS to Kessel Run (Navy). Updated IMS schedule reflects Kessel Run (Navy) continuous Development and Testing profile.

FUNDING:

Tactical METOC Applications (Project 2343):
Funding has been realigned into PE 0604231N from PE 0604218N Project 2343 as part of RDTEN PE Consolidation starting in FY20. There are no New Starts associated with this realignment. FY2021 funding request was decreased by $0.079 as a result of FCR-4 Build Technology Review (BTR) completion.

Fleet METOC Equipment (Project 2345):
Funding has been realigned into PE 0604231N from PE 0604218N Project 2345 as part of RDTEN PE Consolidation starting in FY20. There are no New Starts associated with this realignment. FY2021 funding request was increased by $2.471M for the development and design for the Next Generation Afloat and Ashore ESRP systems.

Remote Sensing Capability Development (RSCD) (Project 2363):
Funding has been realigned into PE 0604231N from PE 0604218N Project 2363 as part of RDTEN PE Consolidation starting in FY20. There are no New Starts associated with this realignment. The FY2021 funding request was increased by $1.868M to support additional cloud based computing environment and data repository to test and evaluate, create performance metrics, and understand computational performance of algorithms and technologies that enhance the fleet's battle space awareness.

Deployable JT Command and Control (Project 3050)
Funding has been realigned into PE 0604231N from PE 0607700N Project 3050 as part of RDTEN PE Consolidation starting in FY20.

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy	Date: February 2020
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604231N *I Tactical Command System*

Naval Operational Business Logistics Enterprise (NOBLE) (Project 3260): FY21 increase is primarily due to additional licenses required to support the installations, data migration and validation in support of Developmental Testing (DT) at the Ashore and Afloat Limited Deployment (LD) sites.

Naval Operational Supply System (NOSS): Investment required to transition from Other Transaction Authority (OTA) prototyping of Commercial Off The Shelf (COTS) capabilities into initial Limited Deployment (LD) activities. Investment supports attainment of an Authorization to Operate (ATO), initial software licensing, initial site installation activities, data migration and validation, training development, incorporation of data analytics, associated with the Acquisition Testing & Deployment phase for the NOSS, NAMS and NOME capabilities. Each program has a unique set of operational and functional requirements; however, they all include license cost sharing for a common Afloat and Ashore Cloud Hosting/Integrated Data Environment (IDE) solution. Additionally, the continuation of software development, testing and integration to support NOSS build two functional capabilities.

Naval Aviation Maintenance System (NAMS): Investment required to transition from OTA prototyping of COTS capabilities into initial LD activities. Investment supports attainment of an ATO, initial software licensing, initial site installation activities, data migration and validation, training development, incorporation of data analytics, associated with the Acquisition Testing & Deployment phase for the NAMS capabilities. NAMS has a unique set of operational and functional requirements; and will be fielded Afloat on CANES and Ashore Cloud Hosting/IDE solution. Additionally, the continuation of software development, testing and integration to support NAMS build two functional capabilities.

Naval Operational Maintenance Environment (NOME): Investment required to transition from OTA prototyping of COTS capabilities into initial LD activities. Investment supports attainment of an ATO, initial software licensing, initial site installation activities, data migration and validation, training development, incorporation of data analytics, associated with the Acquisition Testing & Deployment phase for the NOME capabilities. NOME has a unique set of operational and functional requirements; and will be fielded Afloat on CANES and Ashore Cloud Hosting/IDE solution. Additionally, the continuation of software development, testing and integration to support NOME build two functional capabilities.

Maritime Tactical Command and Control (MTC2)(Project 3323): Starting in FY2021, MTC2 budget controls have been realigned from Research, Development, Test & Evaluation (RDT&E) Program Element (PE) 0604231N Project Unit 3323 and Operations, Maintenance, Navy (OMN) PE 0204660N AGSAG 1C1C Project Unit 70100 and consolidated into a single Software & Digital Technology Pilot Program under a new Budget Activity (BA 8) as directed by Section 872 of the National Defense Authorization Act (NDAA) for FY 2018 (P.L. 115-91).

Navy Air Operations Command and Control (NAOC2)(Project 3324): FY21 decrease due to reduction in planned C2AOS-C2IS RDT&E requirements. Current plan is to field Kessel Run (Navy) vice C2AOS-C2IS.

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy	Date: February 2020
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604231N *I Tactical Command System*

FORCEnet (Project 9123): Increase of $0.047M from FY 2020 to FY 2021 is attributed to additional support required to identify critical Portfolio Health Assessment(PHA) architectural dependencies that enable mission situational awareness.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 0486 / *Tactical Support Center*	

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
0486: *Tactical Support Center*	138.216	4.991	6.092	6.045	-	6.045	5.718	6.131	6.053	6.177	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

TacMobile brings Enterprise Command, Control, Communications, Computers and Intelligence, Surveillance and Reconnaissance (C4ISR) to the Maritime Patrol and Reconnaissance Force (MPRF) community.

TacMobile is a long-running, multi-year acquisition program which provides Command, Control, Communications, Computers, and Intelligence (C4I) for Navy's Maritime Patrol and Reconnaissance Force (MPRF). From within Tactical Operations Centers (TOC) at well-supported airfields, TacMobile provides theater Anti-Submarine Warfare (ASW) and Intelligence Surveillance Reconnaissance (ISR) commanders a common tactical picture while providing pre-flight and post-flight support to manned and unmanned MPRF aircraft. From within Mobile Tactical Operations Centers (MTOC), TacMobile supports manned MPRF aircraft at the tactical edge of operations. TacMobile Fly-Away Kits (FAK) support manned MPRF aircraft in short-duration expeditionary settings.

Services provided include analysis and correlation of diverse sensor information; data management support; command decision aids; rapid data communication; mission planning, evaluation and reach-back dissemination of surveillance data and threat alerts to operational users ashore and afloat, and to the Maritime Intelligence Surveillance and Reconnaissance Environment.

TOCs provide Command, Control, Communications, Computers and Intelligence (C4I) capability, air-ground, satellite and point-to-point communications systems; sensor analysis capabilities; avionics and weapons system interfaces and facilities equipment. MTOCs are scalable, mobile versions for operations from remote forward operating airfields. FAKs provide additional agility for expeditionary short-term duration aircraft detachments. This program assures that existing TOCs and MTOCs are interoperable to fulfill their operational requirements. TOC/MTOC will continue to provide the ground Command and Control missions, reach-back and C4I interfaces for the MPRF Family of Systems (FOS) aircraft and systems evolution including P-8A Multi-mission Maritime Aircraft (MMA) baseline and Increment 2, and the development of future C4I support capabilities for the P-8A Poseidon Increment 3, Advanced Airborne Sensor (AAS), and the MQ-4C TRITON Unmanned Aerial System.

The TacMobile program follows an Evolutionary Acquisition approach for adding capabilities that maintain and support MPRF weapons systems. Current requirements for TacMobile are to adapt to a smaller, lightweight, scalable Network-centric Services Oriented Architecture (SOA) configuration. Additional TacMobile requirements are to simplify and streamline the Pre-Flight Insertion Data (PID) process for mission aircraft, and to satisfy the need for sensor data sharing between aircraft and the Maritime Intelligence Surveillance and Reconnaissance Enterprise.

FY21: Funding continues to support core TacMobile systems engineering, development and testing of Increment 3, and Technical Refresh to Increment 2.1, to maintain interoperability with P-8A Poseidon and the MQ-4C Triton. Specifically this development is aligned to support P-8A Inc 3 Block 2 ECP 6 (FR300) and ECP 7 (FR310) Integrated Testing, increase modularity, establish additional security enclaves and reduce footprint to offset the size/weight/power/cooling (SWaP-C) of additional required aircraft interfaces developed to support P-8A Increment 3, Advanced Airborne Sensor (AAS) and emerging Maritime Patrol and Reconnaissance Aircraft operations. Network-centric Services Oriented Architecture (SOA) and airborne C4I integration efforts continue to ensure interoperability with emerging MPRF Aircraft

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 0486 / *Tactical Support Center*

and Sensors, streamline Pre-Flight Insertion Data (PID), facilitate the MPRF ISR and ASW data Processing - Exploitation - Dissemination (PED) process, and reduce TacMobile footprint, enhancing mobility capabilities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: TacMobile Increment 2.1	0.990	0.953	0.516	0.000	0.516
Articles:	-	-	-	-	-

FY 2020 Plans:

Complete development of Super High Frequency (SHF) and Tactical Data Links (TADIL), Command, Control, Communications and Intelligence (C4I) enhancements (Common Operational Picture (COP) and Integrated Broadcast Service (IBS)), and appropriate subsystem refreshes based on P-8A and MQ-4C collaborative efforts and made ready for fielding. These efforts include:

INTEROPERABILITY: Complete Automated Digital Network System (ADNS) and PCDL Full Motion Video implementations (TR 2.1.2).

SYSTEM UPGRADES: Continue iterative design model development of automated TacMobile system functionality to be carried into Increment 3.0, to reduce operator workload, increase agility with Size / Weight / Power/Cooling (SWaP-C) reductions, and offset increasing Maritime Patrol and Reconnaissance Force Intelligence Surveillance and Reconnaissance Mission/Function/Task TR 2.1.2; Continue to incorporate fleet change requests into Technical Refresh 2.1.2 - (TR 2.1.2).

MODERNIZATION: Complete integration of selected option for Global Broadcast System subsystem modernization - (TR 2.1.2); Complete integration and testing of selected option for SHF subsystem modernization - TR 2.1.2; Continue communications upgrade design/integration/development for P-8A interoperability and optimization: Common Data Link Upgrades, Broadcast Intelligence Analysis, Joint Range Extension, Third Party Targeting, High Frequency Internet Protocol, Link 16 updates, and Wideband SatCom design/technology implementation - (TR 2.1.2); Continue with integration and development of P8-A interoperability, C4I refresh, storage modernization, network refresh (including Cyber upgrades), and power distribution system upgrades. Complete integration of selected solution to modernize or replace current generation Global Command and Control System Maritime - (TR 2.1.2); Continue integration and development of the next generation Mass Storage solution - (TR 2.1.2). Analyze and assess options to defer integration of solutions to modernize or replace current generation Global Command and Control System Maritime from TR 2.1.2 to Inc 3.

FY 2021 Base Plans:

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 0486 / *Tactical Support Center*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Continue development, integration and test of enhancements to Tactical Data Links (TADIL), Command, Control, Communications and Intelligence (C4I) (Common Operational Picture (COP), Integrated Broadcast Service (IBS)), and appropriate subsystem refreshes based on P-8A and MQ-4C collaborative efforts and make ready for fielding. These efforts include: INTEROPERABILITY: Analyze and assess options to better integrate cooperative partner P-8A mission planning with US mission planning and TCPED for enhanced flexibility and lethality. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** FY21 funding decrease for TacMobile Increment 2.1 development is due to reduction of effort, associated with continuing ramp down toward completion of TR 2.1.2 development/integration.					
Title: TacMobile Increment 3.0	4.001	5.139	5.529	0.000	5.529
Articles:	-	-	-	-	-
FY 2020 Plans: INTEROPERABILITY: Update Engineering Development Model (EDM) design to include any changes to appropriate interfaces for P-8A - (Inc 3.0); Update design for Multiple Security Level enclaves and joint system security architecture for P-8A interoperability - (Inc 3.0); Update EDM architecture to support Navy Tasking, Collection, Processing, Exploitation, and Dissemination CONOPS and data reach-back requirements for integrating the wide range of P-8A missions and Anti-Submarine Warfare and Intelligence Surveillance and Reconnaissance data elements with the Maritime Intelligence Surveillance and Reconnaissance Environment - (Inc 3.0); Update EDM design and data strategy to maximize automation, Services Oriented Architecture (SOA), and virtualization for increased interoperability and efficiency - (Inc 3.0); Update TacMobile design and implementation of metadata tagging and content management to align with Family of Systems Community of Interest data management model schema - (Inc 3.0); Continue maturing requirements development for Multistatic Active Coherent (MAC) Enhancements (MAC-E). Commence design and development of EDM upgrade for MAC-E integration. Integrate enhanced TacMobile data analysis tools and applications to support P-8A MAC-E interoperability - (Inc 3.0); Complete TacMobile Increment 3.0 Data Strategy and Information Support Plan to support Navy TCPED and Net-Centric strategies as well as to support P-8A Poseidon Inc 3, MQ-4C Triton Multi-INT, and Advanced Airborne Sensor (AAS) operations - (Inc 3.0); Update integration of Navy enterprise solutions for network services and Common Operational Picture (COP) management (in synch with Distributed Common Ground System Navy (DCGS-N), Undersea Warfare-Decision Support System (USW-					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 0486 / *Tactical Support Center*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
DSS)) - (Inc 3.0); Update software development for sortie management and data services to interface with P-8A media build - (Inc 3.0); Conduct system integration and developmental testing to evaluate design and P-8A interfaces interoperability - (Inc 3.0); Conduct testing to achieve system Cybersecurity certifications and accreditations - (Inc 3.0). SYSTEM UPGRADES: Implement fleet and engineering change requests into Inc 3 design - (Inc 3.0); Implement hardware upgrades to address obsolescence and technological changes that do not impact system capability, investigate emerging technologies through study, development, and associated testing for feasibility of program insertion - (Inc 3.0). MODERNIZATION: Implement Size Weight Power and Cooling (SWaP-C) reductions into final EDM design and proposed TOC/MTOC design - Inc 3.0). ***FY 2021 Base Plans:*** INTEROPERABILITY: Complete Engineering Development Model (EDM) design to include any changes to appropriate interfaces for P-8A - (Inc 3.0); Finalize design for Multiple Security Level enclaves and joint system security architecture for P-8A interoperability - (Inc 3.0); Finalize EDM architecture to support Navy Tasking, Collection, Processing, Exploitation, and Dissemination CONOPS and data reach-back requirements for integrating the wide range of P-8A missions and Anti-Submarine Warfare and Intelligence Surveillance and Reconnaissance data elements with the Maritime Intelligence Surveillance and Reconnaissance Environment - (Inc 3.0); Finalize EDM design and data strategy to maximize automation, Services Oriented Architecture (SOA), and virtualization for increased interoperability and efficiency - (Inc 3.0); Finalize TacMobile design and implementation of metadata tagging and content management to align with Family of Systems Community of Interest data management model schema - (Inc 3.0); Begin design and development for Multistatic Active Coherent (MAC) Enhancements (MAC-E) - (Inc 3.0); Complete TacMobile Increment 3.0 Data Strategy and Information Support Plan of EDM upgrade for MAC-E integration. Integrate enhanced TacMobile data analysis tools and applications to support P-8A MAC-E interoperability - (Inc 3.0); Complete TacMobile Increment 3.0 Data Strategy and Information Support Plan to support Navy TCPED and Net-Centric strategies as well as to support P-8A Poseidon Inc 3, MQ-4C Triton Multi-INT, and Advanced Airborne Sensor (AAS) operations - (Inc 3.0); Update integration of Navy enterprise solutions for network services and Common Operational Picture (COP) management (in synch with Distributed Common Ground System Navy (DCGS-N), Undersea Warfare-Decision Support System (USW-DSS)) - (Inc 3.0); Finalize software development for sortie management and data services to interface with P-8A media build - (Inc 3.0); Conduct system integration and developmental					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 0486 / *Tactical Support Center*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
testing to evaluate design and P-8A interfaces interoperability - (Inc 3.0); Conduct testing to achieve system Cybersecurity certifications and accreditations - (Inc 3.0); SYSTEM UPGRADES: Continue implementing fleet and engineering change requests into Inc 3 design - (Inc 3.0); Continue implementing hardware upgrades to address obsolescence and technological changes that do not impact system capability, investigate emerging technologies through study, development, and associated testing for feasibility of program insertion - (Inc 3.0); MODERNIZATION: Implement Size Weight Power and Cooling (SWaP-C) reductions into final EDM design and proposed TOC/MTOC design - (Inc 3.0); ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** FY21 funding increase for TacMobile Increment 3.0 development is due to ramp up of Systems Engineering Development, Updating Engineering Development Model (EDM) develoment, and system integration and testing.					
Accomplishments/Planned Programs Subtotals	4.991	6.092	6.045	0.000	6.045

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/2906: *TacMobile*	42.666	33.419	22.771	-	22.771	19.433	21.805	24.774	31.477	Continuing	Continuing

Remarks

D. Acquisition Strategy

Evolutionary Acquisition - Increment 2.0 provided enhanced Beyond Line of Sight (BLOS) Global Information Grid (GIG) reach back capability, and supports Maritime Situational Awareness connectivity enhancements for data exchange with Maritime Patrol and Reconnaissance Force (MPRF) aircraft and with Coalition data networks. It incorporated Anti-Submarine Warfare (ASW) acoustical analysis improvements and new P-3C aircraft ASW interfaces. Increment 2.1 supported migration to follow on Global Command and Control System - Maritime (GCCS-M) version 4.0.3 and introduction of the P-8A Poseidon. Tech Refresh 2.1.1 supports technical engineering changes associated with the introduction of P-8A Poseidon Increment 2, MQ-4C Triton, Advanced Airborne Sensor (AAS), migration to GCCS-M 4.1 Group Level, and transition to WIN10 baselines. Increment 3 will incorporate support for other Maritime Patrol and Reconnaissance Force (MPRF) Family of Systems (FOS) Aircraft Systems, as they transition to a Services Oriented Architecture (SOA).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 0486 / *Tactical Support Center*	

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
Primary Hardware Development	C/CPFF	NIWC LANT;TAPESTRY: Charleston, SC; Pax : Charleston; SC; Pax River, MD	13.130	1.457	Dec 2018	1.804	Dec 2019	1.700	Dec 2020	-		1.700	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	NIWC LANT; TAPESTRY, BAH, Sentek : Charleston, SC; Pax River, MD; San Diego, CA	36.132	1.378	Dec 2018	1.745	Dec 2019	1.802	Dec 2020	-		1.802	Continuing	Continuing	Continuing
Training Development	C/CPFF	NIWC LANT; TAPESTRY, Sentek : Charleston, SC; Pax River, MD; San Diego, CA	3.461	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Software Development	C/CPFF	NIWC LANT;TAPESTRY; CENTURUM : Charleston, SC; Pax River, MD; San Diego, CA	49.111	1.123	Dec 2018	1.066	Dec 2019	1.066	Dec 2020	-		1.066	Continuing	Continuing	Continuing
Integrated Logistics Support	C/CPFF	NIWC LANT;TAPESTRY; CENTURUM : Charleston, SC; Pax River, MD	1.735	0.035	Dec 2018	0.035	Dec 2019	0.035	Dec 2020	-		0.035	Continuing	Continuing	Continuing
Configuration Management	C/CPFF	NIWC LANT;TAPESTRY; CENTURUM : Charleston, SC; Pax River, MD	1.371	0.023	Dec 2018	0.023	Dec 2019	0.023	Dec 2020	-		0.023	Continuing	Continuing	Continuing
Technical Data	C/CPFF	NIWC LANT;TAPESTRY; CENTURUM : Charleston, SC; Pax River, MD	1.731	0.251	Dec 2018	0.251	Dec 2019	0.251	Dec 2020	-		0.251	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 0486 / *Tactical Support Center*	

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
Studies & Analyses	C/CPFF	NIWC LANT;TAPESTRY; CENTURUM : Pax River, MD; San Diego CA	1.140	0.015	Dec 2018	0.015	Dec 2019	0.015	Dec 2020	-		0.015	Continuing	Continuing	Continuing
		Subtotal	107.811	4.282		4.939		4.892		-		4.892	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 & Evaluation	C/CPIF	NIWC LANT;TAPESTRY; CENTURUM : Charleston, SC; Pax River, MD	3.792	0.335	Dec 2018	0.803	Dec 2019	0.803	Dec 2020	-		0.803	Continuing	Continuing	Continuing
Operational Test & Evaluation	MIPR	OPTEVFOR; NIWC LANT; TAPESTRY : Jacksonville, FL	6.020	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	9.812	0.335		0.803		0.803		-		0.803	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
Contractor Engineering Support	C/CPIF	TAPESTRY; CENTURUM; BAH; SENTEK : Pax River, MD; Charleston, SC; San Diego, CA	3.615	0.195	Dec 2018	0.195	Dec 2019	0.195	Dec 2020	-		0.195	Continuing	Continuing	Continuing
Government Engineering Support	WR	NIWC LANT : Charleston, SC; Pax River, MD	2.434	0.107	Dec 2018	0.107	Dec 2019	0.107	Dec 2020	-		0.107	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 0486 / *Tactical Support Center*	

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	C/CPIF	NIWC LANT;PMW 750; TAPESTRY; CENTURUM; BAH; SENTEK : Charleston, SC; San Diego, CA	14.237	0.047	Dec 2018	0.023	Dec 2019	0.023	Dec 2020	-		0.023	Continuing	Continuing	Continuing
Travel	WR	PMW750 : San Diego, CA	0.307	0.025	Dec 2018	0.025	Dec 2019	0.025	Dec 2020	-		0.025	Continuing	Continuing	Continuing
		Subtotal	20.593	0.374		0.350		0.350		-		0.350	Continuing	Continuing	N/A

	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	138.216	4.991		6.092		6.045		-		6.045	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 0486 / *Tactical Support Center*

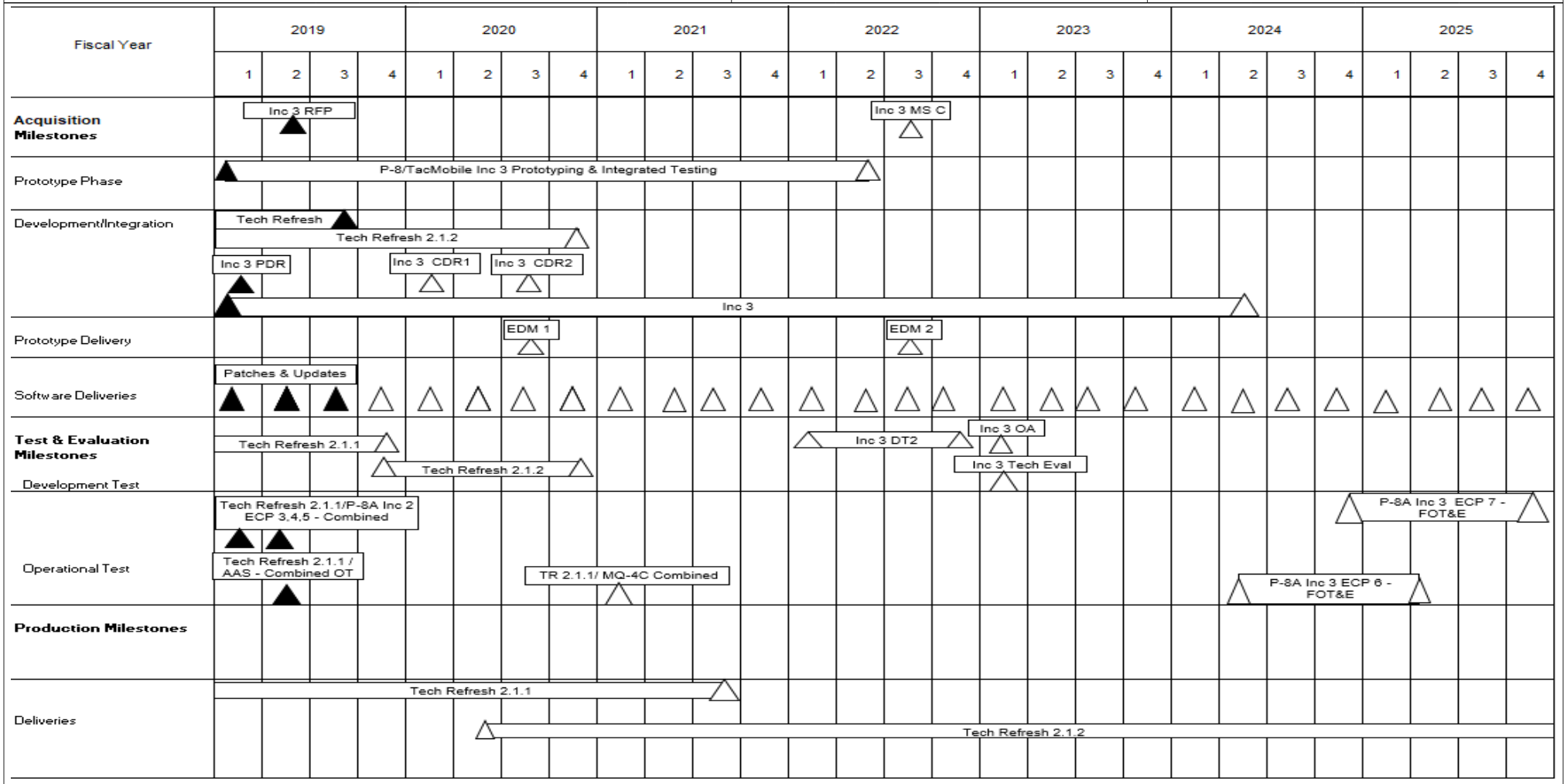


Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 0486 / *Tactical Support Center*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0486				
Software Delivery (Monthly)	1	2019	4	2025
Tech Refresh Delivery (TR 2.1.1)	1	2019	3	2021
Tech Refresh Delivery (TR 2.1.2)	2	2020	4	2025
Combined Operational Test (Tech Refresh 2.1.1)	2	2019	2	2019
Combined Operational Test (Tech Refresh 2.1.1) (1)	1	2021	1	2021
Development (TR 2.1.1)	1	2019	3	2019
Development (TR 2.1.2)	1	2019	4	2020
Developmental Test (Tech Refresh 2.1.1)	1	2019	3	2019
Developmental Test (Tech Refresh 2.1.2)	4	2019	4	2020
Prototyping & Integrated Testing (P-8/TacMobile) (Increment 3)	1	2019	2	2022
Preliminary Design Review (Increment 3)	1	2019	1	2019
Critical Design Review (Increment 3)	1	2020	3	2020
Development (Increment 3)	1	2019	2	2024
Developmental Test (Increment 3)	1	2021	4	2022
Operational Assessment (Increment 3)	1	2022	1	2023
Milestone C (Increment 3)	3	2022	3	2022
Developmental Test (Increment 3 Tech Eval)	1	2023	1	2023
Combined Operational Tests/Follow On Tests (Increment 3)	2	2024	2	2025

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 2343 / *Tactical METOC Applications*	

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
2343: *Tactical METOC Applications*	0.000	0.000	12.198	12.119	-	12.119	12.635	13.907	14.193	14.478	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Funding has been realigned into PE 0604231N from PE 0604218N Project 2343 as part of RDTEN PE Consolidation starting in FY20. There are no New Starts associated with this realignment. All budgeted efforts have been previously approved.

A. Mission Description and Budget Item Justification

The Tactical Meteorology and Oceanography (METOC) Applications Project provides cyber secure operational effects decision aid capabilities for Navy and Marine Corps warfighters in the context of Joint Operations in a net-centric environment. This project funds the agile software development of the Naval Integrated Tactical Environmental System Next Generation (NITES-Next) program of record. NITES-Next program identifies and transitions state-of-the-art decision support software technologies from the government and commercial industry's technology base, and then demonstrates and validates these capabilities before fielding. These software decision support tools provide platform, sensor, communications, and weapon systems performance assessments for warfighters in terms of their littoral and deep-strike battlespace environments. These assessments allow mission planners and warfighters, from Unit to Theater level, to optimize their sensor employment on airborne, surface, and subsurface platforms in support of Naval Composite Warfare mission areas including Undersea Warfare (USW), Anti-Submarine Warfare (ASW), Mine Warfare (MIW), Amphibious Warfare (AMW), Anti-Surface Warfare (ASUW), Anti-Air Warfare (AAW), Strike Warfare (STW), Expeditionary Warfare (EXW), Electronic Warfare (EW), Information Operations (IO), Intelligence Operations (INT), Non-Combat Operations (NCO), Command, Control, Communication (CCC), and Naval Special Warfare (NSW). Performance assessments leading to improvements in operational and tactical control are conducted through a two-tiered approach: 1) Meteorological and Oceanographic (METOC) Decision Aids and, 2) Operational Effects Decision Aids (OEDAs). METOC Decision Aides consist of a series of analysis tools which characterize the physical environment conditions of the battlespace based on the best set of physical environment data available at the time (i.e., some combination of historical and/or real-time (or near real-time) in-situ, and numerically modeled forecast data). OEDAs use the METOC Decision Aide information by fusing it with relevant, often-classified, sensor and target data to predict how weapons and sensor systems will perform. Performance results are displayed in tabular and graphic formats integrated into net-centric visualization tools for use by mission planners, and combat/weapon system operators to develop localization plans, USW/AAW/ASUW screens, STW profiles, and AMW ingress and egress points. METOC Decision Aides and OEDAs use data obtained through direct interfaces to Navy combat systems. Cyber secure capabilities are a current emphasis required to characterize and/or predict sensor and weapons system performance in the highly complex littoral environments in support of regional conflict scenarios. It addresses multi-warfare areas, particularly shallow water ASW, NSW, and missile and air defense/strike capabilities.

Funding supports development and integration efforts for Meteorological and Oceanographic (METOC) systems to generate and collect METOC data and fuse multiple intelligence inputs to more robustly characterize and predict tactical atmospheric and oceanographic conditions. This integrated METOC picture will support real-time battlespace awareness of propagation conditions affecting signals across the electromagnetic spectrum. METOC data will be fused with other intelligence data and automatically provided to shipboard combat systems to inform kinetic and non-kinetic fires.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2343 / *Tactical METOC Applications*

Fiscal Year (FY) 21 request provides for NITES-Next continuing efforts to conduct Fleet Capability Release (FCR-4) to deliver capabilities to provide Electo-Optical Sensor Performance Prediction, Surfzone forecasting, and littoral current characterization. The program will continue planning for the FCR-5 development, contracting activities and Technology Readiness Assessment (TRA). The program will update its Risk Management Framework (RMF) Authority to Operate (ATO) for FCR-4 software.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Naval Integrated Tactical Environmental System Next Generation (NITES-Next)	0.000	12.198	12.119	0.000	12.119
Articles:	-	-	-	-	-
FY 2020 Plans: NITES-Next is conducting a Fleet Capability Release - 3 (FCR-3) Field Technical Review (FTR) and is seeking to obtain an FCR-3 Field Decision (FD) to deliver the mobile variant and Electromagnetic (EM) Prediction capabilities. Risk Management Framework (RMF) Authority to Operate (ATO) for FCR-3 software. The program is also conducting an FCR-4 Build Technical Review (BTR) and seeking to obtain an FCR-4 Build Decision (BD) from the Milestone Decision Authority (MDA). NITES-Next is beginning initial software development of the FCR 4 capability. The program is planning for the FCR-5 development and contracting activities.					
FY 2021 Base Plans: NITES-Next will continue to conduct development for FCR-4 to deliver capabilities to provide Electo-Optical Sensor Performance Prediction, Surfzone forecasting, and littoral current characterization. The program will update its Risk Management Framework (RMF), Authority to Operate (ATO), perform development, testing and evaluation (DT&E) for FCR-4 software. The program will continue planning for the FCR-5 development, contracting activities and Technology Readiness Assessment (TRA).					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement: Decrease of $0.079 from FY 2020 to FY 2021 is attributed to FCR-4 Build Technical Review (BTR) completion.					
Accomplishments/Planned Programs Subtotals	0.000	12.198	12.119	0.000	12.119

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/4226: *Meteorological Equipment*	21.437	12.407	15.192	-	15.192	14.069	14.492	13.901	13.770	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2343 / *Tactical METOC Applications*

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/0604218N/2343: *Tactical METOC Applications*	9.073	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.073

Remarks

D. Acquisition Strategy

The NITES-Next program acquisition, management and contracting strategies are to support the Tactical Meteorology & Oceanography (METOC) Applications project to continue the development of state-of-the-art software capabilities that provide sensor, communication, and weapon system performance assessment capabilities for open ocean and littoral operating environments. The Department of the Navy (DoN) maintains management oversight of the NITES-Next program's acquisition and contracting strategies. The Department of the Navy (DoN) requirements for the NITES-Next program's acquisition and contracting strategies are based on approved Joint Capabilities Integration and Development System (JCIDS) documentation.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 2343 / *Tactical METOC Applications*	

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
NITES-Next	WR	NIWC Pacific : San Diego, CA	0.000	0.000		2.761	Nov 2019	2.739	Nov 2020	-		2.739	Continuing	Continuing	Continuing
NITES-Next	C/FP	SAIC : Virginia	0.000	0.000		2.252	Jan 2020	2.241	Jan 2021	-		2.241	Continuing	Continuing	Continuing
NITES-Next	WR	NIWC Atlantic : South Carolina	0.000	0.000		0.094	Oct 2019	0.094	Oct 2020	-		0.094	Continuing	Continuing	Continuing
NITES-Next/Engineering	C/IDIQ	Various : Various	0.000	0.000		4.759	May 2020	4.725	May 2021	-		4.725	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		9.866		9.799		-		9.799	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
NITES-Next	C/FP	SAIC : Virginia	0.000	0.000		1.353	Jan 2020	1.346	Jan 2021	-		1.346	0.000	2.699	-
		Subtotal	0.000	0.000		1.353		1.346		-		1.346	0.000	2.699	N/A

Management Services ($ in Millions)

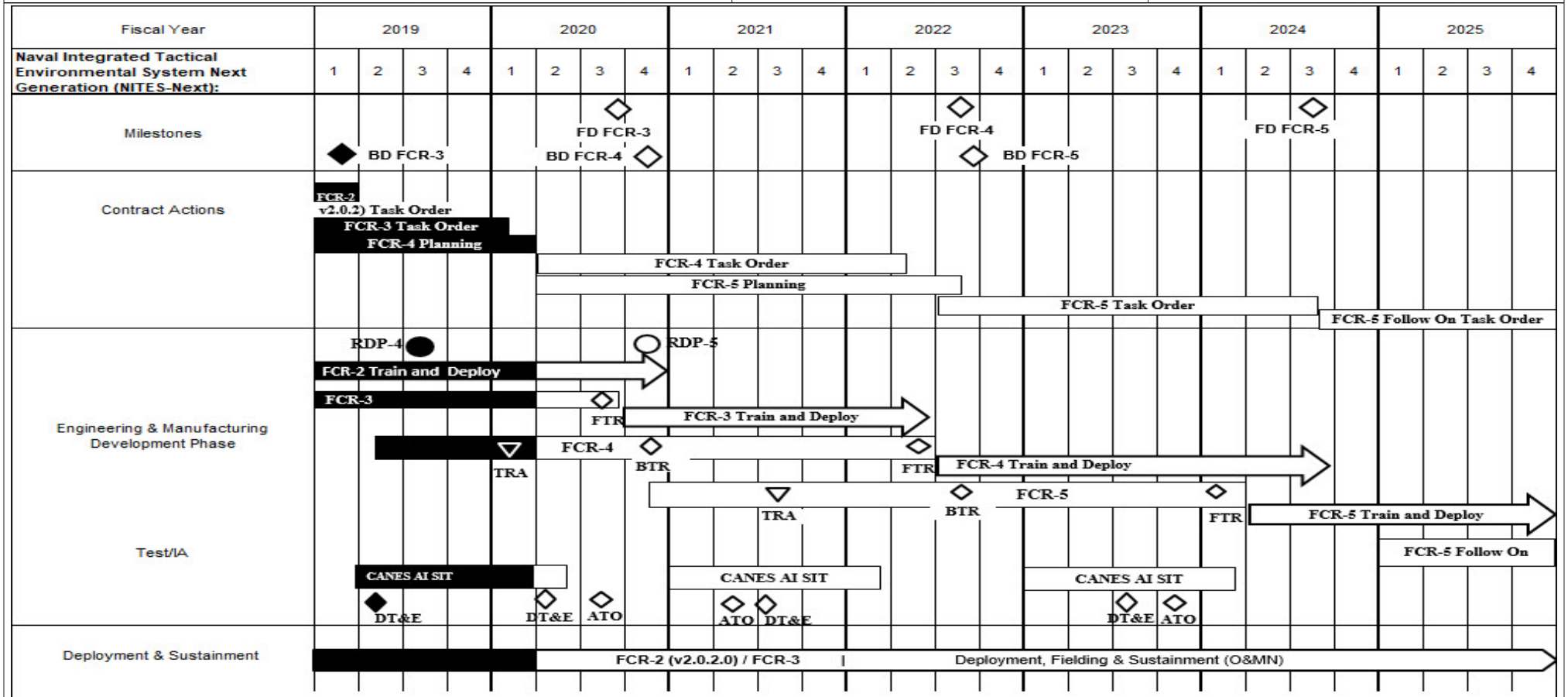
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NITES-Next	WR	NIWC PAC : San Diego, CA	0.000	0.000		0.398	Nov 2019	0.396	Nov 2020	-		0.396	0.000	0.794	-
NITES-Next	C/FP	BAH : San Diego CA	0.000	0.000		0.581	Jan 2020	0.578	Jan 2021	-		0.578	0.000	1.159	-
		Subtotal	0.000	0.000		0.979		0.974		-		0.974	0.000	1.953	N/A

	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		12.198		12.119		-		12.119	Continuing	Continuing	N/A

Remarks

FY19 cost data is provided under PE 0604218N, Project 2343.

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2343 / *Tactical METOC Applications*



Acronyms: RDP = Requirements Definition Package. FCR = Fleet Capability Release. TRA = Technology Readiness Assessment. BD = Build Decision. FD = Fielding Decision. ATO = Authority to Operate. Field Technical Reivew = FTR. DT&E = Developmental Test & Evaluation. CANES = Consolidated Afloat Networks and Enterprise Services. SIT = System Integration Test AI = Application Integration.

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2343 / *Tactical METOC Applications*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Naval Integrated Tactical Environmental System Next Generation (NITES-Next)				
Milestones: Build Decision (BD) Fleet Capability Release - 3	1	2019	1	2019
Milestones: Build Decision (BD) Fleet Capability Release - 4	4	2020	4	2020
Milestones: Fielding Decision (FD) Fleet Capability Release - 3	3	2020	3	2020
Milestones: Fielding Decision (FD) Fleet Capability Release - 4	3	2022	3	2022
Milestones: Build Decision (BD) Fleet Capability Release - 5	3	2022	3	2022
Milestones: Fielding Decision (FD) Fleet Capability Release - 5	3	2024	3	2024
Contract Actions: FCR-2 (v2.0.2) Task Order	1	2019	1	2019
Contract Actions: FCR-3 Task Order	1	2019	1	2020
Contract Actions: FCR-4 Task Order	2	2020	2	2022
Contract Actions: FCR-4 Planning	1	2019	2	2020
Contract Actions: FCR-5 Planning	2	2020	3	2022
Contract Actions: FCR-5 Task Order	3	2022	3	2024
Contract Actions: FCR-5 Follow On Task Order	3	2024	4	2025
Engineering & Manufacturing Development Phase: Fleet Capability Release - 2 / Train and Deploy	1	2019	4	2020
Engineering & Manufacturing Development Phase: Fleet Capability Release - 3 / Train and Deploy	4	2020	2	2022
Engineering & Manufacturing Development Phase: Fleet Capability Release - 4 / Train and Deploy	3	2022	3	2024
Engineering & Manufacturing Development Phase: Fleet Capability Release - 5 / Train and Deploy	2	2024	4	2025
Engineering & Manufacturing Development Phase: Fleet Capability Release - 3	1	2019	3	2020
Engineering & Manufacturing Development Phase: Fleet Capability Release - 4	2	2019	2	2022

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2343 / *Tactical METOC Applications*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Engineering & Manufacturing Development Phase: Fleet Capability Release - 5	4	2020	1	2024
Engineering & Manufacturing Development Phase: Fleet Capability Release - 5 Follow On	1	2025	4	2025
Engineering & Manufacturing Development Phase: Requirements Definition Package - 4	3	2019	3	2019
Engineering & Manufacturing Development Phase: Requirements Definition Package - 5	4	2020	4	2020
Engineering & Manufacturing Development Phase: Build Technical Review FCR-4	4	2020	4	2020
Engineering & Manufacturing Development Phase: Build Technical Review FCR-5	3	2022	3	2022
Engineering & Manufacturing Development Phase: Technology Readiness Assessment - 4	1	2020	1	2020
Engineering & Manufacturing Development Phase: Technology Readiness Assessment - 5	3	2021	3	2021
Engineering & Manufacturing Development Phase: Field Technical Review FCR-3	3	2020	3	2020
Engineering & Manufacturing Development Phase: Field Technical Review FCR-4	2	2022	2	2022
Engineering & Manufacturing Development Phase: Field Technical Review FCR-5	1	2024	1	2024
Test/IA: Authority to Operate FCR-3	3	2020	3	2020
Test/IA: Authority to Operate FCR-4	2	2021	2	2021
Test/IA: Authority to Operate FCR-5	3	2023	3	2023
Test/IA: Developmental Test Fleet Capability Release - FCR 2.0.2.0	2	2019	2	2019
Test/IA: Developmental Test Fleet Capability Release - FCR 3	2	2020	2	2020
Test/IA: Developmental Test Fleet Capability Release - FCR-4	3	2021	3	2021
Test/IA: Developmental Test Fleet Capability Release - FCR-5	2	2023	2	2023
Test/IA: CANES AI SIT FCR-3	1	2019	2	2020
Test/IA: CANES AI SIT FCR-4	1	2021	4	2021
Test/IA: CANES AI SIT FCR-5	4	2022	4	2023
Test/IA: Deployment and Sustainment: Deployment, fielding and Sustainment (OMN)	1	2019	4	2025

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 2345 / *Fleet METOC Equipment*	

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
2345: *Fleet METOC Equipment*	0.000	0.000	0.148	2.619	-	2.619	0.577	0.487	0.496	0.506	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Funding has been realigned into PE 0604231N from PE 0604218N Project 2345 as part of RDTEN PE Consolidation starting in FY20. There are no New Starts associated with this realignment. All budgeted efforts have been previously approved.

A. Mission Description and Budget Item Justification

This project provides for the engineering and manufacturing development of sensors, communication interfaces, processing and display meteorological and oceanographic (METOC) equipment. This equipment is designed to provide future mission capabilities for war fighters to measure, ingest, store, process, distribute and display METOC parameters and derived products.

This project also exploits new government off-the-shelf/commercial off-the-shelf technologies, tactical sensors and web enablement for the Navy's computer-based tactical shipboard and shore capability used to predict and assess the operational effects of the physical environment on the performance of platforms, weapons and sensor systems. This project includes development of warfare specific mission planning modules to support unmanned systems with integration of data from environmental and tactical sensor systems, model forecast information and Geospatial Information & Services Databases. This project also supports development of autonomous environmental sensing systems for situational awareness and tactical decision aid/mission planner support, as well as iridium and advanced satellite communication integration in METOC sensor, vehicle control and mission planning systems that will be required to achieve Chief of Naval Operation objectives for information dominance and decision superiority.

Major emphasis areas include Littoral Battlespace Sensors - Unmanned Undersea Vehicles (LBS-UUV) and the Environmental Satellite Receiver Processor (ESRP) program (comprised of ESRP AFLOAT (formerly AN/SMQ-11)and ESRP ASHORE (formerly AN/FMQ-17) systems).

Fiscal Year (FY) 21 request provides for the Littoral Battlespace Sensors - Gliders (LBS-G) and Littoral Battlespace Sensors - Autonomous Undersea Vehicles (LBS-AUV) engineering design studies. Develop system upgrades via Engineering Change Proposals (ECP's) and correct any identified software and/or hardware deficiencies. Continue investigating next generation propulsion technologies such as Hybrid Thruster, battery chemistry, thermal engines, and universal buoyancy engines for potential system upgrades. Also, investigating battery technology, bio-fouling solutions, afterbody solutions, and open architecture approaches.

FY21 request provides for the development and testing of hardware and software upgrades to ESRP systems. Efforts include development of next generation ESRP systems to ensure systems continue to receive enhanced METOC data and imagery as satellite systems evolve.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Littoral Battlespace Sensors - Unmanned Undersea Vehicle (LBS-UUV)	0.000	0.000	0.205	0.000	0.205

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Articles:	-	-	-	-	-
FY 2020 Plans: N/A ***FY 2021 Base Plans:*** Fiscal Year (FY) 21 request provides for the Littoral Battlespace Sensors - Gliders (LBS-G) and Littoral Battlespace Sensors - Autonomous Undersea Vehicles (LBS-AUV) engineering design studies. Develop system upgrades via Engineering Change Proposals (ECP's) and correct any identified software and/or hardware deficiencies. Continue investigating next generation propulsion technologies such as Hybrid Thruster, battery chemistry, thermal engines, and universal buoyancy engines for potential system upgrades. Also, investigating battery technology, bio-fouling solutions, afterbody solutions, and open architecture approaches. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Funding increased of $0.205M from FY2020 to FY2021 is for engineering design studies and Engineering Change Proposals (ECP's).					
Title: Environmental Satellite Receiver Processor (ESRP)	0.000	0.148	2.414	0.000	2.414
Articles:	-	-	-	-	-
FY 2020 Plans: Continue to develop and test annual hardware and software upgrades to integrate new meteorological and oceanographic (METOC) Satellite Sensors available in the Geostationary Operational Environmental Satellites (GOES) and the Polar Orbiting Environmental Satellites (POES). Continue integration of ESRP systems in support of Weather Satellite Follow-On (WSF-M), Electro-Optical Infrared Weather System (EWS-G), GOES-13, GOES-15, GOES-16, GOES-17 and Europe Meteorology Satellites (EUMETSAT) satellites. Overall program efforts include investigation of emerging technologies through study, development and associated testing for feasibility of program insertion. ***FY 2021 Base Plans:*** To develop and test annual hardware and software upgrades to include new next generation METOC Satellite Sensors available in the GOES and the POES. Continue integration of ESRP systems in support of WSF-M, EWS-G, GOES-15, GOES-16, GOES-17 and EUMETSAT satellites. Overall program efforts include					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
investigation of emerging technologies through study, development and associated testing for feasibility of program insertion. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Increase from FY20 to FY21 of $2.266M is attributed to ESRP system Next Generation development.					
Accomplishments/Planned Programs Subtotals	0.000	0.148	2.619	0.000	2.619

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/4226: *Meteorological Equipment*	21.437	12.407	15.192	-	15.192	14.069	14.492	13.901	13.770	Continuing	Continuing
• RDTEN/0604218N/2345: *Fleet METOC Equipment*	0.648	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	66.012

Remarks

D. Acquisition Strategy

LBS-UUV Acquisition, management and contracting strategies are to support engineering and manufacturing development by providing funds to prime LBS-UUV OEMs, Hydroid and Teledyne Brown.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 2345 / *Fleet METOC Equipment*	

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
METOC ESRP	SS/CPFF	RAYTHEON : Indianapolis	0.000	0.000		0.148	Feb 2020	2.414	Feb 2021	-		2.414	Continuing	Continuing	Continuing
Littoral Battlespace Sensing - Gliders	C/CPIF	Teledyne Brown Engineering : Alabama	0.000	0.000		0.000		0.100	Mar 2021	-		0.100	Continuing	Continuing	Continuing
Littoral Battlespace Sensing - Autonomous Undersea Vehicle (Submarine)/Razorback	C/FP	Hydroid : Pocasset, MA	0.000	0.000		0.000		0.105	Mar 2021	-		0.105	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.148		2.619		-		2.619	Continuing	Continuing	N/A

Remarks

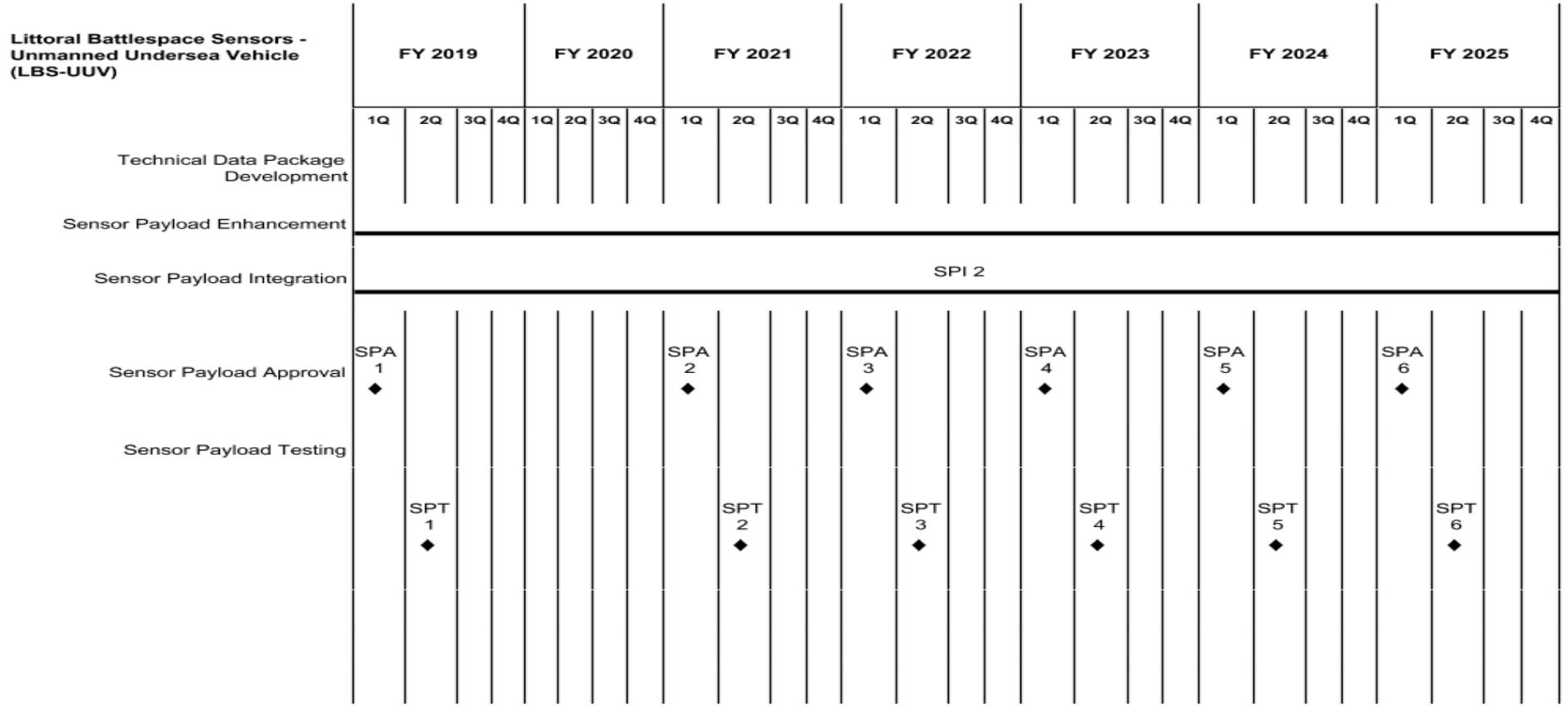
Growth in FY21 is due to award of development contract for the next generation ESRP systems.

	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		0.148		2.619		-		2.619	Continuing	Continuing	N/A

Remarks

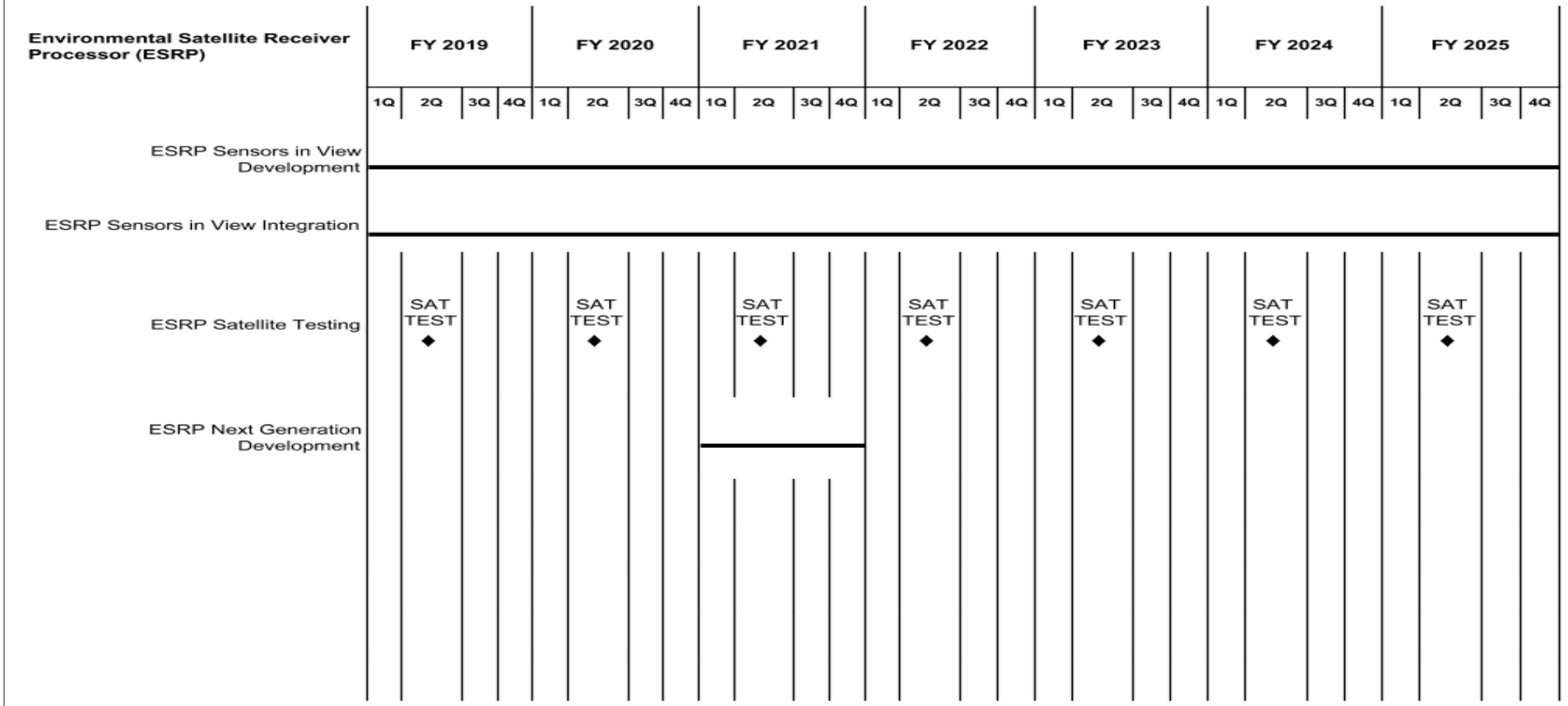
FY19 cost data is provided under PE 0604218N Project 2345.

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*



2021PB - 0604231N - 2345 NOTE: FY19 funding was provided under PE 0604218N , Project 2345.
No events planned in FY20 due to funds availability.

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*



2021PB - 0604231N - 2345 NOTE: FY19 funding was provided under PE 0604218N , Project 2345

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Littoral Battlespace Sensors - Unmanned Undersea Vehicle (LBS-UUV)				
Sensor Payload Enhancement:	1	2019	4	2025
Sensor Payload Integration: Sensor Payload Integration2	1	2019	4	2025
Sensor Payload Approval: Sensor Payload Approval 1	1	2019	1	2019
Sensor Payload Approval: Sensor Payload Approval 2	1	2021	1	2021
Sensor Payload Approval: Sensor Payload Approval 3	1	2022	1	2022
Sensor Payload Approval: Sensor Payload Approval 4	1	2023	1	2023
Sensor Payload Approval: Sensor Payload Approval 5	1	2024	1	2024
Sensor Payload Approval: Sensor Payload Approval 6	1	2025	1	2025
Sensor Payload Testing: Sensor Payload Testing 1	2	2019	2	2019
Sensor Payload Testing: Sensor Payload Testing 2	2	2021	2	2021
Sensor Payload Testing: Sensor Payload Testing 3	2	2022	2	2022
Sensor Payload Testing: Sensor Payload Testing 4	2	2023	2	2023
Sensor Payload Testing: Sensor Payload Testing 5	2	2024	2	2024
Sensor Payload Testing: Sensor Payload Testing 6	2	2025	2	2025
Environmental Satellite Receiver Processor (ESRP)				
ESRP Sensors in View Development: ESRP Sensors in View Development	1	2019	4	2025
ESRP Sensors in View Integration: ESRP Sensors in View Integration	1	2019	4	2025
ESRP Satellite Testing: ESRP Satellite Testing (FY19)	2	2019	2	2019
ESRP Satellite Testing: ESRP Satellite Testing (FY20)	2	2020	2	2020
ESRP Satellite Testing: ESRP Satellite Testing (FY21)	2	2021	2	2021
ESRP Satellite Testing: ESRP Satellite Testing (FY22)	2	2022	2	2022
ESRP Satellite Testing: ESRP Satellite Testing (FY23)	2	2023	2	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
ESRP Satellite Testing: ESRP Satellite Testing (FY24)	2	2024	2	2024
ESRP Satellite Testing: ESRP Satellite Testing (FY25)	2	2025	2	2025
ESRP Next Generation Development: ESRP Next Generation Development	1	2021	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 2363 / *Remote Sensing Capability Development*	

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
2363: *Remote Sensing Capability Development*	0.000	0.000	5.651	7.519	-	7.519	4.927	4.808	4.911	5.011	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Funding has been realigned into PE 0604231N from PE 0604218N Project 2363 as part of RDTEN PE Consolidation starting in FY20. There are no New Starts associated with this realignment. All budgeted efforts have been previously approved.

A. Mission Description and Budget Item Justification

The Remote Sensing Capabilities Development (RSCD) project designs and fields capabilities intended to enhance maritime domain awareness using non-organic sensors. Seahorse is the unclassified name for RSCD's Top Secret / Sensitive Compartmented Information (TS/SCI) project that represents the Navy's use of non-organic sensors in a maritime environment. The enabling technologies behind Seahorse currently meet a Technology Readiness Level (TRL) of five (5) or more when employed in very controlled scenarios. RSCD is actively working to shorten and streamline the Seahorse Tasking, Collections, Processing, Exploitation, and Dissemination (TCPED) cycle to meet speed of service and accuracy requirements. RSCD incorporates state of the art software in the form of Convolutional Neural Networks (CNN) and machine/continuous learning technologies, and results in a significant reduction of false alarm rates and number of Geospatial Intelligence (GEOINT). Seahorse is relied upon by PACOM and CENTCOM to provide GEOINT solutions (detail held at a higher classification). Seahorse request for collections receive adequate priority within the National Geospatial-Intelligence Agency (NGA) collection management system. The RSCD project is transitioning Seahorse to a fully integrated, cloud-based, operational project. The system addresses Fleet Integrated Prioritized Capability List (IPCL) and capabilities gaps for increasing Battlespace Awareness and Intelligence Surveillance and Reconnaissance (ISR) capabilities to support Fleet TCPED processes. The System of System (SoS) solution utilizes automated Tasking, Processing, and Exploitation systems integrated into a single SoS.

Fiscal Year (FY) 2021 funding is required to develop the operational, cloud-based architecture as well as develop the Test and Evaluation (T&E) and development environment. Additionally, FY2021 request provides for continued target data collection, enhancements on algorithms and the consolidation of numerous small image databases into one, cloud-based, image repository. FY2021 funds will develop and deliver algorithms in support of the RSCD project and will support Fleet Undersea missions. The operationalization of Seahorse supports the 2018 National Defense Strategy objectives of sustaining Joint Force military advantages, countering strategic competitors and rogue state military advancements, and streamlining development and fielding through rapid prototyping and experimentation. RSCD will accomplish this by investing in and leveraging advanced computing, "big data" analytics, machine learning, artificial intelligence, and advanced algorithms to ensure dominance in the maritime environment.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Remote Sensing Capability Development	0.000	5.651	7.519	0.000	7.519
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2363 / *Remote Sensing Capability Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
FY 2020 Plans: Collect data in various weather and sea states to broaden the range of environmental conditions and reduce uncertainty in environmental prediction. Conduct software algorithm performance analysis. Enhance software algorithms to automatically detect oceanographic phenomena. Enhance and modify software algorithms to support transition to a new architecture. Implement the algorithm performance assessment strategy as well as test and evaluation plans. Document software algorithm test reports. Integrate algorithms for access over the network. Develop training documents to provide the user community education on using the different tools and applications. Coordinate Task, Collect, Process, Exploit, Disseminate (TCPED) process amongst inter-agencies to support Navy Missions. Expand scope of the Seahorse project to include new surface detection algorithms. Develop, enhance, and integrate surface detection algorithm capabilities, and provide input to Fleet training and Concept of Operations (CONOPS) development. Effort introduces rigor and standardization of target detection capabilities in support of CLUTCHSHOT.					
FY 2021 Base Plans: Program will begin the establishment of a cloud based computing environment and data repository in order to test and evaluate, create performance metrics, and understand computational performance of algorithms and technologies that enhance Maritime Domain Awareness (MDA). Continue to operationalize Seahorse by collecting data in various weather and sea states to broaden the range of environmental conditions, reduce uncertainty in environmental prediction, and generate training data sets for Machine Learning. Continue to conduct software algorithm performance analysis and enhancements to automatically detect oceanographic phenomena to support transition to a new cloud-based architecture. Continue to develop training documents to provide the user community education on using the different tools and applications. Continue to coordinate Task, Collect, Process, Exploit, Disseminate (TCPED) process amongst inter-agencies to support Navy Missions. Based on emerging threats, continue to expand scope of the Seahorse project to include new surface detection algorithms. Program will develop, enhance, and integrate, surface detection algorithm capabilities, and provide input to Fleet training and CONOPS development. Perform Test and Evaluation and Validation and Verification of new and existing capabilities.					
FY 2021 OCO Plans: 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 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2363 / *Remote Sensing Capability Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Increase of 1.868 from FY 2020 to FY 2021 allows for additional cloud based computing environment and data repository to test and evaluate, create performance metrics, and understand computational performance of algorithms and technologies that enhance the fleet's battle space awareness.					
Accomplishments/Planned Programs Subtotals	0.000	5.651	7.519	0.000	7.519

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/0604218N/2363: *Remote Sensing Capability Development*	5.491	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.491

Remarks

D. Acquisition Strategy

Remote Sensing Capability Development (RSCD) is being managed as a Program Executive Office (PEO) Project, via a Project Definition Document (PDD) construct for acquisition rigor and oversight.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 2363 / *Remote Sensing Capability Development*	

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
Remote Sensing Capability Development Data Collection	C/FFP	SAIC : Viriginia	0.000	0.000		0.866	Feb 2020	1.153	Feb 2021	-		1.153	Continuing	Continuing	Continuing
Remote Sensing Capability Development Data Collection	WR	NRL : Washington, DC	0.000	0.000		1.347	Nov 2019	1.794	Nov 2020	-		1.794	Continuing	Continuing	Continuing
Remote Sensing Capability Development Data Collection	C/FFP	Cubic : San Diego, CA	0.000	0.000		1.385	Apr 2020	1.838	Apr 2021	-		1.838	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		3.598		4.785		-		4.785	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
Remote Sensing Capability Development Data Collection	WR	NIWC PAC : San Diego, CA	0.000	0.000		0.849	Mar 2020	1.131	Mar 2021	-		1.131	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.849		1.131		-		1.131	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

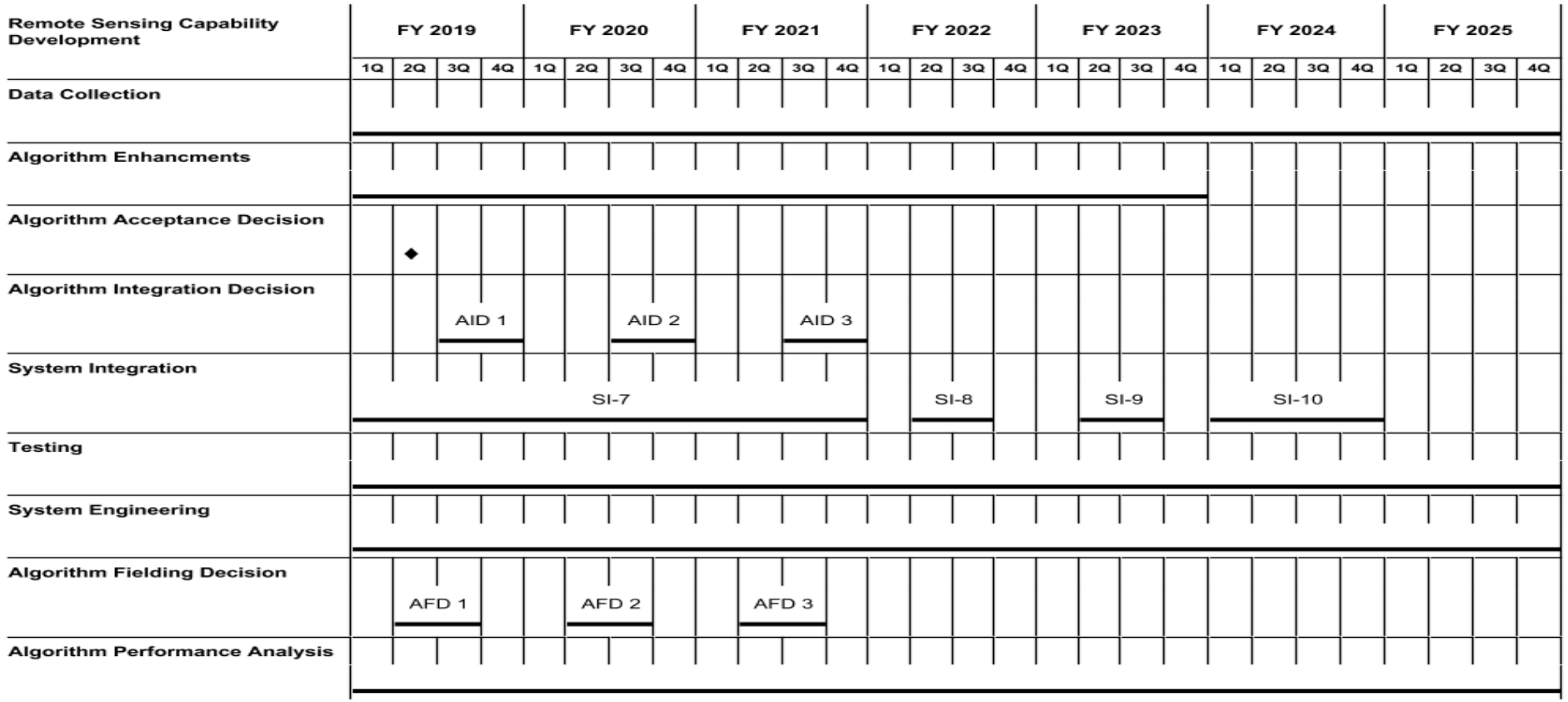
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Remote Sensing Capability Development Data Collection	WR	NIWC PAC : San Diego, CA	0.000	0.000		1.204	Mar 2020	1.603	Mar 2021	-		1.603	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		1.204		1.603		-		1.603	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 2363 / *Remote Sensing Capability Development*	

	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		5.651		7.519		-		7.519	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2363 / *Remote Sensing Capability Development*



2021DON - 0604231N - 2363

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 2363 / *Remote Sensing Capability Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Remote Sensing Capability Development				
Data Collection:	1	2019	4	2025
Algorithm Enhancments:	1	2019	4	2023
Algorithm Acceptance Decision: Algorithm Acceptance Decision	2	2019	2	2019
Algorithm Integration Decision: Algorithm Integration Decision 1	3	2019	4	2019
Algorithm Integration Decision: Algorithm Integration Decision 2	3	2020	4	2020
Algorithm Integration Decision: Algorithm Integration Decision 3	3	2021	4	2021
System Integration: System Integration 7	1	2019	4	2021
System Integration: System Integration 8	2	2022	3	2022
System Integration: System Integration 9	2	2023	3	2023
System Integration: System Integration 10	1	2024	4	2024
Testing:	1	2019	4	2025
System Engineering:	1	2019	4	2025
Algorithm Fielding Decision: Algorithm Fielding Decision 1	2	2019	3	2019
Algorithm Fielding Decision: Algorithm Fielding Decision 2	2	2020	3	2020
Algorithm Fielding Decision: Algorithm Fielding Decision 3	2	2021	3	2021
Algorithm Performance Analysis:	1	2019	4	2025

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3050 / *Deployable JT Command and Control*	

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
3050: *Deployable JT Command and Control*	0.000	0.000	3.159	3.291	-	3.291	3.364	3.424	3.494	3.565	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Funding has been realigned into PE 0604231N from PE 0607700N Project 3050 as part of RDTEN PE Consolidation starting in FY20. There are no new starts associated with this realignment.

A. Mission Description and Budget Item Justification

Deployable Joint Command and Control (DJC2) provides a self-contained, standardized, rapidly deployable, modular, scalable, and reconfigurable joint command and control (C2) capability to designated Geographic Combatant Commands (GCCs). DJC2 is the materiel solution to Defense Planning Guidance that called for the development of standing Joint Task Forces (JTFs) with a deployable C2 capability. DJC2 will ensure that Joint Force Commanders (JFC) are equipped, as well as trained and organized, to carry out their C2 responsibilities. DJC2 provides GCCs and JFCs a mission critical, integrated family of systems with which to plan, control, coordinate, execute, and assess operations. It is designed to deploy rapidly, set up within hours, and quickly provide necessary C2 mission and collaboration functionality across the full spectrum of JTF operations. The DJC2 has also been deployed in support of Humanitarian Assistance and Disaster Relief (HA/DR) efforts. The capability is intended for all levels of conflict and will be reconfigurable to meet specific GCC and JTF mission requirements. This capability is interoperable with higher and adjacent echelons of command (to include coalition allies) as well as with supporting elements to include joint forces.

FY21 funding supports development efforts for systems engineering, integration, and DJC2 Test Bed. Focus areas include emerging cyber security technologies and cloud hosting environments.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Systems Engineering & Integration	0.000	1.418	1.484	0.000	1.484
Articles:	-	-	-	-	-
FY 2020 Plans: Developing system enhancements in support of Information Assurance, Assured Command & Control, and migrating to a common infrastructure and Command and Control, Intelligence, Surveillance and Reconnaissance (C2ISR) application baseline. Identifying an Advanced Extremely High Frequency (A-EHF) voice and data solution to enhance Command & Control capabilities in denied and degraded environments. Aligning common					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3050 / *Deployable JT Command and Control*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
system architecture with Joint Information Environment (JIE) and Tactical Processing Node (TPN) via virtualized Software Defined Networks (SDN) with fine-grained application access and control effort. ***FY 2021 Base Plans:*** Develop system enhancements in support of Information Assurance and migration to a cloud hosting environment. Develop Agile Core Services for Shore with on-demand mission capabilities to include user and application data replication/synchronization, cloud patching, and user to provision infrastructure, applications, and cloud based services. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Increase from FY20 to FY21 is due to the development of agile core services for shore engineering efforts.					
Title: DJC2 RDT&E Test Bed	0.000	1.741	1.807	0.000	1.807
Articles:	-	-	-	-	-
FY 2020 Plans: Testing in support of enhanced Information Assurance to include Automated Cyber Security testing, automated system vulnerability patching download, and system micro-segmentation. Demonstrating Advanced Extremely High Frequency (A-EHF) voice and data solution to enhance Command & Control capabilities in denied and degraded environments. Testing Link 16, Virtual Secure Enclave, and Automated Network capabilities. Demonstrating a Mission Partner Environment (MPE) aligned common system architecture with Tactical Processing Node (TPN) capability via virtualized Software Defined Networks (SDN) with fine-grained application access and control. ***FY 2021 Base Plans:*** Test system enhancements in support of Information Assurance and migration to a Cloud hosting environment. Perform lab testing of Agile Core Services for Shore with on-demand mission capabilities to include user and application data replication/synchronization, cloud patching, and provisioning infrastructure, applications, and Cloud based services. ***FY 2021 OCO Plans:*** 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 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3050 / *Deployable JT Command and Control*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Increase from FY20 to FY21 is due lab testing of agile core services for shore engineering efforts.					
Accomplishments/Planned Programs Subtotals	0.000	3.159	3.291	0.000	3.291

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 /2906: *Tactical/ Mobile C4I Systems/DJC2*	2.666	3.053	2.278	-	2.278	2.092	2.144	2.173	2.215	Continuing	Continuing
• RDTEN/0607700N/3050: *Deployable JT Command and Control*	2.817	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	8.744

Remarks

D. Acquisition Strategy

This RDT&E line supports an evolutionary acquisition strategy. The intent of this strategy is to: develop a system based upon a current understanding of joint requirements; rapidly field systems based upon those requirements; analyze operational utilization of the systems; and roll the results of the analysis into periodic upgrades of the systems to maintain currency and maximize operational effectiveness. Efforts include investigation of emerging technologies through study, development, and associated testing for feasibility of program insertion. The baseline configuration is based upon existing Command, Control, Communications, Computers, & Intelligence (C4I) systems, scaled to the Combatant Command level. The follow-on configurations will include newly developed capabilities based on emergent, joint requirements and operational feedback based upon utilization of earlier delivered systems. Ultimately, the goal is to perform quick and affordable integration of emergent transformational Commercial Off the Shelf (COTS) and Government Off the Shelf (GOTS) technologies in support of information warfare and overall efforts required to pace the threat. This is accomplished via technical analysis and engineering efforts associated with implementation of new technology to enable rapid introduction of new products and technology, prevent obsolescence, and end of support issues enhancements via incremental software & hardware upgrades delivered on annual build release

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3050 / *Deployable JT Command and Control*	

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	WR	NSWC : Panama City, FL	0.000	0.000		0.440	Dec 2019	0.462	Dec 2020	-		0.462	Continuing	Continuing	Continuing
Hardware/Software Development	C/CPAF	GTRI : Atlanta, GA	0.000	0.000		0.750	Dec 2019	0.785	Dec 2020	-		0.785	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		1.190		1.247		-		1.247	Continuing	Continuing	N/A

Remarks

FY19 cost data is provided under PE 0607700N Project 3050.

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
Software Integration	WR	NSWC : Panama City, FL	0.000	0.000		0.411	Dec 2019	0.428	Dec 2020	-		0.428	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.411		0.428		-		0.428	Continuing	Continuing	N/A

Remarks

FY19 cost data is provided under PE 0607700N Project 3050.

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	WR	NSWC : Panama City, FL	0.000	0.000		0.890	Dec 2019	0.926	Dec 2020	-		0.926	Continuing	Continuing	Continuing
Operational Test	WR	NSWC : Panama City, FL	0.000	0.000		0.500	Dec 2019	0.521	Dec 2020	-		0.521	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		1.390		1.447		-		1.447	Continuing	Continuing	N/A

Remarks

FY19 cost data is provided under PE 0607700N Project 3050.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3050 / *Deployable JT Command and Control*	

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	WR	NIWC PAC : San Diego, CA	0.000	0.000		0.168	Dec 2019	0.169	Dec 2020	-		0.169	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.168		0.169		-		0.169	Continuing	Continuing	N/A

Remarks

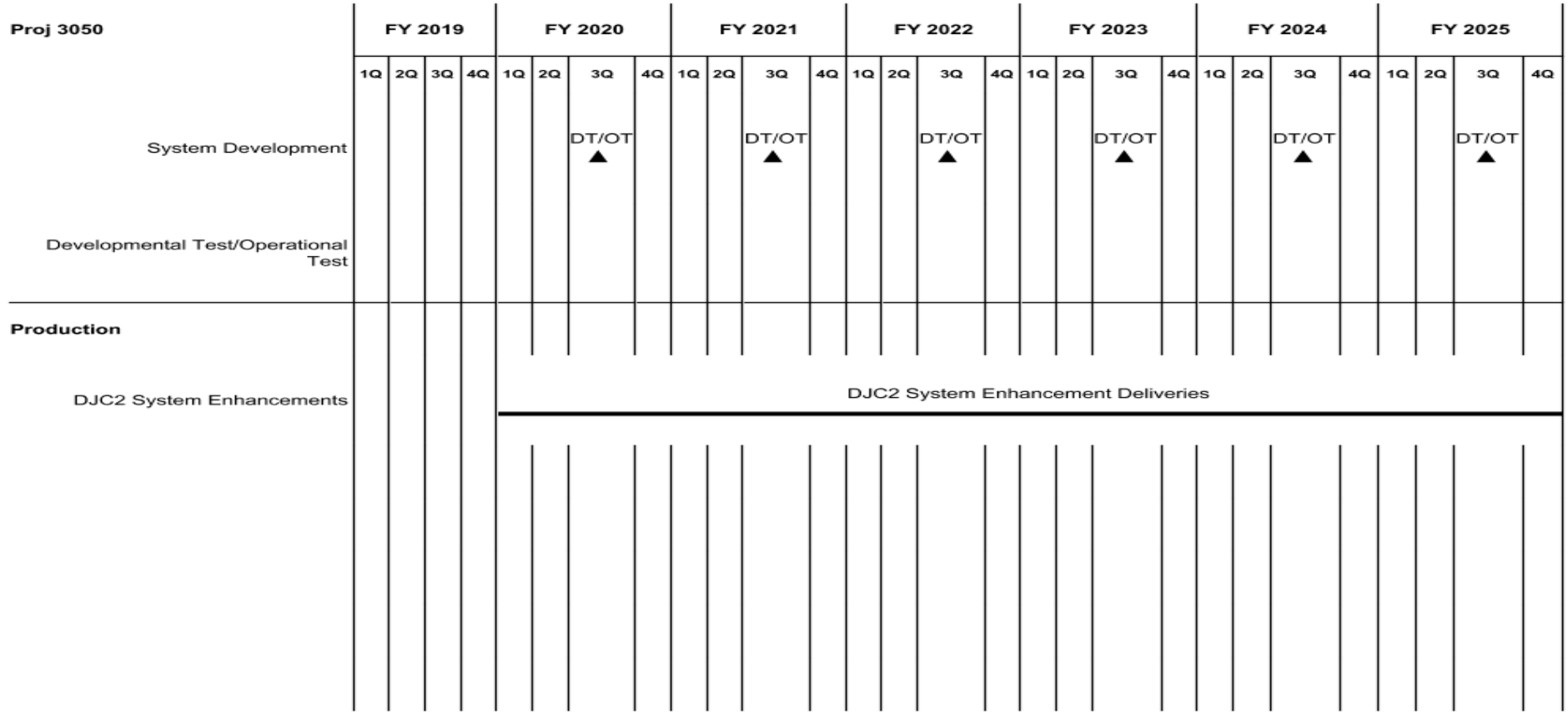
FY19 cost data is provided under PE 0607700N Project 3050.

	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		3.159		3.291		-		3.291	Continuing	Continuing	N/A

Remarks

FY19 cost data is provided under PE 0607700N Project 3050.

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3050 / *Deployable JT Command and Control*



2021DON - 0604231N - 3050

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3050 / *Deployable JT Command and Control*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3050				
System Development: Developmental Test/Operational Test FY 2020	3	2020	3	2020
System Development: Developmental Test/Operational Test FY 2021	3	2021	3	2021
System Development: Developmental Test/Operational Test FY 2022	3	2022	3	2022
System Development: Developmental Test/Operational Test FY 2023	3	2023	3	2023
System Development: Developmental Test/Operational Test FY 2024	3	2024	3	2024
System Development: Developmental Test/Operational Test FY 2025	3	2025	3	2025
Production: DJC2 System Enhancements: DJC2 System Enhancement Deliveries	1	2020	4	2025

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*	

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
3260: *Naval Operations Business Logistics Enterprise (NOBLE)*	12.656	33.298	35.126	63.633	-	63.633	32.661	19.857	13.464	0.000	0.000	210.695
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops and improves the Navy's tactical support information systems. It includes Naval Operational Supply System (NOSS), Naval Aviation Maintenance System (NAMS), and Naval Operational Maintenance Environment (NOME).

The NOBLE mission is to provide the Navy and Marine Corps with an integrated, scalable system that supports the management of logistical information, material, and funds required to maintain and operate ships, submarines, and aircraft.

Increase from FY20-21 is due to increased software modification and licensing costs based on additional information from vendors. Funding provides for the continuation of the Acquisition Testing & Development phase to include NOSS, NAMS, and NOME Use Case configuration to support Developmental Test (DT) events, software configuration/modeling and integration of 3D visualization, and external interface development. Funding also procures COTS software licenses in support of continuing development activities including data migration and validation activities at a Fleet Readiness Center (FRC), Marine Aviation Logistics Squadron (MALS), Unit level (CG/DDG) and Force level (CVN/LHD) ships, Navy Expeditionary Combat Command (NECC) units, and Navy and Marine Corps aviation squadrons. Provide installation and training to support the transition of the current Naval Tactical Command Support System (NTCSS) client-server architecture to a modern service oriented architecture (SOA) running in a Department of the Navy (DON) commercial cloud computing environment culminating in obtaining a Limited Deployment Authority To Proceed (LD-ATP) and a subsequent Full Deployment ATP (FD-ATP) decision.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Naval Operational Supply System (NOSS)	16.379	14.196	20.000	0.000	20.000
Articles:	-	-	-	-	-
FY 2020 Plans: Award a follow on OTA contract in Q2 to continue the Acquisition Testing & Deployment phase of NOSS software development to include, Test & Evaluation Master Plan (TEMP) development, Life Cycle Sustainment Planning, assess vulnerability to cyber attacks in support of obtaining an Authority To Operate (ATO) authorization, validate production requirements, training development, conduct Application Integration testing in the Consolidated Afloat Network and Enterprise Services (CANES) and Agile Core Services (ACS) environment, and conduct Functional Manager Certification (FMC). Continue NOSS software development effort to develop/					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
design an Integrated Data Environment (IDE), which will be potentially leveraged by all Naval Business Logistics Business Systems. NOSS will subsume ~14 legacy applications and support approximately 1000 sites. ***FY 2021 Base Plans:*** Continue the Testing & Deployment phase of NOSS to include Integration and Developmental/Functional Testing and if successful lead to a Limited Deployment ATP. If testing at the Limited Deployment sites is successful we anticipate a Full Deployment ATP decision by the MDA to then execute rolling out the NOSS capability to the fleet. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The increase from FY20 to FY21 is due to additional software licensing, development of training material, site installation and training activities, and data migration and validation associated with the Acquisition Testing & Deployment phase for the NOSS to include the Integrated Data Environment (Government Cloud hosting license fees) required to support the Program of Records (PORs).					
Title: Naval Aviation Maintenance System (NAMS)	7.359	11.090	25.100	0.000	25.100
Articles:	-	-	-	-	-
FY 2020 Plans: Award a follow on OTA contract in Q2 to continue the Acquisition Testing & Deployment phase of NAMS software development to include, TEMP development, Life Cycle Sustainment Planning, assess vulnerability to cyber attacks in support of obtaining an ATO authorization, validation of production requirements, training development, integration efforts with the Aviation Logistics Environment (ALE), develop/design an Integrated Data Environment (IDE) to support the NAMS application, conduct Application Integration testing in the CANES and ACS environment, and conduct FMC. NAMS will subsume 2 legacy applications and will support 338 sites. ***FY 2021 Base Plans:*** Continue and increase software development efforts for NAMS. Continue the Testing & Deployment phase of NAMS to include Integration and Developmental/Functional Testing and if successful lead to a Limited Deployment ATP. If testing at the Limited Deployment sites is successful we anticipate a Full Deployment ATP decision by the MDA to then execute rolling out the NAMS capability to the fleet. ***FY 2021 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

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 ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The significant increase from FY20 to FY21 is primarily attributed to ramping up software development efforts specific to aviation maintenance requirements as well as increased license costs related to development efforts. Additional funding also supports development activities, development of training materials, site installation and training activities, to include data migration and validation associated with the Acquisition Testing & Deployment phase for NAMS and the Integrated Data Environment (Government Cloud hosting license fees) required to support the Program of Records (PORs) in support of attaining a LD-ATP decision.					
Title: Naval Operational Maintenance Enterprise (NOME)	9.560	9.840	18.533	0.000	18.533
Articles:	-	-	-	-	-
FY 2020 Plans: Award a follow on OTA contract in Q2 to continue the Acquisition Testing & Deployment phase of NOME software development to include, Test & Evaluation Master Plan (TEMP) development, Life Cycle Sustainment Planning, assess vulnerability to cyber attacks in support of obtaining an Authority To Operate (ATO) authorization, validate production requirements, training development, develop/design an Integrated Data Environment (IDE) to support the NOME application, conduct Application Integration testing in the Consolidated Afloat Network and Enterprise Services (CANES) and Agile Core Services (ACS) environment, and conduct Functional Manager Certification (FMC). NOME will subsume ~5 legacy applications and will support 260 sites. ***FY 2021 Base Plans:*** Continue and increase software development efforts for NOME. Continue the Testing & Deployment phase of NOME to include Integration and Developmental/Functional Testing and if successful lead to a Limited Deployment ATP. If testing at the Limited Deployment sites is successful we anticipate a Full Deployment ATP decision by the MDA to then execute rolling out the NOME capability to the fleet. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The significant increase from FY20 to FY21 is primarily attributed to ramping up software development efforts specific to operational maintenance requirements as well as increased license costs related to development efforts. Additional funding also supports development activities, development of training materials, site installation and training activities, to include data migration and validation associated with the Acquisition Testing					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
& Deployment phase for NOME and the Integrated Data Environment (Government Cloud hosting license fees) required to support the Program of Records (PORs) in support of attaining a LD-ATP decision.					
Accomplishments/Planned Programs Subtotals	33.298	35.126	63.633	0.000	63.633

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/2611: *Naval Tact Cmd Supt Sys (NTCSS)*	11.391	15.154	15.385	-	15.385	16.476	18.124	18.377	18.740	Continuing	Continuing

Remarks

D. Acquisition Strategy

NOBLE will employ an evolutionary acquisition strategy. Software development/configuration will be comprised of multiple builds to include the ability to utilize mobile computing devices, each with increasing net-centric services capability. NOBLE is planned to leverage Commercial Off The Shelf (COTS) software programs, dependent on the Navy Common Computing Environment (CCE). Hardware infrastructure will be provided by CANES, Integrated Shipboard Network System (ISNS), Navy Marine Corps Intranet (NMCI), Next Generation Enterprise Network (NGEN), OneNET (the OCONUS (outside of continental United States) network), and the Department of Navy commercial cloud computing environments. NOBLE's primary contracting method for software products will be competitive award.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

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
NOME Software Development	MIPR	PEO STRI : Orlando, FL	0.000	5.000	Dec 2018	1.390	Jan 2020	10.800	Oct 2020	-		10.800	14.519	31.709	-
NOME Software Development/Infrastucture	C/CPFF	TBD : San Diego, CA	0.000	0.000		3.500	Feb 2020	4.000	Feb 2021	-		4.000	0.000	7.500	-
NAMS Software Development	MIPR	PEO STRI : Orlando, FL	0.000	2.699	Dec 2018	2.640	Jan 2020	17.300	Oct 2020	-		17.300	22.305	44.944	-
NOSS Software Development/Infrastucture	C/CPFF	TBD : San Diego, CA	0.000	0.000		3.500	Feb 2020	4.000	Feb 2021	-		4.000	0.000	7.500	-
NOSS Software Development	MIPR	PEO STRI : Orlando, FL	1.500	10.719	Dec 2018	5.746	Jan 2020	12.200	Oct 2020	-		12.200	15.989	46.154	-
NAMS Software Development/Infrastucture	C/CPFF	TBD : San Diego, CA	0.000	0.000		3.500	Feb 2020	4.000	Feb 2021	-		4.000	0.000	7.500	-
NOME System Engineering	WR	NIWC Atlantic : Norfolk, VA	0.000	1.440	Dec 2018	1.500	Oct 2019	0.500	Oct 2020	-		0.500	0.502	3.942	-
NOSS System Engineering	WR	NIWC Atlantic : Norfolk, VA	0.704	1.440	Oct 2018	1.500	Oct 2019	0.500	Oct 2020	-		0.500	0.502	4.646	-
NOSS System Engineering	WR	USFFC : Norfolk, VA	0.746	1.000	Dec 2018	0.000		0.000		-		0.000	0.000	1.746	-
NAMS Detailed BPR	WR	NAVAIR : Patuxent River, MD	0.849	0.000		0.000		0.000		-		0.000	0.000	0.849	-
NAMS System Engineering	WR	NIWC Atlantic : Norfolk, VA	0.750	1.440	Oct 2018	1.500	Oct 2019	0.500	Oct 2020	-		0.500	0.502	4.692	-
NAMS Analyis of Alternatives (AoA)	C/CPFF	Client Solution Architects LLC : San Diego, CA	0.537	0.000		0.000		0.000		-		0.000	0.000	0.537	-
NAMS Analyis of Alternatives (AoA)	MIPR	WHQS : Washington DC	0.539	0.000		0.000		0.000		-		0.000	0.000	0.539	-
		Subtotal	5.625	23.738		24.776		53.800		-		53.800	54.319	162.258	N/A

Remarks

Variance in software development costs by program is driven by the unique set of requirements each application has and in FY21 the associated license fees to support the Limited Deployment sites.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

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
NOME FMC Developmental Test & Evaluation	WR	NAVSEA : Washington, D.C.	0.000	0.200	Dec 2018	0.200	Feb 2020	0.300	Oct 2020	-		0.300	0.150	0.850	-
NOME Operational Test & Evaluation	WR	COTF : Norfolk, VA	0.000	0.200	Mar 2019	0.000		0.000		-		0.000	0.150	0.350	-
NAMS FMC Developmental Test & Evaluation	WR	NAVAIR : Patuxent River, MD	0.000	0.250	Oct 2018	0.200	Feb 2020	0.300	Oct 2020	-		0.300	0.150	0.900	-
NAMS Operational Test & Evaluation	WR	COTF : Norfolk, VA	0.000	0.250	Mar 2019	0.000		0.000		-		0.000	0.150	0.400	-
NOSS FMC Developmental Test & Evaluation	WR	NAVSUP : Mechanicsburg, PA	0.250	0.250	Oct 2018	0.200	Feb 2020	0.300	Oct 2020	-		0.300	0.150	1.150	-
NOSS Operational Test & Evaluation (Documentation)	WR	COTF : Norfolk, VA	0.250	0.250	Mar 2019	0.000		0.000		-		0.000	0.150	0.650	-
		Subtotal	0.500	1.400		0.600		0.900		-		0.900	0.900	4.300	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
NOME System Engineering Support	WR	NIWC Pacific : San Diego, CA	0.000	1.120	Dec 2018	1.500	Oct 2019	1.500	Oct 2020	-		1.500	1.504	5.624	-
NOSS System Engineering Support	WR	NIWC Pacific : San Diego, CA	1.390	1.120	Oct 2018	1.500	Oct 2019	1.500	Oct 2020	-		1.500	1.504	7.014	-
NAMS System Engineering Support	WR	NIWC Pacific : San Diego, CA	0.250	1.120	Oct 2018	1.500	Oct 2019	1.500	Oct 2020	-		1.500	1.504	5.874	-
NOSS Systems Engineering Support	C/CPFF	SENTEK Global : San Diego, CA	2.666	0.600	Dec 2018	0.750	Jan 2020	0.750	Oct 2020	-		0.750	0.752	5.518	-
NAMS Systems Engineering Support	C/CPFF	SENTEK Global : San Diego, CA	0.225	0.600	Dec 2018	0.750	Jan 2020	0.750	Oct 2020	-		0.750	0.752	3.077	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

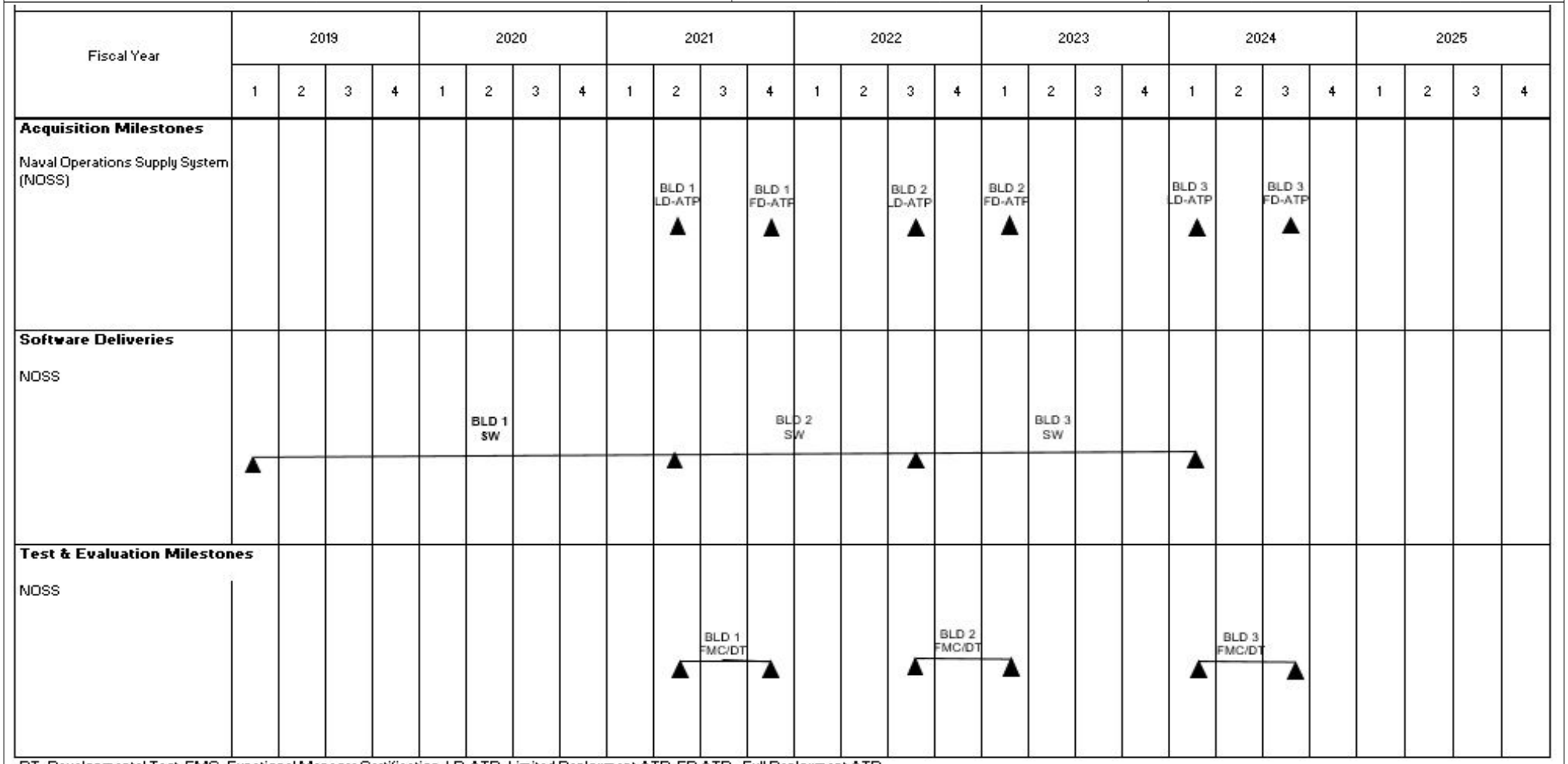
Management Services ($ in Millions)

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
NOME Systems Engineering Support	C/CPFF	SENTEK Global : San Diego, CA	0.000	0.600	Dec 2018	0.750	Jan 2020	0.750	Oct 2020	-		0.750	0.752	2.852	-
NOME Program Management Support	C/CPFF	Booz Allen Hamilton : San Diego, CA	0.000	1.000	Dec 2018	1.000	Jan 2020	0.683	Oct 2020	-		0.683	1.002	3.685	-
NOSS Program Management Support	C/CPFF	Booz Allen Hamilton : San Diego, CA	1.000	1.000	Dec 2018	1.000	Jan 2020	0.750	Oct 2020	-		0.750	1.002	4.752	-
NAMS Program Management Support	C/CPFF	Booz Allen Hamilton : San Diego, CA	1.000	1.000	Dec 2018	1.000	Jan 2020	0.750	Oct 2020	-		0.750	1.002	4.752	-
		Subtotal	6.531	8.160		9.750		8.933		-		8.933	9.774	43.148	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	12.656	33.298		35.126		63.633		-		63.633	64.993	209.706	N/A

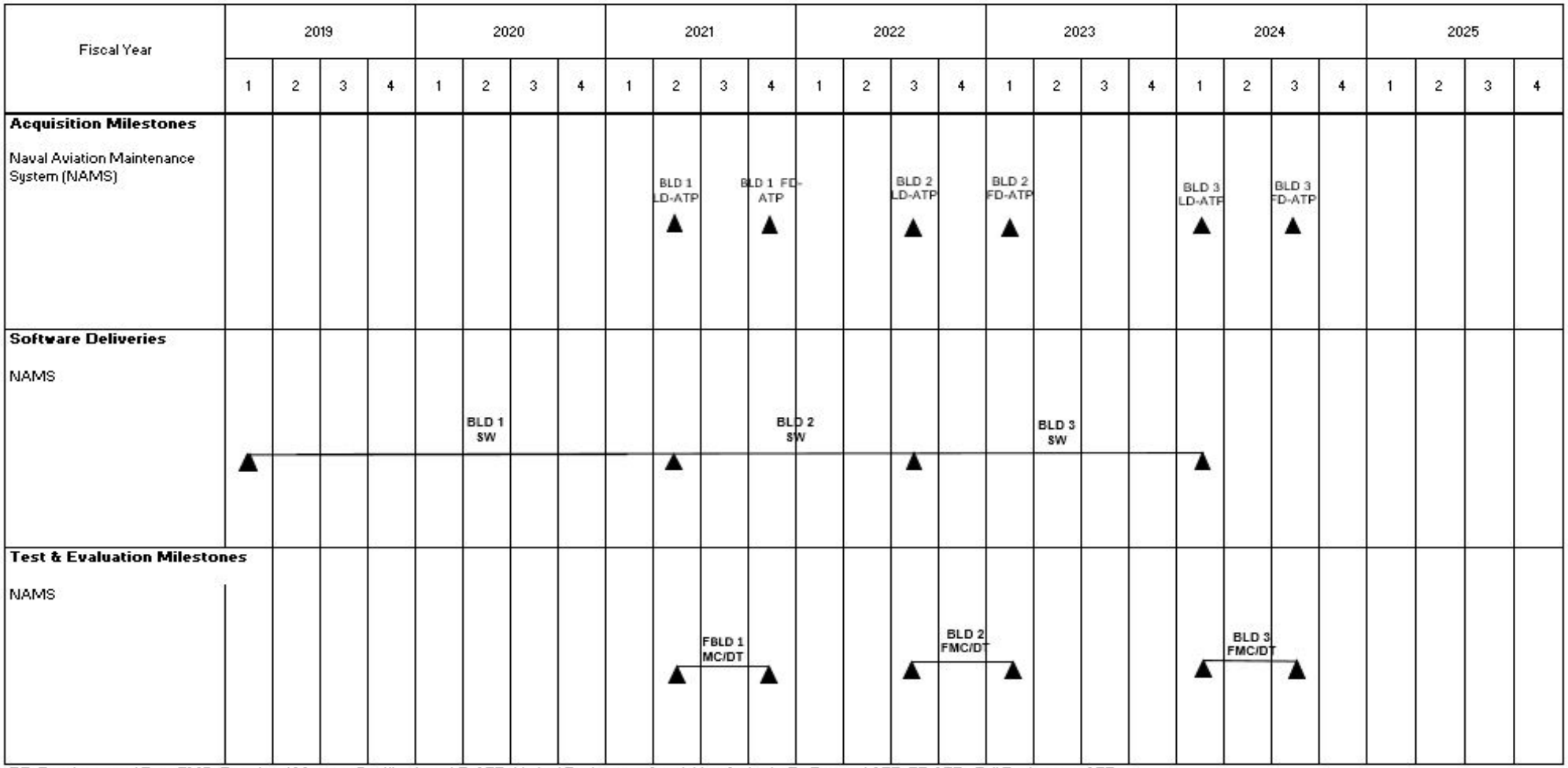
Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*



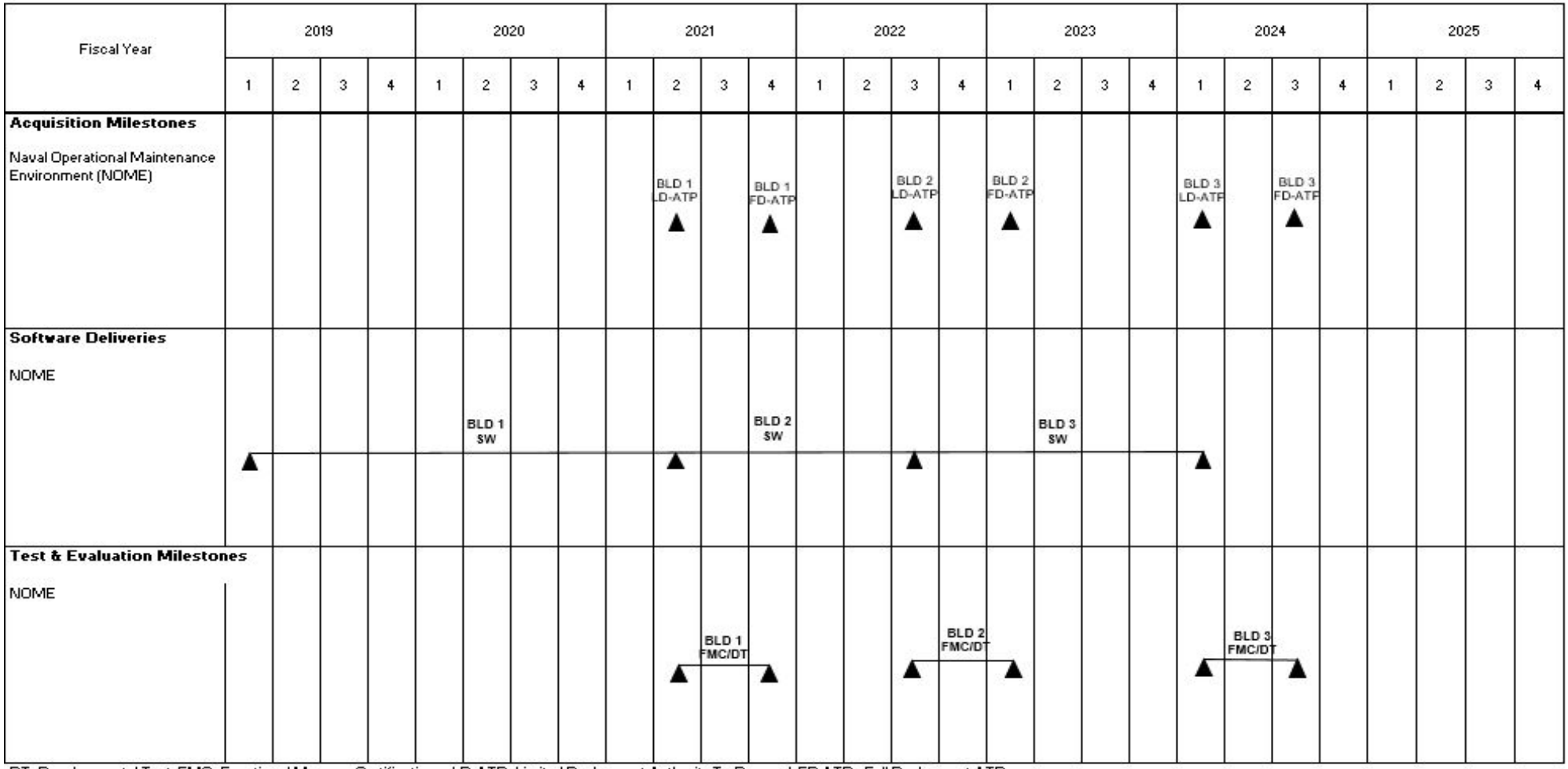
DT- Developmental Test; FMC- Functional Manager Certification; LD-ATP- Limited Deployment ATP; FD ATP - Full Deployment ATP

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*



DT- Developmental Test; FMC- Functional Manager Certification; - LD-ATP- Limited Deployment Acquisition Authority To Proceed ATP; FD ATP - Full Deployment ATP;

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*



DT- Developmental Test; FMC- Functional Manager Certification; ; LD-ATP- Limited Deployment Authority To Proceed; FD ATP - Full Deployment ATP

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3260				
Naval Operational Supply System (NOSS) Build 1 Software Development	1	2019	2	2021
Naval Operational Supply System (NOSS) Build 2 Software Development	2	2021	3	2022
Naval Operational Supply System (NOSS) Build 3 Software Development	3	2022	1	2024
Naval Operational Maintenance Enterprise (NOME) Build 1 Software Development	1	2019	2	2021
Naval Operational Maintenance Enterprise (NOME) Build 2 Software Development	2	2021	3	2022
Naval Operational Maintenance Enterprise (NOME) Build 3 Software Development	3	2022	1	2024
Naval Aviation Maintenance System (NAMS) Build 1 Software Development	1	2019	2	2021
Naval Aviation Maintenance System (NAMS) Build 2 Software Development	2	2021	3	2022
Naval Aviation Maintenance System (NAMS) Build 3 Software Development	3	2022	1	2024
NOSS Build 1 Limited Deployment ATP	2	2021	2	2021
NOSS Build 2 Limited Deployment ATP	3	2022	3	2022
NOSS Build 3 Limited Deployment ATP	1	2024	1	2024
NAMS Build 1 Limited Deployment ATP	2	2021	2	2021
NAMS Build 2 Limited Deployment ATP	3	2022	3	2022
NAMS Build 3 Limited Deployment ATP	1	2024	1	2024
NOME Build 1 Limited Deployment ATP	2	2021	2	2021
NOME Build 2 Limited Deployment ATP	3	2022	3	2022
NOME Build 3 Limited Deployment ATP	1	2024	1	2024
NOSS Build 1 Developmental Test/Functional Manager Certification (DT/FMC)	2	2021	4	2021
NOSS Build 2 Developmental Test/Functional Manager Certification (DT/FMC)	3	2022	1	2023
NOSS Build 3 Developmental Test/Functional Manager Certification (DT/FMC)	1	2024	3	2024

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
NAMS Build 1 Developmental Test/Functional Manager Certification (DT/FMC)	2	2021	4	2021
NAMS Build 2 Developmental Test/Functional Manager Certification (DT/FMC)	3	2022	1	2023
NAMS Build 3 Developmental Test/Functional Manager Certification (DT/FMC)	1	2024	3	2024
NOME Build 1 Developmental Test/Functional Manager Certification (DT/FMC)	2	2021	4	2021
NOME Build 2 Developmental Test/Functional Manager Certification (DT/FMC)	3	2022	1	2023
NOME Build 3 Developmental Test/Functional Manager Certification (DT/FMC)	1	2024	3	2024
NOSS Build 1 Full Deployment ATP	4	2021	4	2021
NOSS Build 2 Full Deployment ATP	1	2023	1	2023
NOSS Build 3 Full Deployment ATP	3	2024	3	2024
NAMS Build 1 Full Deployment ATP	4	2021	4	2021
NAMS Build 2 Full Deployment ATP	1	2023	1	2023
NAMS Build 3 Full Deployment ATP	3	2024	3	2024
NOME Build 1 Full Deployment ATP	4	2021	4	2021
NOME Build 2 Full Deployment ATP	1	2023	1	2023
NOME Build 3 Full Deployment ATP	3	2024	3	2024

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3323 / *Maritime Tactical Command & Control (MTC2)*	

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
3323: *Maritime Tactical Command & Control (MTC2)*	72.741	11.706	8.659	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	93.106
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Maritime Tactical Command and Control (MTC2) is a next generation Command and Control (C2) software program that will deliver Battle Management Aids (BMA) and Maritime Planning Tools (MPT) to dynamically plan, direct, monitor, and assess maritime operations in support of Joint, Multi-Service, and Coalition Force planning. MTC2 will leverage a System of Services (SoServ) to deliver capabilities improving decision speed and dynamic synchronization of forces. BMAs / MPTs are small, capability-focused deliveries that can be rapidly developed, tested, and fielded. MTC2 will leverage Science and Technology (S&T) investments and will engage with the Navy Requirements Governance Board (RGB) to define and prioritize the BMAs and MPTs that MTC2 will deliver and align to the Program Executive Office (PEO) Command, Control, Communications, and Intelligence (C4I) enterprise architecture (Consolidated Afloat Network Enterprise Service (CANES), Agile Core Services (ACS)) for fielding to all echelons of command (Afloat and Ashore) within the Navy. The program's objective is to provide a suite of maritime applications (BMAs / MPTs) that enable planning, execution, monitoring, and assessment in support of operational and tactical level of war requirements. MTC2 will field BMAs / MPTs designed to provide automated and structured support for tactical and operational planning, decision-making, and execution. As a software-only program that leverages enterprise infrastructure, MTC2 will provide new and improved capabilities to include an Operational Planning Tool (OPT), an improved browser enabled map visualization that will enable the warfighter to associate tracks to relevant data, past and predicted movements, ingest Meteorology and Oceanography information, and operational overlays. MTC2's updated architecture will enable future composable C2 capabilities to respond with a more rapid pace in changes in threats and technology. MTC2 is the Navy's solution to Global Force Management - Data Initiative (GFM-DI) which is Department of Defense (DoD) -wide enterprise solution that enables visibility/accessibility/ sharing of data applicable to the entire DoD force structure. MTC2 will incorporate distributed data transfer capability for enhanced operational data exchange between command and control systems, combat systems, logistics, and intelligence systems for timely threat identification, location, and status alongside blue force data.

Starting in FY2021, MTC2 budget controls have been realigned from Research, Development, Test & Evaluation (RDT&E) Program Element (PE) 0604231N Project Unit 3323 and Operations, Maintenance, Navy (OMN) PE 0204660N AGSAG 1C1C Project Unit 70100 and consolidated into a single Software & Digital Technology Pilot Program under a new Budget Activity (BA 8) as directed by Section 872 of the National Defense Authorization Act (NDAA) for FY 2018 (P.L. 115-91).

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 Tactical Command and Control (MTC2)	11.706	8.659	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2020 Plans: MTC2 will begin initial fielding Ashore/Afloat of the Program of Record (PoR) capability to a Carrier Strike Group (CSG) and/or Maritime Operations Center (MOC); continue development aligned to Program Executive Office					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3323 / *Maritime Tactical Command & Control (MTC2)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
(PEO) Command, Control, Communications, and Intelligence (C4I) enterprise architecture (CANES / ACS) updates, changes and modifications. MTC2 will continue to receive feedback from fleet users for development, integration, and testing of additional capabilities/enhancements (Battle Management Aids (BMAs) / Maritime Planning Tools (MPT)) to inform the MTC2 Requirements Governance Board (RGB) for consideration of future capability drops. MTC2 will develop, test, and integrate additional data feeds and interfaces as needed for machine-to-machine planning. Data feeds integrated into MTC2 will be displayed seamlessly on a single display for fleet users which will require ongoing Human Factors Engineering (HFE) in addition to development, integration, and test. MTC2 will continue to host fleet users in working sessions and incorporate HFE and development updates for BMA / MPT improvements. MTC2 will target demonstrations of capabilities at Trident Warrior (TW) 20. MTC2 will continue integration and testing of Global Force Management - Data Initiative (GFM-DI) capabilities for transition into the MTC2 software baseline for fielding. Capability Drop 2 was defined in the MTC2 RGB Prioritized Focus Areas (signed 16 March 2018) to provide Navy Dynamic Organization to Joint Global Force Management (GFM) community. This capability drop has been accelerated to meet the Joint Global Force Management - Data Initiative (GFM-DI) Allocation mandate to Full Operational Capability (FOC) by FY 2020. ***FY 2021 Base Plans:*** N/A ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** FY21 and out moved to new BA08. Reference PE 0608231N Project 3323. Starting in FY2021, MTC2 budget controls have been realigned from Research, Development, Test & Evaluation (RDT&E) Program Element (PE) 0604231N Project Unit 3323 and Operations, Maintenance, Navy (OMN) PE 0204660N AGSAG 1C1C Project Unit 70100 and consolidated into a single Software & Digital Technology Pilot Program under a new Budget Activity (BA 8) as directed by Section 872 of the National Defense Authorization Act (NDAA) for FY 2018 (P.L. 115-91).					
Accomplishments/Planned Programs Subtotals	11.706	8.659	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3323 / *Maritime Tactical Command & Control (MTC2)*

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/0608231N/3323: *Maritime Tactical Command & Control (MTC2)*	0.000	0.000	10.868	-	10.868	11.204	11.520	11.789	11.990	Continuing	Continuing

Remarks

D. Acquisition Strategy

MTC2 acquisition strategy will align to DoDI 5000.02 Model 3 Incrementally Deployed Software Intensive Program. MTC2 will execute an agile software development acquisition strategy that is responsive to the fleet needs. Instead of a single Milestone C, software development will be comprised of multiple software releases defined by Capability Drops (CDs) of increasing levels of net-centric services capability, with separate Annual Build Decisions. MTC2 will be software only requiring the information technology infrastructure network and hardware provided by other network centric programs. MTC2's primary contracting method for software development will utilize Naval Information Warfare Systems Command (NAVWAR) contracts. Naval Information Warfare Center - Pacific (NIWC-PAC), San Diego, CA will be the designated Software Support Activity (SSA).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3323 / *Maritime Tactical Command & Control (MTC2)*

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	WR	NIWC : San Diego, CA	10.813	2.909	Dec 2018	1.006	Dec 2019	0.000		-		0.000	0.000	14.728	14.728
Training Development	WR	NIWC : San Diego, CA	1.940	0.078	Dec 2018	0.058	Dec 2019	0.000		-		0.000	0.000	2.076	2.076
Integration, Assembly & Test	WR	NIWC : San Diego, CA	27.796	3.009	Dec 2018	0.775	Dec 2019	0.000		-		0.000	0.000	31.580	31.580
Studies & Design	MIPR	Various : Various	1.764	0.000		0.000		0.000		-		0.000	0.000	1.764	1.764
Systems Engineering	C/CPFF	Various : Various	13.353	1.855	Dec 2018	1.312	Dec 2019	0.000		-		0.000	0.000	16.520	16.520
Software Development	WR	NIWC : San Diego, CA	10.930	2.894	Dec 2018	4.936	Dec 2019	0.000		-		0.000	0.000	18.760	18.760
		Subtotal	66.596	10.745		8.087		0.000		-		0.000	0.000	85.428	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
Integrated Logistics Support	WR	NIWC : Norfolk, VA/ San Diego, CA	0.198	0.078	Dec 2018	0.048	Dec 2019	0.000		-		0.000	0.000	0.324	0.324
Integrated Logistics Support	C/CPFF	SeaPort : San Diego, CA	0.078	0.148	Dec 2018	0.121	Dec 2019	0.000		-		0.000	0.000	0.347	0.347
		Subtotal	0.276	0.226		0.169		0.000		-		0.000	0.000	0.671	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
Program Management Support	C/CPFF	SeaPort : San Diego, CA	4.381	0.735	Dec 2018	0.403	Dec 2019	0.000		-		0.000	0.000	5.519	5.519
Management Services Prior Year	Various	Various : Various	1.488	0.000		0.000		0.000		-		0.000	0.000	1.488	1.488
		Subtotal	5.869	0.735		0.403		0.000		-		0.000	0.000	7.007	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3323 / *Maritime Tactical Command & Control (MTC2)*	

	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	72.741	11.706		8.659		0.000		-		0.000	0.000	93.106	N/A

Remarks

FY21 and out moved to new BA08. Reference PE 0608231N Project 3323.

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3323 / *Maritime Tactical Command & Control (MTC2)*

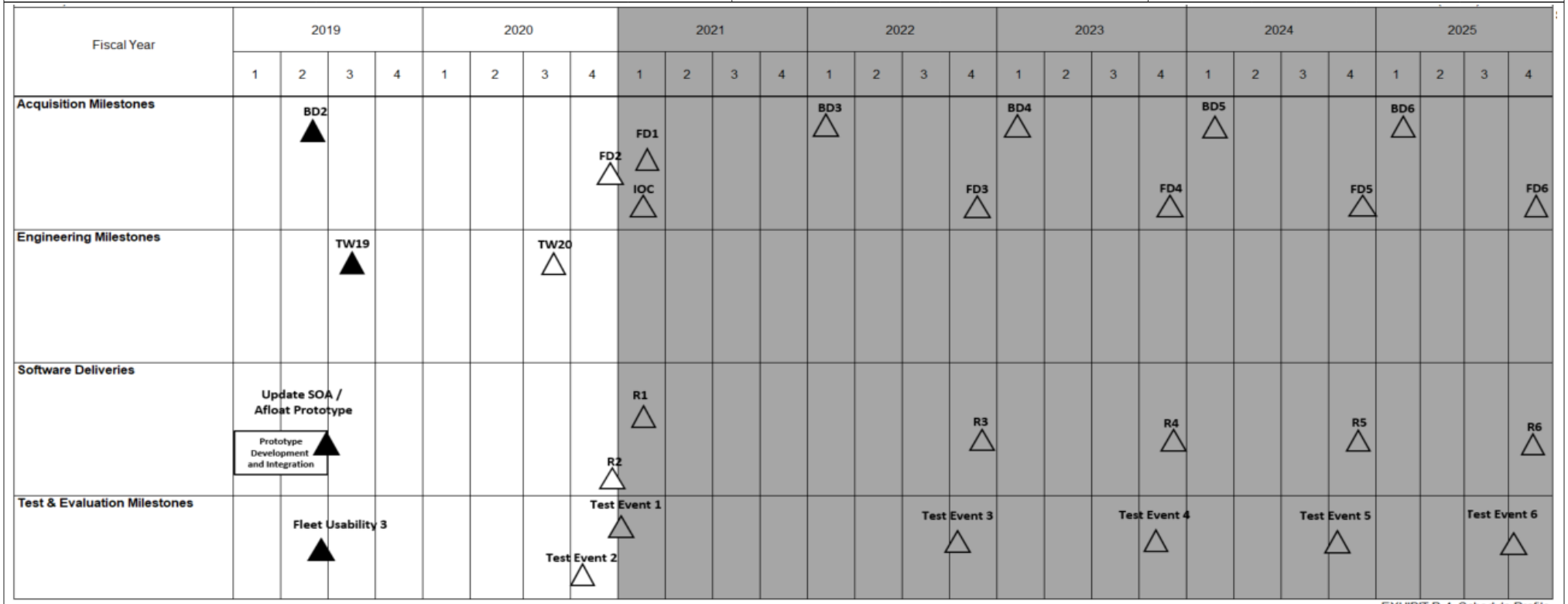


EXHIBIT R-4, Schedule Profile

NOTE: Starting in PB21 reference New BA08 PE 0608231N Project 3323 for prior year information.

Legend:

BD - Build Decision
FD - Field Decision
IOC - Initial Operational Capability
SOA - Service Oriented Architecture
TW - Trident Warrior
R- Release

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3323 / *Maritime Tactical Command & Control (MTC2)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3323				
Prototype Development and Integration	1	2019	2	2019
Annual Build Decision (BD) 2	2	2019	2	2019
Update Service Oriented Architecture (SOA) / Afloat Prototype	2	2019	2	2019
Fleet Usability 3	2	2019	2	2019
Trident Warrior Fiscal Year 2019 (TW)	3	2019	3	2019
Trident Warrior Fiscal Year 2020 (TW)	3	2020	3	2020
Test Event 2	4	2020	4	2020
Fielding Decision (FD) 2	4	2020	4	2020
Release 2	4	2020	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3324 / *Navy Air Operations Command and Control (NAOC2)*	

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
3324: *Navy Air Operations Command and Control (NAOC2)*	14.875	0.978	0.708	0.517	-	0.517	0.748	0.763	0.778	0.793	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Navy Air Operations Command and Control (NAOC2): NAOC2 integrates and tests Air Force program of record systems that provide an integrated and scalable planning system for standardized, secure, and automated decision support for Air Force, Joint, and Allied commanders worldwide. These programs provide automated air operations planning, execution management and intelligence capabilities at the Force level to include fleet commanders, numbered fleet commanders, Commander Carrier Strike Groups, Commander Expeditionary Strike Groups, Commander Landing Forces, and Joint Task Force Commanders. NAOC2 includes Theater Battle Management Core System (TBMCS) and Kessel Run (Navy). Kessel Run (Navy) aligns with the Compile to Combat (C2C24) construct in providing Rapid, agile delivery of capabilities to the fleet by commercial cloud infrastructure using Development, Security, Operations (DevSecOps) cloud native applications. Kessel Run (Navy) is comprised of multiple tactical software applications that will provide continuous iterate delivery of software to shipboard and shore users. It will also align with the Joint C2 Reference Architecture (JC2RA) such as Consolidated Afloat Networks and Enterprise Services (CANES). Kessel Run (Navy) is not natively compatible with Navy Information Technology (IT) infrastructure, such as CANES, and requires a significant level of system integration. Continuation of Navy integration and test efforts will significantly enhance the ability of the Joint Force Air Component Commander and Combined Air Operations Center personnel to plan daily air operations including strike, airlift, offensive/defensive air, missile defense, and refueling missions in support of combat operations. Developmental Testing is continuous and operates in parallel with the DevSecOps construct. Kessel Run (Navy) will be continued for new technology insertion into Navy infrastructure network and hardware in support of Naval Air C2 and Net Enabled Weapons system integration. Kessel Run (Navy) addresses the requirement of war fighter distributed planning and execution processes along with significantly improving Joint interoperability. TBMCS continues a hardware transition to CANES. Currently, TBMCS is the key system that is used to conduct real world air planning in the Joint and Navy environments. Kessel Run (Navy) will replace TBMCS while bringing more flexibility to the war fighter.

FY21 Funding will provide Testing and integration of Pivotal Cloud Foundry (PCF) as a connected system at an ashore node (C3F) and afloat node (Trident Warrior) followed with transition to Kubernetes based containers on top of CANES/ACS as a hosted system leveraging RAISED/C2C24.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Kessel Run (Navy) Integration and Testing	0.978	0.708	0.517	0.000	0.517
Articles:	-	-	-	-	-
FY 2020 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3324 / *Navy Air Operations Command and Control (NAOC2)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Conduct user engagements utilizing Kessel Run (Navy) application, Kessel Run (Navy) application containerization experimentation. Conduct Navy requirements analysis, continue Platform Services synchronization and integration with Kessel Run (Navy). Software application testing ***FY 2021 Base Plans:*** Develop the Kessel Run (Navy) based NAOC2 CONOPS, design the minimum shipbaord footprint, continue fly away kit Platform Services syncronization and integration with Kessel Run (Navy). Continue Software application testing and development. Conduct fleet experimentation planning and execution including documentaton, installation and experimentation of Pivotal Cloud Foundry (PCF) and Agile Core Services (ACS) in connected/ disconnected/degraded operations. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** FY21 decrease due to reduction in planned C2AOS-C2IS RDT&E requirements. Current plan is to field Kessel Run(Navy) vice C2AOS-C2IS.					
Accomplishments/Planned Programs Subtotals	0.978	0.708	0.517	0.000	0.517

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Theater Battle Management Core System (TBMCS) and Kessel Run (Navy) are designed, developed, and delivered by the Air Force and will be integrated for a Navy Common Computing Environment (CCE) such as Consolidated Afloat Network and Enterprise Services (CANES). As a Joint interest program, this approach satisfies the current validated requirements, supports the accelerated retirement of legacy hardware, and reduces overall risk to the program.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3324 / *Navy Air Operations Command and Control (NAOC2)*	

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/ Training DevelopmentText/ Configuration Management	WR	NIWC Pacific : San Diego, CA	3.816	0.076	Nov 2018	0.058	Nov 2019	0.040	Nov 2020	-		0.040	Continuing	Continuing	Continuing
Integration and Testing	MIPR	CECOM/MITRE : San Diego, CA	0.000	0.207	Jun 2019	0.000		0.110	Nov 2020	-		0.110	Continuing	Continuing	Continuing
Integration and Testing	WR	NIWC Pacific : San Diego, CA	3.886	0.695	Nov 2018	0.520	Nov 2019	0.367	Nov 2020	-		0.367	Continuing	Continuing	Continuing
NAOC2 Product Development	Various	VARIOUS : VARIOUS	2.512	0.000		0.000		0.000		-		0.000	0.000	2.512	2.512
		Subtotal	10.214	0.978		0.578		0.517		-		0.517	Continuing	Continuing	N/A

Remarks

RDTE product development efforts decrease in FY 2021 due to a reduction in testing efforts and initiation of Kessel Run (Navy) simultaneous fielding.

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/ILS Support	WR	VARIOUS : VARIOUS	0.538	0.000		0.000		0.000		-		0.000	0.000	0.538	0.538
		Subtotal	0.538	0.000		0.000		0.000		-		0.000	0.000	0.538	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
Operational Test & Evaluation	WR	COMOPTEVFOR : Norfolk, VA	0.404	0.000		0.130	Nov 2019	0.000		-		0.000	0.000	0.534	0.534
Developmental Test & Evaluation	WR	NIWC Pacific : San Diego, CA	2.651	0.000		0.000		0.000		-		0.000	0.000	2.651	2.651
		Subtotal	3.055	0.000		0.130		0.000		-		0.000	0.000	3.185	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3324 / *Navy Air Operations Command and Control (NAOC2)*

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
Contractor Engineering and Program Management Support	C/CPFF	Various : San Diego, CA	1.068	0.000		0.000		0.000		-		0.000	0.000	1.068	1.068
		Subtotal	1.068	0.000		0.000		0.000		-		0.000	0.000	1.068	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	14.875	0.978		0.708		0.517		-		0.517	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3324 / *Navy Air Operations Command and Control (NAOC2)*

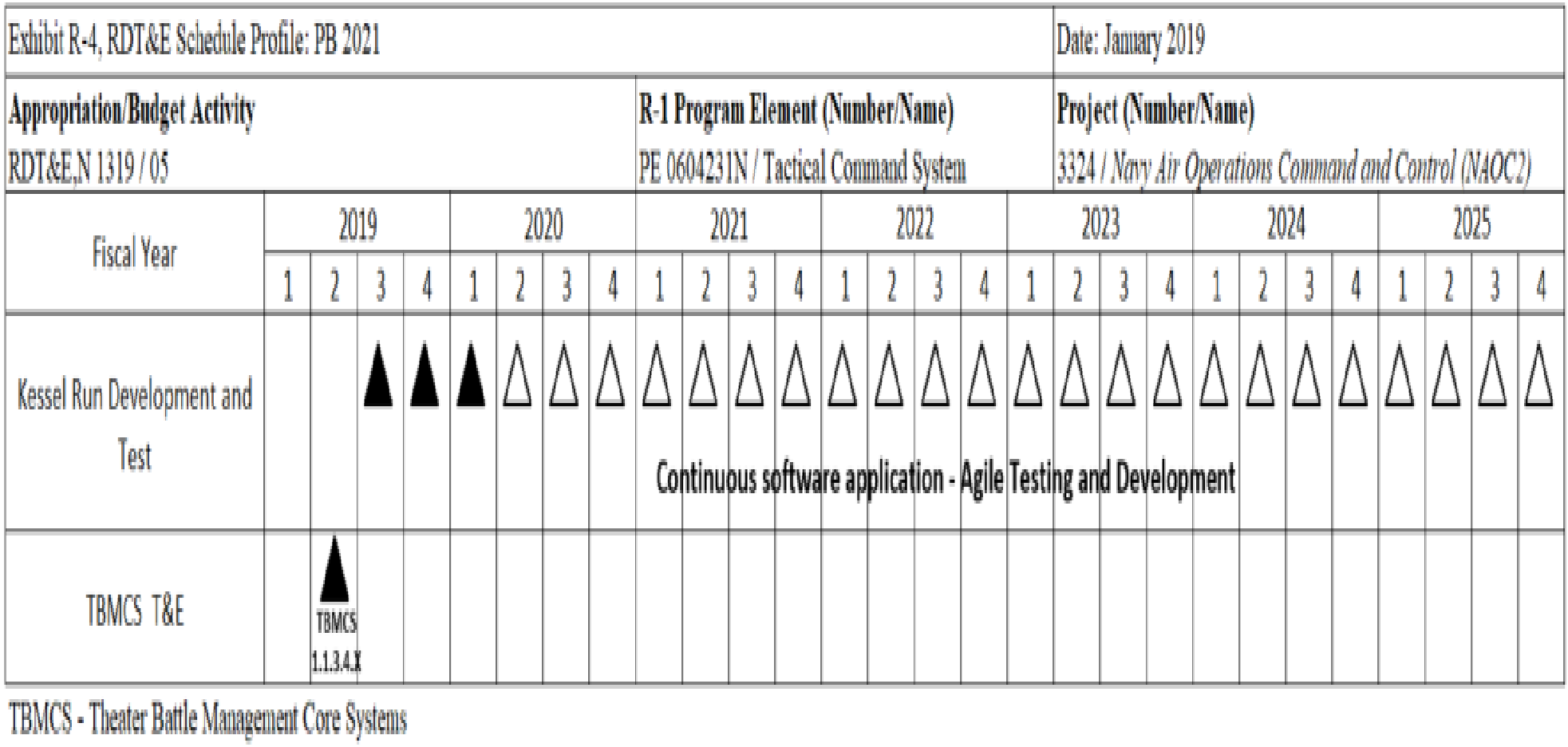


Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3324 / *Navy Air Operations Command and Control (NAOC2)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3324				
Software Test and Development - 1	3	2019	3	2019
Software Test and Development - 2	4	2019	4	2019
Software Test and Development - 3	1	2020	1	2020
Software Test and Development - 4	2	2020	2	2020
Software Test and Development - 5	3	2020	3	2020
Software Test and Development - 6	4	2020	4	2020
Software Test and Development - 7	1	2021	1	2021
Software Test and Development - 8	2	2021	2	2021
Software Test and Development - 9	3	2021	3	2021
Software Test and Development - 10	4	2021	4	2021
Software Test and Development - 11	1	2022	1	2022
Software Test and Development - 12	2	2022	2	2022
Software Test and Development - 13	3	2022	3	2022
Software Test and Development - 14	4	2022	4	2022
Software Test and Development - 15	1	2023	1	2023
Software Test and Development - 16	2	2023	2	2023
Software Test and Development - 17	3	2023	3	2023
Software Test and Development - 18	4	2023	4	2023
Software Test and Development - 19	1	2024	1	2024
Software Test and Development - 20	2	2024	2	2024
Software Test and Development - 21	3	2024	3	2024

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3324 / *Navy Air Operations Command and Control (NAOC2)*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Software Test and Development - 22	4	2024	4	2024
Software Test and Development - 23	1	2025	1	2025
Software Test and Development - 24	2	2025	2	2025
Software Test and Development - 25	3	2025	3	2025
Software Test and Development - 26	4	2025	4	2025

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 9123 / *FORCEnet*	

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
9123: *FORCEnet*	241.830	2.137	2.179	2.225	-	2.225	2.271	2.315	2.361	2.408	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

FORCEnet is the Navy and Marine Corps initiative to deliver Information Warfare (IW) and achieve Department of the Navy (DoN)/Department of Defense (DoD) Transformation, Joint/Allied/Coalition Interoperability, implementing Maritime Domain Awareness (MDA), and Net-Centric Operations/Warfare (NCO/W). Chief of Naval Operations (CNO) IW effort focuses prioritization and organizational responsibility for IW, cyber, intelligence and sensors resulting in increased scope of systems, platforms and mission areas. FORCEnet is a foundation of Sea Power 21, Naval Power 21, which is the Naval Operating Concept (NOC) for Joint Operations, and the DoN's Naval Transformation Roadmap.

Funding supports IW Portfolio Health Assessments (PHAs) of Navy mission areas and identifies gaps in IW capabilities in the context of assessed mission areas. Funds support vignettes, technical baselines, architecture products, and briefings developed to support sponsor decision making processes.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: FORCEnet	2.137	2.179	2.225	0.000	2.225
Articles:	-	-	-	-	-
FY 2020 Plans: -Continue to expand upon System of Systems (SoS) mission engineering analyses and ongoing experimentation to iteratively mature the findings and outcomes, while increasing the support to a development of a Limited Operational Capability. -Continue to utilize and study Navy mission areas in support of SoS engineering assessments identifying integration and interoperability gaps, trades, and solutions for sponsor related equities. -Continue to identify Navy mission area gaps in Information Warfare (IW) capabilities to prioritize Science and Technology (S&T) efforts for future budget decisions. Continue to identify critical architectural dependencies that enable mission situational awareness, which is a key component of the Portfolio Health Assessments (PHAs). -Continue to assess tradespace and solutions, ensuring Force level capability and SoS integration and interoperability in studied mission areas. -Continue to package assessments to support sponsor decision-making processes.					
FY 2021 Base Plans: -Continue to expand upon SoS mission engineering analyses and ongoing experimentation to iteratively mature the findings and outcomes, while increasing the support to a development of a Limited Operational Capability.					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 9123 / *FORCEnet*

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 utilize and study Navy mission areas in support of SoS engineering assessments identifying integration and interoperability gaps, trades, and solutions for sponsor related equities. -Continue to identify Navy mission area gaps in IW capabilities to prioritize S&T efforts for future budget decisions. Continue to identify critical architectural dependencies that enable mission situational awareness, which is a key component of the PHAs. -Continue to assess tradespace and solutions, ensuring Force level capability and SoS integration and interoperability in studied mission areas. -Continue to package assessments to support sponsor decision-making processes. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Increase of $0.046M from FY 2020 to FY 2021 is attributed to additional support required to identify critical Portfolio Health Assessment(PHA)architectural dependencies that enable mission situational awareness.					
Accomplishments/Planned Programs Subtotals	2.137	2.179	2.225	0.000	2.225

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

FORCEnet is a non-acquisition effort that informs and matures Navy decisions, which in turn impacts acquisition programs. Activities include acquiring intellectual capital in emerging technical areas through contracts providing technical engineering expertise and surge capacity for emerging tasks.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 9123 / *FORCEnet*	

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 Development and Systems Engineering	Various	Various : Various	4.331	0.000		0.000		0.000		-		0.000	0.000	4.331	-
		Subtotal	4.331	0.000		0.000		0.000		-		0.000	0.000	4.331	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
Software Development and Logistics Support	Various	Various : Various	136.842	0.000		0.000		0.000		-		0.000	0.000	136.842	-
Information Warfare Roadmaps and Analysis	C/CPFF	SAIC : McLean, VA	12.199	1.657	Mar 2019	1.677	Mar 2020	1.710	Mar 2021	-		1.710	Continuing	Continuing	Continuing
Information Warfare Roadmaps and Analysis	WR	NIWC LANT : Charleston, NC	2.854	0.480	Mar 2019	0.502	Mar 2020	0.515	Mar 2021	-		0.515	Continuing	Continuing	Continuing
Information Warfare Roadmaps and Analysis	C/CPFF	BAH : McLean, VA	0.651	0.000		0.000		0.000		-		0.000	0.000	0.651	-
		Subtotal	152.546	2.137		2.179		2.225		-		2.225	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
Accelerating Joint Warfighting Capability	Various	Various : Various	77.271	0.000		0.000		0.000		-		0.000	0.000	77.271	-
		Subtotal	77.271	0.000		0.000		0.000		-		0.000	0.000	77.271	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
Engineering and Technical Support	Various	Various : Various	7.682	0.000		0.000		0.000		-		0.000	0.000	7.682	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 9123 / *FORCEnet*	

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
Subtotal			7.682	0.000		0.000		0.000		-		0.000	0.000	7.682	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	241.830	2.137		2.179		2.225		-		2.225	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 9123 / *FORCEnet*

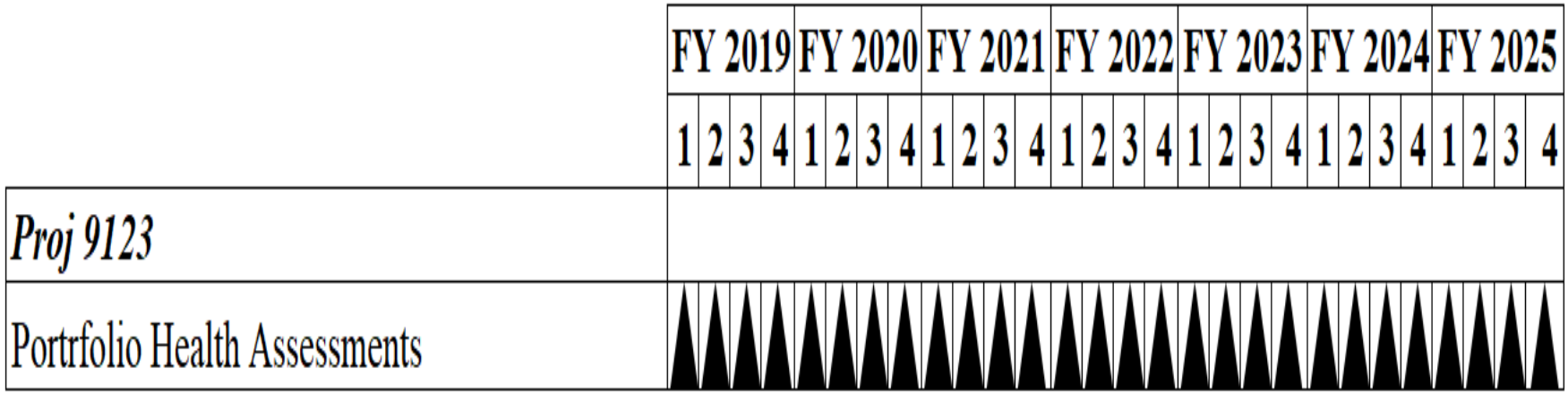


Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 9123 / *FORCEnet*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 9123				
Naval Information Warfare Enterprise	1	2019	4	2025