Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy											Date: April 2022	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604280N *I JT TACTICAL RADIO SYSTEM (JTRS)*							
COST ($ in Millions)	**Prior Years**	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Cost To Complete**	**Total Cost**
Total Program Element	229.508	223.551	234.434	329.787	-	329.787	324.172	235.254	133.664	135.407	Continuing	Continuing
0725: *Communication Automation*	2.250	8.036	8.774	14.012	-	14.012	19.669	12.542	9.317	4.270	Continuing	Continuing
0728: *Navy Multiband Terminal (NMT)*	0.000	0.000	26.337	30.978	-	30.978	22.093	4.415	2.468	7.754	Continuing	Continuing
0729: *Mobile Advanced Extremely High Frequency (AEHF) Terminal (MAT)*	0.000	0.000	27.810	75.986	-	75.986	80.354	53.492	0.905	0.905	Continuing	Continuing
0742: *Sub Integrated Ant System*	17.845	13.157	15.929	27.991	-	27.991	16.067	10.339	10.545	10.763	Continuing	Continuing
0921: *NAVSTAR GPS Equipment*	50.971	41.593	28.903	36.380	-	36.380	39.816	50.391	20.937	21.095	Continuing	Continuing
1411: *Sub Tact Comm System*	13.038	13.759	13.575	14.274	-	14.274	14.475	14.461	14.667	14.930	Continuing	Continuing
2126: *ATDLS Integration*	21.000	18.342	22.922	32.039	-	32.039	31.123	27.888	23.105	23.478	Continuing	Continuing
3020: *MIDS/JTRS*	39.703	78.824	66.417	82.429	-	82.429	84.784	46.418	36.360	36.585	Continuing	Continuing
3078: *Digital Modular Radio*	51.227	2.663	2.530	6.347	-	6.347	7.019	6.823	6.773	6.899	Continuing	Continuing
3341: *Network Tactical Common Data Link*	30.775	40.521	19.096	6.037	-	6.037	5.526	5.475	5.530	5.622	Continuing	Continuing
4011: *Naval Coastal Warfare Surv and C4I Sys*	2.699	2.795	2.141	3.314	-	3.314	3.246	3.010	3.057	3.106	Continuing	Continuing
9999: *Congressional Adds*	0.000	3.861	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.861

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 290, 554

A. Mission Description and Budget Item Justification

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

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy	Date: April 2022
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604280N *I JT TACTICAL RADIO SYSTEM (JTRS)*

(0725) The details of Program Element 0604280N, Project 0725 for BFTN/BRSE are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.

(0728) The details of Program Element 0604280N, Project 0728 for NMT are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

(0728) Navy Global Broadcast System (GBS) is a member of the larger Joint C4I program, providing high speed (up to 45 Mbps per transponder)/large volume information/data delivery to forces afloat, ashore, and Naval Special Warfare Command. Leveraging the NMT antenna, GBS provides a one-way broadcast to Naval maritime forces across the spectrum of mission areas, to include land, air and naval warfare, special operations, strategic nuclear operations, strategic defense, theater missile defense, and space operations and intelligence in support of RC3. GBS Transmission Security (TRANSEC) is an operational requirement from the Joint GBS ORD and provides robust datalink protection of both uplink and downlink for the GBS broadcast. GBS is evaluating PTW solutions to meet the TRANSEC mandate. The Air Force & Army Anti-Jam Modem (A3M) and the WAMS are PTW solutions that are under consideration. Navy GBS will require extensive development activities for the new PTW modem solution and must conduct a FOT&E with Joint Services. Overall program efforts include technology insertion studies required to support satellite communications.

(0728) GBS will continue GBS Transmission Security (TRANSEC) development to provide robust datalink protection of both uplink and downlink for the GBS broadcast. The FY23 request also includes procurement of test modems for surface IA&T events and beginning of submarine TRANSEC development and integration.

(0729) Satellite Communications: The details of Program Element 0604280N, Project 0729 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

(0742) Submarine Integrated Antenna System: The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

(0921) Navigation Satellite Timing & Ranging (NAVSTAR) Global Positioning System (GPS) project (0921) encompasses the Navy's efforts to pace the growing threat to GPS Navigation through the fielding of new GPS receivers, Anti-Jam (AJ) Antennas, and Assured-Positioning Navigation and Timing (A-PNT) technologies across all Navy platform types. NAVSTAR GPS is a group of A-PNT systems that provides authorized users with secure, worldwide, all weather, three dimensional position, velocity, and precise time data. NAVSTAR GPS provides A-PNT capability to Command, Control, Communications, Computer, Intelligence, Surveillance and Reconnaissance (C4ISR) and combat systems in standalone and networked architectures throughout air and maritime domains. This project is comprised of four distinct efforts: Sea Navigation Warfare (NAVWAR), GPS-based Positioning, Navigation, and Timing (PNT) Service (GPNTS), Air Navigation Warfare (NAVWAR) and GPS Modernization. Sea NAVWAR provides AJ antennas to surface and subsurface platforms; GPNTS provides GPS receivers and A-PNT technology to surface platforms; Air NAVWAR provides AJ antennas, and GPS Modernization provides GPS receivers to air platforms. Research, Development, Testing and Evaluation (RDT&E) funds are used to perform all the non-recurring GPS Surface Ship, Submarine and Aircraft Development, Integration, and Testing efforts in support of NAVSTAR GPS.

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy	Date: April 2022
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604280N *I JT TACTICAL RADIO SYSTEM (JTRS)*

FY2023 request will fund the following GPS Surface Ship, Submarine and Aircraft Development, Integration and Test efforts in support of NAVSTAR GPS: continue investigation of enhanced Anti-Jam (AJ) capabilities for integration into existing Sea NAVWAR antenna systems, commence efforts to develop and test a GPNTS system capable of hosting the Automated Celestial Navigation Systems (ACNS) below deck hardware, complete Non-Recurring Engineering (NRE) integration efforts for the Multi-Platform Anti-Jam Global Positioning System Navigation H-Antenna Integration (MAGNA-I) on the AH-1Z/UH-1Y helicopters including platform interface modifications, software development, integration testing and hardware integration, and commence Military Code (M-Code) Prime Vendor Integrations (PVI) on the following five (5) platforms: FA-18E/F, EA-18G, E-2D, CH-53K and AH-1Z/UH-1Y.

(1411) Submarine Tactical Communications System: The details of Program Element 0604280N, Project 1411 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

(2126) Tactical Data Link (TDL) systems includes the Advanced Tactical Data Link Systems (ATDLS) integration programs, specifically Link 16 Network, Command and Control Processor (C2P) and Link Monitoring and Management Tool (LMMT).

FY23 JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under operational systems development because it encompasses engineering and manufacturing development for upgrade of existing operational systems.

Link 16 Network Program provides high power shipboard and shore integrated Link 16 capability through the fielding of Joint Tactical Information Distribution System (JTIDS), Multifunctional Information Distribution System (MIDS) on Ships (MOS) and MOS Modernization (MOS Mod) including transmit and receive antennas and High Power Amplifiers (HPA). JTIDS, MOS and MOS Mod utilizes the JTIDS, MIDS Low Volume Terminal (LVT), and MIDS Joint Tactical Radio System (JTRS) terminals respectively, integrates the HPA and interfaces to the shipboard antenna and Command and Control Processor (C2P). MIDS-LVT and MIDS JTRS terminals are developed by the MIDS Program Office (MPO). JTIDS terminal is no longer in production, but is undergoing product improvement to maintain interoperability and security with MIDS-LVT and MIDS JTRS. As part of the product improvement all shipboard Link 16 terminals are required to have dynamic network management (DNM), crypto modernization (CM) and frequency remapping (FR). MIDS Program Office (MPO) is developing additional improvements to the MIDS-LVT and MIDS JTRS terminals. The MIDS-LVT will have Link 16 Enhanced Throughput (ET) and the MIDS JTRS will have the added capability of four net concurrent multi-netting (CMN) with current contention receive (CCR) and tactical targeting networking technology (TTNT).

Command and Control Processor (C2P): The two Research Development Test & Evaluation (RDT&E) initiatives are 1) C2P Technology Refresh (TR) cyber security update and 2) C2P Modernization which now includes Link 22 integration. C2P TR cyber security update is a new initiative driven by recently discovered cyber security risk to the C2P system in support of the Ballistic Missile Defense (BMD) mission. This update is planned to support acceleration on all AEGIS BMD ships. C2P Modernization funds the transition of the legacy Compiler Monitor System (CMS-2Y) software code to a modern software language. This is required to sustain the system software, to adequately address growing cyber security and operational availability challenges and to enable more affordable transition to new hardware processing components as a result of commercial off the shelf processor obsolescence.

Link Monitoring and Management Tool (LMMT) is a system delivered on commercial off-the-shelf hardware (HW) providing gateway functions for multiple Tactical Data Link (TDL) interface, routing and display of TDL data to include Link 16, Joint Range Extension (JRE) and Link 22. LMMT is also capable of performing TDL

network monitoring and management, data forwarding between the TDLs and providing tactical data to the Integrated Air and Missile Defense (IAMD), Ballistic Missile Defense (BMD) network, and Global Command and Control System (GCCS) for establishing the common operational picture. LMMT requirements will be incrementally developed and delivered in capability drops via the Joint Capabilities Integration Development System (JCIDS) IT Box approach.

(3020)The Multifunctional Information Distribution System (MIDS) program office is the Performing Activity for the Navy (Lead Service for Department of Defense (DOD)), Link 16 capability and consists of two (2) product lines, MIDS Low Volume Terminal (LVT) (legacy hardware defined radio) and MIDS Joint Tactical Radio System (JTRS) (software defined radio). MIDS-LVT effort is a cooperative development program between France, Germany, Italy, Spain, and the United States with United States joint service participation (Navy, Army, Air Force), and has provided over 11,000 terminals to 48 Nations providing interoperability with North Atlantic Treaty Organization (NATO) and coalition partners. The Department of Defense (DoD) established the program to design, develop, and deliver low volume, lightweight tactical information system terminals for U.S. and allied fighter aircraft, bombers, helicopters, ships, and ground sites. MIDS-LVT significantly increases force effectiveness and minimizes hostile actions and friend-on-friend engagements. MIDS-LVT Block Upgrade 2 was executed as an ECP and provides the critical upgrades to the MIDS-LVT Terminal to enable U.S., Coalition and International partners' ability to meet the National Security Agency (NSA) mandated timelines for Cryptographic Modernization (CM) and the National Telecommunications and Information Agency (NTIA) and Federal Aviation Agency (FAA) mandated timelines for Frequency Remapping (FR).

MIDS JTRS, designed as a Pre-Planned Product Improvement (P3I) and executed as an Engineering Change Proposal (ECP) to the production MIDS-LVT configuration, and is fully compatible with MIDS-LVT. The MIDS JTRS Core Terminal achieved Full Production and Fielding (FP&F) in March 2012. It facilitated the JTRS incremental approach for fielding advanced JTRS transformational networking capability and transformed the MIDS-LVT into a 4-channel, Software Communications Architecture (SCA) compliant, Joint Tactical Radio. A form-fit-function replacement to MIDS-LVT, MIDS JTRS also adds three programmable 2 Megahertz (MHz) to 2 Gigahertz (GHz) channels capable of hosting the JTRS legacy and networking waveforms. In addition to Link 16, Tactical Air Navigation (TACAN), and voice functionality found in MIDS-LVT, MIDS JTRS has four channels and adds capabilities such as Link 16 Enhanced Throughput (ET), Link 16 FR, software programmability, CM, and Four Net Concurrent Multi-Netting with Concurrent Contention Receive (CMN-4).

MIDS JTRS Tactical Targeting Network Technology (TTNT), is a block upgrade to the MIDS JTRS CMN-4 Terminal providing an Internet Protocol-based networking capability on tactical aircraft. TTNT is a low latency, high throughput waveform that has the capability to support data exchange between fast-moving tactical aircraft, weapons, and unmanned aircraft, in addition to air, land, and sea-based command and control nodes, in a variety of air-to-air and air-to-ground missions including time sensitive targeting, air warfare, close air support, non-traditional ISR, and anti-surface warfare. TTNT and MIDS JTRS CMN-4 are critical Tactical Data Link capabilities and directly supports Naval Integrated Fire Control (NIFC) capability requirements. These capabilities provide Joint Airborne Network-Tactical Edge functionality to run advanced mission applications in a cross-platform/cross-domain tactical network enterprise.

The FY 2023 Budget completes the first software drop (Block Cycle 1) for the MIDS Modernization Software and Firmware development and completes the Electromagnetic Compatibility (EMC) Features testing for BC1 and the Field Loadable capability. Improvements to other MIDS JTRS Hardware begins in FY2023. The FY 2023 budget also supports the lead service core waveform development requirements for developing a reference implementation platform for prototyping and conducting frequency testing for the Link 16 and TTNT waveforms.

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy	Date: April 2022
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604280N *I JT TACTICAL RADIO SYSTEM (JTRS)*

The FY 2023 Budget continues to fund critical warfighter improvements to the TTNT Terminal Software and Waveform in order to out pace the threat. It completed the development of the TTNT Consolidated Automated Support System (CASS) Test Program Sets (TPS). New TTNT enhancements are funded in the FY2023 budget that add classified capabilities to the terminal.

(3078) Digital Modular Radio (DMR) with Integrated Waveform (IW) and Mobile User Objective System (MUOS) capable hardware is the Navy's technical solution for the IW/MUOS requirement. The DMR AN/USC-61(C), is the first software defined radio to become a communications system standard for the U.S. Military. The compact, multi-channel DMR provides 3G, Wideband Code Division Multiple Access (WCDMA) technology, for high speed/capacity voice and data satellite communications. DMR radios currently operate aboard U.S. Navy surface and subsurface vessels, fixed-sites and other Department of Defense (DoD) communication platforms using frequencies ranging from 2 MHz to 2 GHz. Certified to pass secure voice and data at Multiple Independent Levels of Security (MILS) over High Frequency (HF), Very High Frequency (VHF), Ultra High Frequency (UHF), and Satellite Communications (SATCOM) channels, the DMR system was developed to the U.S. Navy's specifications and meets all the stringent environmental, Electromagnetic Interference (EMI) and performance requirements for use in the U.S. Fleet. This system is formally specified by both Fleet Commanders as a threshold capability, for global maritime command control and communications in a Distributed Maritime Environment, to execute current warfighting plans and is required for National Command and Control capability. This program is for continued development/integration of the IW and MUOS waveforms into the DMR in accordance with Military Standards 188-181,2,3. Additionally, the enhancements of High Frequency Distribution Amplifier Group (HFDAG), HF Automated Link Establishment (ALE) and Second-Generation Anti-Jam Tactical UHF Radio for NATO (SATURN) will also be developed/integrated into the DMR. HFDAG is a follow-on HF solution to fulfill transmit and receive HF communication capability with various modes of operation, such as ALE, for Navy platforms. HFDAG will utilize the existing DMR as the exciter/receiver. Generation 3 (GEN 3) HF ALE/HF wideband provides Navy users with improved HF communications, increased transmission rates from radio to radio, and serves as a supplement to SATCOM when SATCOM networks are overloaded or unavailable. SATURN is the follow-on HAVEQUICK II anti-jamming solution in accordance with NATO Standardization Agreement 4372 (retirement date for HAVEQUICK II is no later than 1OCT24). SATURN capability will counter adversaries' jamming efforts and ensure Navy's Assured Command and Control UHF communications operational end-to-end capability as well as enhance interoperability within/between DMR users and with Allied/Coalition partners. IW uses a Time Division Multiple Access (TDMA) communication system in an attempt to improve satellite bandwidth utilization over legacy SATCOM waveforms. This enables demand assigned services on UHF SATCOM networks to support new applications that require better performance and higher channel throughput. The MUOS waveform will enable MUOS satellites to provide worldwide communication satellite coverage for DoD requirements. MUOS will provide functionality comparable to commercial mobile phone systems.

FY23 will fund DMR to develop the SATURN waveform from the currently used HAVEQUICK II (HQII) waveform; continue porting and begin integration of the MUOS waveform 3.2; and the continued development of Crypto Mod SINCGARS 3.x Phase 2.

(3341) Network Tactical Common Data Link (NTCDL) provides the ability to transmit/receive real-time Intelligence, Surveillance, and Reconnaissance (ISR) data simultaneously from multiple sources (surface, airborne, sub-surface, man-portable), and exchange command and control information (voice, data, imagery, and Full Motion Video) across dissimilar joint, service, coalition, and civil networks. NTCDL provides warfighters with the capability to support multiple, simultaneous, networked operations with currently fielded Common Data Link (CDL)-equipped air platforms (e.g. MH-60R), in addition to next generation manned and unmanned platforms (e.g., P-8, Triton, MQ-25 (Stingray), small tactical unmanned aircraft systems (STUAS) and Fire Scout). NTCDL is an incremental capability (surface, airborne, sub-surface, man-portable) providing modular, scalable, multiple-link networked communications. NTCDL benefits the fleet by providing a horizon extension for line-of-sight sensor

systems for use in time-critical strike missions and supports tasking, collection, processing, exploitation, and dissemination (TCPED) via its ISR networking capability. NTCDL supports Resilient Command and Control (RC2) through its relay capability, and supports TCPED through its ISR networking capability.

FY 2023 request is for NTCDL to continue to mature the Initial Capability to support high speed waveforms, higher speed data rates, and platform communication equipment, and mature system maintenance, interoperability, training (Computer Based Training module), and system software.

(4011) The Navy Expeditionary C4I project supports the Navy Expeditionary Combat Command (NECC) mission to detect, deter or interdict potential threats to DoN assets using agile, modular and scalable technology. NECC units have a number of current and future Command, Control, Communications, Computers & Intelligence (C4I) technological requirements for Tactical/Command Operations Center, tactical vehicles, combatant craft, and dismounted personnel. NECC operations require units to maintain effective command and control, develop and display a common tactical picture, and share intelligence and current operational information with higher headquarters, subordinate units, joint forces and coalition allies. Small, Medium, and Large Scale Communication Systems (LSCS) are the C4I hub for the NECC; Navy Enterprise Tactical Command and Control (NETC2) is the converged LSCS baseline. Future C4I research and development include enhanced information transport, network cyber security posture, assured communications in denied environments along with agility and mobility. Funding is required for testing and evaluation of cyber security issues associated with obsolescence of network items and if not addressed will impact the ability of the Program Office to maintain system accreditation under Risk Management Framework (RMF) revoking multiple LSCS assets authority to connectivity on the Department of Defense Information Network (DoDIN). Efforts are in alignment with NECC's strategic Expeditionary Warfare Improvement Program (EXWIP) Integrated Priority Capability List (IPCL) priorities and maintain alignment with greater DoD initiatives, such as Joint Information Environment (JIE), Mission Partner Environment (MPE) in order to maintain interoperability and drive down DoN enterprise costs.

FY 2023 funding supports investigation of cloud and containerization technologies, as well as development of Tier 1 capabilities to support multi-cloud environments.

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	232.930	234.434	0.000	-	0.000
Current President's Budget	223.551	234.434	329.787	-	329.787
Total Adjustments	-9.379	0.000	329.787	-	329.787
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.358	0.000			
• SBIR/STTR Transfer	-8.020	0.000			
• Program Adjustments	0.000	0.000	0.000	-	0.000
• Rate/Misc Adjustments	-0.001	0.000	0.000	-	0.000
• Adjustments to Budget Year	-	-	329.787	-	329.787

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy	Date: April 2022
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Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2021	FY 2022
Project: 9999: *Congressional Adds*		
Congressional Add: *Multifunciontal Information Distribution System Acceleration*	3.861	0.000
Congressional Add Subtotals for Project: 9999	3.861	0.000
Congressional Add Totals for all Projects	3.861	0.000

Change Summary Explanation

FY 2023 funding request was reduced by $6.414 million to account for the availability of prior year execution balances.

FY 2023 funding increase reflects the fact that the FY 2022 President’s Budget request did not include out-year funding.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 0725 / *Communication Automation*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
0725: *Communication Automation*	2.250	8.036	8.774	14.012	-	14.012	19.669	12.542	9.317	4.270	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The details of Program Element 0604280N Project 0725 are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Battle Force Tactical Network (BFTN)	8.036	8.774	14.012	0.000	14.012
Articles:	-	-	-	-	-
FY 2022 Plans: The details of Program Element 0604280N Project 0725 are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.					
FY 2023 Base Plans: The details of Program Element 0604280N Project 0725 are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: The details of Program Element 0604280N Project 0725 are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.					
Accomplishments/Planned Programs Subtotals	8.036	8.774	14.012	0.000	14.012

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• OPN/3057: *Battle Force Tactical Network (BFTN)*	25.266	27.816	34.763	-	34.763	31.492	23.432	18.826	0.000	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0725 / *Communication Automation*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost

Remarks

OPN LI 3057 is a shared line; funding identified is for BFTN efforts.

D. Acquisition Strategy

The details of Program Element 0604280N Project 0725 are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 0725 / *Communication Automation*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	Various	Not Specified : Not Specified	1.866	7.686	Dec 2020	8.124	Oct 2021	12.462	Oct 2022	-		12.462	Continuing	Continuing	Continuing
		Subtotal	1.866	7.686		8.124		12.462		-		12.462	Continuing	Continuing	N/A

Remarks

The details of Program Element 0604280N Project 0725 are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	Various	Not Specified : Not Specified	0.384	0.350	Nov 2020	0.550	Nov 2021	0.550	Nov 2022	-		0.550	0.000	1.834	-
		Subtotal	0.384	0.350		0.550		0.550		-		0.550	0.000	1.834	N/A

Remarks

The details of Program Element 0604280N Project 0725 are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	Various	Not Specified : Not Specified	0.000	0.000		0.100	Oct 2021	1.000	Oct 2022	-		1.000	0.000	1.100	-
		Subtotal	0.000	0.000		0.100		1.000		-		1.000	0.000	1.100	N/A

Remarks

The details of Program Element 0604280N Project 0725 are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	2.250	8.036		8.774		14.012		-		14.012	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 0725 / *Communication Automation*	

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

The details of Program Element 0604280N Project 0725 are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0725 / *Communication Automation*

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Proj 0725																												
Classified (Placeholder)	[redacted]																											

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0725 / *Communication Automation*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0725				
Classified (Placeholder)	1	2021	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 0728 / *Navy Multiband Terminal (NMT)*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
0728: *Navy Multiband Terminal (NMT)*	0.000	0.000	26.337	30.978	-	30.978	22.093	4.415	2.468	7.754	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 290

A. Mission Description and Budget Item Justification

The details of Program Element 0604280N, Project 0728 for NMT are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

Navy Global Broadcast System (GBS) is a member of the larger Joint Command, Control, Communications, Computers, and Intelligence (C4I)program, providing high speed (up to 45 Mbps per transponder)/large volume information/data delivery to forces afloat, ashore, and Naval Special Warfare Command. Leveraging the NMT antenna, GBS provides a one-way broadcast to Naval maritime forces across the spectrum of mission areas, to include land, air and naval warfare, special operations, strategic nuclear operations, strategic defense, theater missile defense, and space operations and intelligence in support of RC3. GBS Transmission Security (TRANSEC) is an operational requirement from the Joint GBS ORD and provides robust datalink protection of both uplink and downlink for the GBS broadcast. GBS is evaluating Protected Tactical Waveform (PTW) solutions to meet the TRANSEC mandate. The Air Force & Army Anti-Jam Modem (A3M) and the WAMS are PTW solutions that are under consideration. Navy GBS will require extensive development activities for the new PTW modem solution and must conduct a Follow-On Test & Evaluation (FOT&E) with Joint Services. Overall program efforts include technology insertion studies required to support satellite communications.

Technology Insertion, studies and implementation is necessary for military satellite communications systems development to support emerging technologies for Satellite Communications (SATCOM) programs.

The FY23 request for GBS will continue GBS Transmission Security (TRANSEC) development to provide robust datalink protection of both uplink and downlink for the GBS broadcast. The FY23 request also includes procurement of test modems for surface IA&T events and beginning of submarine TRANSEC development and integration.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: NMT Resilient C3 Development	0.000	24.409	26.839	0.000	26.839
Articles:	-	-	-	-	-
Description: The details of Program Element 0604280N, Project 0728 for NMT are classified SECRET// NOFORN and are submitted to Congress in the classified budget justification books.					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0728 / *Navy Multiband Terminal (NMT)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
FY 2022 Plans: The details of Program Element 0604280N, Project 0728 for NMT are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books. ***FY 2023 Base Plans:*** The details of Program Element 0604280N, Project 0728 for NMT are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The details of Program Element 0604280N, Project 0728 for NMT are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
Title: Global Broadcast System (GBS) Transmission Security (TRANSEC) ***Articles:*** ***Description:*** Navy GBS is a member of the larger Joint C4I program, providing high speed (up to 45 Mbps per transponder)/large volume information/data delivery to forces afloat, ashore, and Naval Special Warfare Command. Leveraging the NMT antenna, GBS provides a one-way broadcast to Naval maritime forces across the spectrum of mission areas, to include land, air and naval warfare, special operations, strategic nuclear operations, strategic defense, theater missile defense, and space operations and intelligence in support of RC3. GBS Transmission Security (TRANSEC) is an operational requirement from the Joint GBS ORD and provides robust datalink protection of both uplink and downlink for the GBS broadcast. GBS is evaluating Protected Tactical Waveform (PTW) solutions to meet the TRANSEC mandate. The Air Force & Army Anti-Jam Modem (A3M) and the WAMS are PTW solutions that are under consideration. Navy GBS will require extensive development activities for the new PTW modem solution and must conduct a FOT&E with Joint Services. Overall program efforts include technology insertion studies required to support satellite communications. ***FY 2022 Plans:*** In alignment with GBS Executive Agent (USSF) PTW implementation, Navy GBS will continue PTW design and development, joint integration and test planning efforts. Design efforts will include product development with	0.000 -	1.778 -	3.989 -	0.000 -	3.989 -

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0728 / *Navy Multiband Terminal (NMT)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
TRANSEC modem vendor to meet Navy GBS specific requirements. Will conduct early development/integration with CSRR and work on collaboration on the SATCOM rack. ***FY 2023 Base Plans:*** In alignment with GBS Executive Agent (USSF) PTW implementation, Navy GBS will procure modems for surface and shore testing and begin integration, assembly and testing activities (IA&T). Navy GBS program will additionally begin sub-surface development and integration activities as submarine platforms will require significant increase in engineering design changes compared to surface platforms. Complete TRANSEC Design and Studies. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Increase of $2.211M from FY22 to FY23 is due to ramp up of activities to include procurement of surface and shore test modems for IA&T efforts as well as beginning sub-surface development and TRANSEC integration.					
Title: Technology Insertion ***Articles:*** ***Description:*** Overall program efforts include technology insertion studies required to support satellite communications. ***FY 2022 Plans:*** To maintain alignment with the Navy's Resilient Command, Control, and Communications (RC3) strategy and approach, Satellite Communications (SATCOM) programs transitioned from exercising an initial RC3 modem capability to utilizing the Wideband Anti-Jam Modem System (WAMS), which provides protected wideband Satellite Communication (SATCOM) capability to the Fleet. Funds required to perform studies on how to integrate WAMS into the Satellite Communication (SATCOM) architecture. ***FY 2023 Base Plans:*** Continue to maintain alignment with the Navy's RC3 strategy and approach, Satellite Communications (SATCOM) programs transitioned from exercising an initial RC3 modem capability to utilizing the Wideband Anti-Jam Modem System (WAMS), which provides protected wideband SATCOM capability to the Fleet. Funds required to perform studies on how to integrate WAMS into the Satellite Communication (SATCOM) architecture. ***FY 2023 OCO Plans:***	0.000 -	0.150 -	0.150 -	0.000 -	0.150 -

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0728 / *Navy Multiband Terminal (NMT)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
N/A					
Accomplishments/Planned Programs Subtotals	0.000	26.337	30.978	0.000	30.978

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• OPN/3216: *NAVY MULTIBAND TERMINAL (NMT)*	55.342	34.723	24.586	-	24.586	80.367	116.040	94.479	86.974	0.000	1,700.672
• RDTEN/0303109N/0728: *NAVY MULTIBAND TERMINAL (NMT)*	19.169	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	49.101

Remarks

The Other Appropriation represents remaining procurement and installation of NMT production units for Afloat and Shore requirements to reach Full Operational Capability. Funding also includes the procurement and installation of Assured Command and Control (AC2) modems as well as the installation of Advanced Time Division Multiple Access (TDMA) Interface Processors (ATIPs), X/KA Back-Fits, and Ashore Antennas.

D. Acquisition Strategy

The details of Program Element 0604280N, Project 0728 for NMT are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0728 / *Navy Multiband Terminal (NMT)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	C/CPFF	Not Specified : Not Specified	0.000	0.000		17.034	Jan 2022	19.467	Jan 2023	-		19.467	Continuing	Continuing	Continuing
TRANSEC Development	SS/CPIF	TBD : TBD	0.000	0.000		0.750	Apr 2022	2.539	Feb 2023	-		2.539	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		17.784		22.006		-		22.006	Continuing	Continuing	N/A

Remarks

Contract development award has shifted from February to April of 2022 due to schedule delay. Increase in costs from FY22 to FY23 is due to ramp up in development efforts and procurement of hardware items to support prototypes.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	WR	Not Specified : Not Specified	0.000	0.000		3.902	Nov 2021	3.310	Nov 2022	-		3.310	Continuing	Continuing	Continuing
GBS TRANSEC Engineering Support	WR	NIWC PAC : San Diego, CA	0.000	0.000		0.429	Jan 2022	0.600	Jan 2023	-		0.600	Continuing	Continuing	Continuing
GBS TRANSEC Engineering Support	WR	NIWC LANT : Charleston, SC	0.000	0.000		0.219	Jan 2022	0.300	Jan 2023	-		0.300	Continuing	Continuing	Continuing
GBS TRANSEC Engineering Support	WR	NUWC : Newport, RI	0.000	0.000		0.286	Jan 2022	0.400	Jan 2023	-		0.400	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		4.836		4.610		-		4.610	Continuing	Continuing	N/A

Remarks

Increase in support cost is due to ramp up in Transec development efforts occurring in FY23.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	WR	Not Specified : Not Specified	0.000	0.000		2.217	Nov 2021	2.541	Nov 2022	-		2.541	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0728 / *Navy Multiband Terminal (NMT)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TRANSEC Test & Evaluation	WR	NIWC PAC : San Diego, CA	0.000	0.000		0.094	Jan 2022	0.150	Jan 2023	-		0.150	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		2.311		2.691		-		2.691	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	C/CPFF	Not Specified : Not Specified	0.000	0.000		1.406	Nov 2021	1.671	Nov 2022	-		1.671	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		1.406		1.671		-		1.671	Continuing	Continuing	N/A

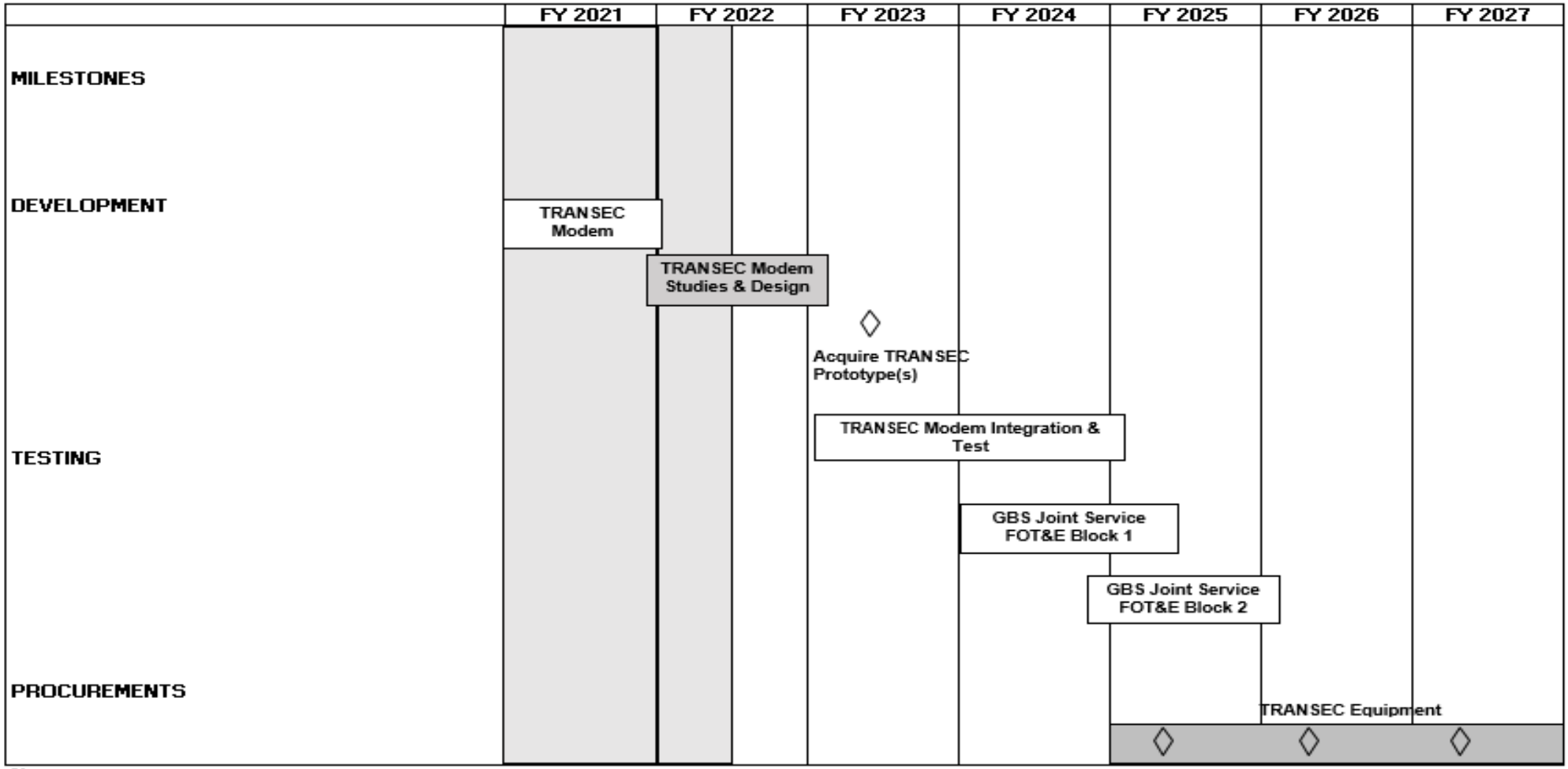
	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		26.337		30.978		-		30.978	Continuing	Continuing	N/A

Remarks

FY21 cost data is provided under PE 0303109N, Project 0728

The details of Program Element 0604280N, Project 0728 for NMT are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0728 / *Navy Multiband Terminal (NMT)*



Notes:

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0728 / *Navy Multiband Terminal (NMT)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0728				
Classified (Place Holder)	1	2021	4	2027
Global Broadcast System(GBS) TRANSEC: Transec Modem Solution Assessment	1	2021	1	2022
Global Broadcast System(GBS) TRANSEC: Transec Modem Studies & Design	4	2021	1	2023
Global Broadcast System(GBS) TRANSEC: Transec Prototype	2	2023	2	2023
Global Broadcast System(GBS) TRANSEC: Transec Integration & Test	1	2023	1	2025
Global Broadcast System(GBS) TRANSEC: GBS Joint Service FOT&E Block 1	1	2024	2	2025
Global Broadcast System(GBS) TRANSEC: GBS Joint Service FOT&E Block 2	4	2024	1	2026
Global Broadcast System(GBS) TRANSEC: TRANSEC Procurement	1	2025	4	2027
Global Broadcast System(GBS) TRANSEC: TRANSEC Delivery FY25	2	2025	2	2025
Global Broadcast System(GBS) TRANSEC: TRANSEC Delivery FY26	2	2026	2	2026
Global Broadcast System(GBS) TRANSEC: TRANSEC Delivery FY27	2	2027	2	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy											Date: April 2022	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*				Project (Number/Name) 0729 / *Mobile Advanced Extremely High Frequency (AEHF) Terminal (MAT)*			
COST ($ in Millions)	**Prior Years**	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Cost To Complete**	**Total Cost**
0729: *Mobile Advanced Extremely High Frequency (AEHF) Terminal (MAT)*	0.000	0.000	27.810	75.986	-	75.986	80.354	53.492	0.905	0.905	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 290

A. Mission Description and Budget Item Justification

The details of Program Element 0604280N, Project 0729 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Mobile Advanced Extremely High Frequency (AEHF) Terminal (MAT)	0.000	27.810	75.986	0.000	75.986
Articles:	-	-	-	-	-
FY 2022 Plans: The details of Program Element 0604280N, Project 0729 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
FY 2023 Base Plans: The details of Program Element 0604280N, Project 0729 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: The details of Program Element 0604280N, Project 0729 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
Accomplishments/Planned Programs Subtotals	0.000	27.810	75.986	0.000	75.986

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0729 / *Mobile Advanced Extremely High Frequency (AEHF) Terminal (MAT)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• RDTEN/0303109N/0729: *Mobile Advanced Extremely High Frequency (AEHF) Terminal (MAT)*	20.851	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	20.851

Remarks

D. Acquisition Strategy

The details of Program Element 0604280N, Project 0729 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 0729 / *Mobile Advanced Extremely High Frequency (AEHF) Terminal (MAT)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	TBD	Not Specified : Not Specified	0.000	0.000		21.684	Apr 2022	67.936	Jan 2023	-		67.936	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		21.684		67.936		-		67.936	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	TBD	Not Specified : Not Specified	0.000	0.000		4.726	Nov 2021	6.350	Nov 2022	-		6.350	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		4.726		6.350		-		6.350	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	TBD	Not Specified : Not Specified	0.000	0.000		0.000		0.500	Nov 2022	-		0.500	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		0.500		-		0.500	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	TBD	Not Specified : Not Specified	0.000	0.000		1.400	Nov 2021	1.200	Nov 2022	-		1.200	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		1.400		1.200		-		1.200	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 0729 / *Mobile Advanced Extremely High Frequency (AEHF) Terminal (MAT)*	

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		27.810		75.986		-		75.986	Continuing	Continuing	N/A

Remarks

FY21 (0729) cost data is provided under PE 0303109N.

The details of Program Element 0604280N, Project 0729 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0729 / *Mobile Advanced Extremely High Frequency (AEHF) Terminal (MAT)*

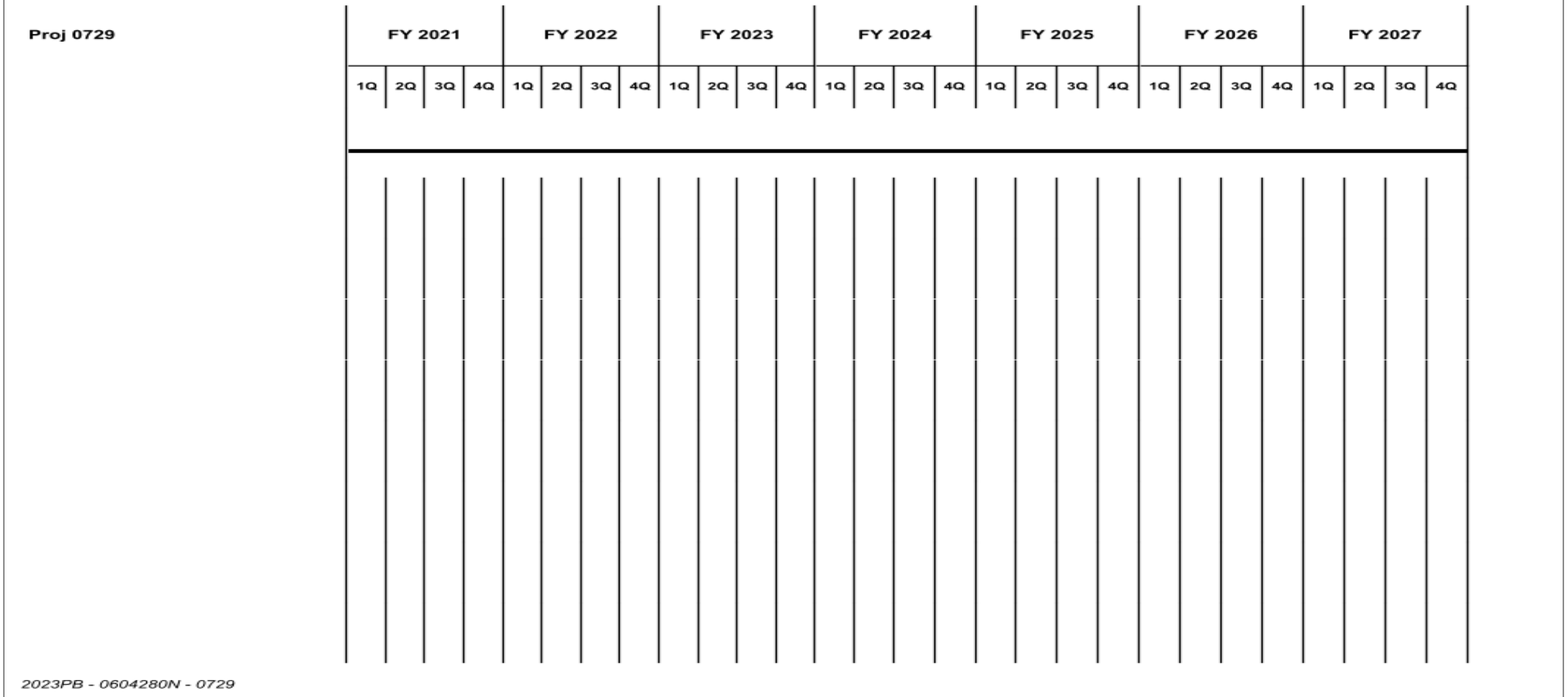


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0729 / *Mobile Advanced Extremely High Frequency (AEHF) Terminal (MAT)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0729				
Classified (Place Holder)	1	2021	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 0742 / *Sub Integrated Ant System*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
0742: *Sub Integrated Ant System*	17.845	13.157	15.929	27.991	-	27.991	16.067	10.339	10.545	10.763	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Transition Engineering	1.808	1.998	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2022 Plans: The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
FY 2023 Base Plans: N/A					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
Title: Submarine High Data Rate (SubHDR) Pre-Planned Product Improvement (P3I)	1.476	1.921	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2022 Plans: The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
FY 2023 Base Plans: N/A					
FY 2023 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0742 / *Sub Integrated Ant System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
Title: Advanced High Data Rate (AdvHDR) ***Articles:*** ***FY 2022 Plans:*** The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books. ***FY 2023 Base Plans:*** The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.	3.455 -	3.585 -	18.702 -	0.000 -	18.702 -
Title: Towed Buoy Antenna (AN/BRR-6/6B) ***Articles:*** ***FY 2022 Plans:*** The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books. ***FY 2023 Base Plans:*** The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:***	3.445 -	3.530 -	4.441 -	0.000 -	4.441 -

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
Title: Antenna Improvements	2.973	4.399	4.159	0.000	4.159
Articles:	-	-	-	-	-
FY 2022 Plans: The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
FY 2023 Base Plans: The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
Title: Submarine Communication Transmitter Buoy (SECT)(AN/BST-1)	0.000	0.496	0.689	0.000	0.689
Articles:	-	-	-	-	-
FY 2022 Plans: The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
FY 2023 Base Plans: The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
Accomplishments/Planned Programs Subtotals	13.157	15.929	27.991	0.000	27.991

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• OPN/3130: *Submarine Communication Equipment*	54.823	64.642	74.569	-	74.569	82.378	81.531	81.629	82.258	Continuing	Continuing

Remarks

D. Acquisition Strategy

The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 0742 / *Sub Integrated Ant System*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	TBD	Not Specified : Not Specified	11.630	8.936	Nov 2020	10.715	Oct 2021	23.632	Oct 2022	-		23.632	Continuing	Continuing	Continuing
		Subtotal	11.630	8.936		10.715		23.632		-		23.632	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	TBD	Not Specified : Not Specified	0.656	1.007	Oct 2020	0.873	Oct 2021	0.643	Oct 2022	-		0.643	Continuing	Continuing	Continuing
		Subtotal	0.656	1.007		0.873		0.643		-		0.643	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	TBD	Not Specified : Not Specified	4.663	2.318	Oct 2020	2.683	Oct 2021	3.080	Oct 2022	-		3.080	Continuing	Continuing	Continuing
		Subtotal	4.663	2.318		2.683		3.080		-		3.080	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	TBD	Not Specified : Not Specified	0.896	0.896	Feb 2021	1.658	Feb 2022	0.636	Feb 2023	-		0.636	Continuing	Continuing	Continuing
		Subtotal	0.896	0.896		1.658		0.636		-		0.636	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 0742 / *Sub Integrated Ant System*	

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	17.845	13.157		15.929		27.991		-		27.991	Continuing	Continuing	N/A

Remarks

- Prior Year cost data is provided under PE 0604503N, Project 0742
- The details of Program Element 0604280N, Project 0742 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0742 / *Sub Integrated Ant System*

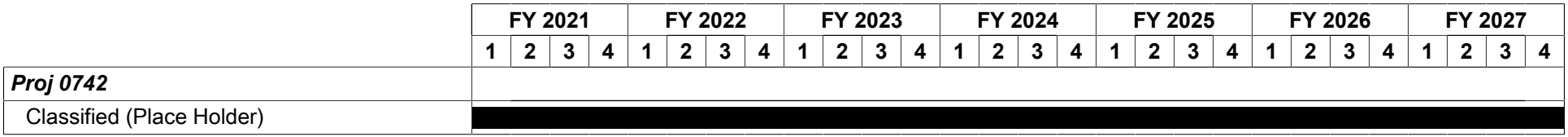

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0742 / *Sub Integrated Ant System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0742				
Classified (Place Holder)	1	2021	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 0921 / *NAVSTAR GPS Equipment*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
0921: *NAVSTAR GPS Equipment*	50.971	41.593	28.903	36.380	-	36.380	39.816	50.391	20.937	21.095	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The FY 2023 funding request was increased by $7.477M to support the Global Positioning System (GPS) - based Positioning, Navigation, and Timing (PNT) Service (GPNTS) Non-GPS Aided PNT for Surface Ships (NoGAPSS) GPNTS hosting of the Automated Celestial Navigation System (ACNS), in direct support of the NoGAPSS Future Naval Capability (FNC) Assured - PNT (A-PNT) effort to provide Naval forces the ability to conduct operations in a maritime environment where GPS is either absent or degraded, along with the GPS Modernization Military Code (M-Code) Prime Vendor Integration (PVI) on the following four (4) air platforms: F/A-18E/F, EA-18G, E-2D, and CH-53K.

Navigation Satellite Timing & Ranging (NAVSTAR) GPS project (0921) encompasses the Navy's efforts to pace the growing threat to GPS Navigation through the fielding of new GPS receivers, Anti-Jam (AJ) Antennas, and A-PNT technologies across all Navy platform types. NAVSTAR GPS is a group of A-PNT systems that provides authorized users with secure, worldwide, all weather, three dimensional position, velocity, and precise time data. NAVSTAR GPS provides A-PNT capability to Command, Control, Communications, Computer, Intelligence, Surveillance and Reconnaissance (C4ISR) and combat systems in standalone and networked architectures throughout air and maritime domains. This project is comprised of four distinct efforts: Sea Navigation Warfare (NAVWAR), GPNTS, Air NAVWAR and GPS Modernization. Sea NAVWAR provides AJ antennas and GPNTS provides GPS Receivers and A-PNT technology to surface platforms, and Air NAVWAR provides AJ antennas and GPS Modernization provides GPS receivers to air platforms. Research, Development, Testing and Evaluation (RDT&E) funds are used to perform all the non-recurring GPS Surface Ship, Submarine and Aircraft Development, Integration, and Testing efforts in support of NAVSTAR GPS.

The Air and Sea NAVWAR programs provide continued access to GPS information in a denied or impeded electronic environment. Development efforts for both programs provide improvements to various platform type antennas and ensure compatibility with the new Military Code (M-Code) signal. The Air NAVWAR program continues integration efforts using GPS Antenna System (GAS-1), Advanced Digital Antenna Production (ADAP), and other AJ antennas on air platforms while investigating smaller AJ antennas for space constrained platforms and aircraft with unique requirements. The Sea NAVWAR program integrates AJ antennas onto surface and subsurface platforms. The Sea NAVWAR program will continue to research the viability and development of enhanced AJ techniques and technologies.

The GPNTS system is being developed to serve as the primary A-PNT system for the surface Navy to ensure reliable PNT capability and interoperability insertion into GPS receivers and associated C4ISR and Combat Systems in a denied environment. GPNTS pairs with AJ antennas and provides precise A-PNT data required for combat, weapons, command, control, communications, navigation, and other systems, as well as providing the time synchronization critical for network environments. GPNTS will back fit current PNT/GPS systems as well as serve as a forward fit for new platforms. GPNTS is an Open Architecture (OA) development, enabling rapid software and hardware based capability improvements to be inserted without a requirement for single-source contracting. GPNTS will host the Air Force GPS Directorate-developed Military GPS User Equipment (MGUE) card, allowing access to the new GPS M-Code signal. GPNTS will provide more robust and secure GPS/PNT capabilities than is currently in the Fleet. The system will provide the capability to migrate non-real time GPS data toward a Common Computing Environment

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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(CCE) and provide a path for the integration of advanced navigation systems and sensors. GPNTS provides A-PNT capability to C4ISR and Combat Systems in standalone and networked architectures throughout maritime domains.

Global Position System (GPS) Modernization integrates and tests the Navy's the Military GPS User Equipment (MGUE) being developed by the United States Space Force (USSF) and United States Air Force (USAF) Life Cycle Material Command into Naval aircraft to provide improved access to GPS signals in challenged and jammed environments. This project will provide central coordination and management of priorities and funding of multiple parallel efforts to integrate different MGUE into various type/model/series aircraft across multiple platform program offices. Due to the diversity of Naval aircraft, each platform will require unique Prime Vendor Integration (PVI) and testing that includes software updates to avionics and mission computers as well as modifications to the airframe based on Size, Weight, Power and Cost (SWaP-C) requirements. GPS Modernization delivers increased GPS Anti-Jam (AJ) protection through modernized GPS receivers that will utilize the new Military Code (M-Code) GPS Signal in Space, incorporate enhanced cryptology, enable blue force GPS electronic attack, deliver greater position and time accuracy, and provide improved protection against signal spoofing as compared to legacy receivers. This effort supports Navy compliance with Public Law 111-383 which prohibits spending funds on non-M-Code GPS user equipment after FY 2017.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Sea Navigation Warfare (NAVWAR)	2.086	1.124	1.105	0.000	1.105
Articles:	-	-	-	-	-
Description: Sea NAVWAR provides the Warfighter continued access to GPS through the use of AJ Antenna Systems designed to counter GPS Electronic Warfare threats due to intentional and unintentional interference on surface and subsurface platforms through the continued development of AJ antennas. Program currently supports two (2) efforts: Increment 2 Advanced Digital Antenna Production (ADAP) antenna for surface platforms, and the Submarine Anti-Jam GPS Enhancement (SAGE) antenna for subsurface platforms. Increment 2 ADAP continues to research the viability and development of smaller AJ antennas for surface platforms with SWaP-C restrictions and will ensure compatibility with the Military Code (M-Code) signal. Increment 2 ADAP received acquisition authority (November 2018) to add a small antenna variant to the program baseline. Program is continuing the SAGE antenna development, which integrates AJ capability into the submarine Multi-Function Mast (OE-538B).					
FY 2022 Plans: Begin investigation of enhanced AJ capabilities for integration into existing Sea NAVWAR antenna systems.					
Begin technology developmental efforts with industry to mature technical base for next-generation AJ antenna.					
Increment 2 ADAP antenna:					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Continue government oversight, system engineering, logistics, contracts, and programmatic management efforts for Increment 2 ADAP to include smaller AJ antenna variants for surface platforms with SWaP-C restrictions. Complete SWaP-C antenna integration efforts for the development of Global Positioning System (GPS) - Based Positioning, Navigation and Timing (PNT) Service (GPNTS) SWaP-C receiver solution to ensure compatibility. Submarine Anti-Jam (AJ) Global Positioning System (GPS) Enhancement (SAGE) antenna: Complete government oversight, system engineering, logistics, contracts, and programmatic management efforts for the SAGE, and integration into the OE-538B antenna system development. Complete Developmental Testing/Operational Testing (DT/OT) efforts to support fielding decision for OE-538B on operational submarines. ***FY 2023 Base Plans:*** Increment 2 Advanced Digital Antenna Production (ADAP) antenna: Continue government oversight, system engineering, logistics, contracts, and programmatic management efforts for Increment 2 ADAP to include assessment of new AJ capabilities and technologies. Continue investigation of enhanced AJ capabilities for integration into existing Sea Naval Warfare (NAVWAR) antenna systems. Continue technology developmental efforts with industry to mature technical base for a next-generation AJ antenna. Begin integration of Multi-Platform Anti-Jam GPS Navigation Antenna (MAGNA) with Mounted Assured PNT System (MAPS) and Dismounted Assured PNT System (DAPS) units to support fleet experimentation to demonstrate MAPS/DAPS as a potential replacement to the Defense Advanced GPS Receiver (DAGR). ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Funding decrease of $0.019M in FY 23 due to planned completion of Size, Weight, Power, and Cost (SWaP-C) antenna and receiver integration in FY22.					
Title: Global Positioning System (GPS) - Based Positioning, Navigation and Timing (PNT) Service (GPNTS)	13.866	1.909	2.933	0.000	2.933
Articles:	-	-	-	-	-
Description: The GPNTS system is being developed to serve as the primary Assured Positioning Navigation and Timing (A-PNT) system for the surface Navy to ensure reliable PNT capability and interoperability insertion into GPS receivers and associated Command, Control, Communications, Computers (C4) Intelligence, Surveillance and Reconnaissance (ISR) and Combat Systems in a denied environment. GPNTS pairs with AJ antennas and provides precise A-PNT data required for combat, weapons, command, control, communications, navigation, and other systems, as well as providing the time synchronization critical for network environments. GPNTS will back fit current PNT/GPS systems as well as serve as a forward fit for new platforms. GPNTS provides a robust, secure, integrated and interoperable network-centric PNT capability to include: Selective Availability Anti-Spoofing Security Module (SAASM) GPS security architecture; migration path to modernized signal-in-space (M-Code); open architecture approach allowing for the integration of alternate PNT sources; scalable solution that consolidates platform receivers, improved anti-jam and anti-spoof mechanisms; and extended timing holdover in a Global Positioning System (GPS) denied environment. As fielding of the GPS - Based Positioning, Navigation and Timing (PNT) Service (GPNTS) system continues, RDTEN will support product improvements such as the integration of the Office of Naval Research (ONR) developed assured-PNT Future Naval Capability (FNC), Non-GPS Aided Positioning for Surface Ships (NoGAPSS) as well as software enhancements for Assured-PNT sensor suite integration to include Celestial Navigation and Enhanced Assurance Timing (EAT). ***FY 2022 Plans:*** Continue coordination activities to prepare for and conduct the required Follow-on Operational Test and Evaluation (FOT&E) in support of a fielding decision for the NoGAPSS capability. Continue software defect resolution with software vendor in support of Full Operational Capability (FOC). Continue platform integration and development to support GPNTS on both Littoral Combat Ships (LCS) variants as directed by the Navy to provide common Assured PNT (A-PNT) capabilities and Navigation Warfare					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
(NAVWAR) compliance on LCS. Integration efforts require identifying interface requirements and analysis that utilizes existing variants of GPNTS. Complete the implementation of GPNTS Pre-planned Product Improvement (P3I) technology software enhancements for A-PNT sensor suite integration to include Celestial Navigation and EAT. Complete non-permanent change installation of GPNTS NoGAPSS delta hardware and software enhancements associated with the NoGAPSS Future Navy Capability (FNC) onboard first Destroyer, Guided Missile (DDG). Complete Aegis Integration Event (AIE) for GPNTS software 2.0 to achieve Combat Systems certification. Completed Risk Management Framework (RMF) Authorization To Operate (ATO) for multiple software baselines. Expiring software (SW) version 1.x ATO in Feb 2022 requiring renewed RMF package. Commence renewal package for SW v2.x ATO due to updated baseline configurations. Completed hardware and software development of a Small Form Factor of GPNTS. Completed Environmental Qualification Testing (EQT) for Global Positioning System (GPS) - Based Positioning, Navigation and Timing (PNT) Service (GPNTS) Non-GPS Aided Positioning for Surface Ships (NoGAPSS) system. ***FY 2023 Base Plans:*** Commence efforts to develop and test a GPNTS system capable of hosting the Automated Celestial Navigation System (ACNS) below deck hardware. Effort is in direct support of the NoGAPSS FNC. Commence coordination activities to prepare for and conduct NoGAPSS Technical Evaluation. Continue coordination activities to prepare for and conduct the required Follow-on Operational Test and Evaluation (FOT&E) in support of a fielding decision for the NoGAPSS capability. Continue platform integration and development to support GPNTS on both Littoral Combat Ships (LCS) variants as directed by the Navy to provide common Assured Positioning Navigation and Timing (A-PNT) capabilities and					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Navigation Warfare (NAVWAR) compliance on LCS. Integration efforts require identifying interface requirements and analysis that utilizes existing variants of GPNTS. Continue NoGAPSS Model Based System Engineering (MBSE) implementation as directed by the Navy to provide a navigation system-of-systems architecture to integrate all sources of Position, Velocity, Attitude and Timing (PVAT) data and the NoGAPSS capability. Continue software defect resolution with software vendor in support of Full Operational Capability (FOC). ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding increase of $1.024M from FY 2022 to FY 2023 due to development of a GPNTS system capable of hosting ACNS below deck hardware, in direct support of the NoGAPSS Future Naval Capability (FNC) A-PNT effort to provide Naval forces the ability to conduct operations in a maritime environment where GPS is either absent or degraded.					
Title: Air Navigation Warfare (NAVWAR) ***Articles:*** ***Description:*** Air Navigation Warfare (NAVWAR) provides the Warfighter continued access to Global Positioning System (GPS) through the use of Anti-Jam (AJ) Antenna Systems designed to counter GPS Electronic Warfare threats due to intentional and unintentional interference. Air NAVWAR efforts include investigation and testing of emerging technologies to improve AJ capability and technologies such as development of miniaturized very small antenna systems to allow for the capability on small variant aircraft. Efforts will also include development to ensure antennas can accept the new Military Code (M-Code) signal. ***FY 2022 Plans:*** Commence Multi-platform AJ GPS Navigation Antenna Integrated (MAGNA-I) ground testing on AH-1Z, UH-1Y helicopters in benign and denied environments in the Facilities for Antenna and Radar Cross Section (RCS) Measurements (FARM) test-chamber.	8.701 -	5.789 -	3.670 -	0.000 -	3.670 -

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Continue Non-Recurring Engineering (NRE) integration efforts for MAGNA-I on AH-1Z, UH-1Y helicopters to include platform interface modifications; software development, integration testing, and hardware integration. Conduct a MAGNA-I co-site analysis to support the AH-1Z, UH-1Y integration with MAGNA-I. Continue to support Assured-Positioning Navigation and Timing (A-PNT) efforts by working with Navy Air platforms on navigation requirements and coordinating with surface Navy platforms to leverage synergies, to include Non-GPS Aided PNT laboratory demonstration of Cooperative Engagement Capability (CEC) based navigation. Continue GPS Demonstrations and laboratory testing of GPS receivers with associated antennas at Facilities for Antenna and Radar Cross Section (RCS) Measurements (FARM), to include continuing testing comparing performance between traditional nulling systems and new beam-steering antenna electronics, comparing legacy anti-jam antennas and modernized antenna to address obsolescence issues, and continuing MAGNA-I environmental tests as part of a risk reduction effort for the F/A-18C/D platforms. The data collected from the beam-steering testing will be used by platforms as they consider future antenna system updates. Continue to provide subject matter expertise to various platforms (including MQ-4C, MQ-25, RQ-21, F/A-18C/D) as they consider various anti-jam solutions. Complete aviation A-PNT timing study, gaining a more complete understanding of capability gaps and identifying potential solutions for the specific aviation capability gaps related to PNT that were identified.					
FY 2023 Base Plans: Commence flight testing of MAGNA-I on AH-1Z and UH-1Y helicopters. Continue to support Assured-Positioning Navigation and Timing (A-PNT) efforts by working with Navy Air platforms on navigation requirements and coordinating with surface Navy platforms to leverage synergies. Continue Global Positioning System (GPS) Demonstrations and laboratory testing of GPS receivers with associated antennas at Facilities for Antenna and Radar Cross Section (RCS) Measurements (FARM), to include continued beam-steering comparison tests and comparing legacy anti-jam and modernized antennas to address obsolescence issues.					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Continue to provide subject matter expertise to various platforms (including MQ-4C, MQ-25, RQ-21, F/A-18C/D) as they consider various Anti-Jam (AJ) solutions. Complete Non-Recurring Engineering (NRE) integration efforts for Multi-Platform AJ GPS Navigation Antenna Integrated (MAGNA-I) on AH-1Z, UH-1Y helicopters to include platform interface modifications; software development, integration testing, and hardware integration. Conduct functional flight testing in a benign environment. Finalize and release the MAGNA-I integration technical data package. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding decrease of $2.119M from FY 2022 to FY 2023 due to the completion of the A-PNT efforts and completion of the MAGNA-I integration effort on AH-1Z and UH-1Y helicopters.					
Title: Global Positioning System (GPS) Modernization	16.940	20.081	28.672	0.000	28.672
Articles:	-	37	19	-	19
Description: GPS Modernization delivers increased GPS AJ protection through modernized GPS receivers that will utilize the new Military Code (M-Code) GPS Signal in Space, incorporate enhanced cryptology, enable blue force GPS electronic attack, deliver greater position and time accuracy, and provide improved protection against signal spoofing as compared to legacy receivers. This effort supports Navy's compliance with Public Law 111-383, which requires that all GPS user equipment be capable of receiving the new GPS M-Code signal after FY 2017. To meet the Navy's fielding timeline, system engineering and requirement development efforts must begin before actual delivery of Military GPS User Equipment (MGUE). The integration timeline of modernized GPS receivers is 5+ years from planning to test and is dependent on platform. Each type/model/series aircraft uses a unique GPS receiver and GPS system configuration, which requires separate parallel Prime Vendor Integration (PVI) and testing efforts to include: software updates to avionics and mission computers; modifications to the airframe based on Size, Weight, Power and Cost (SWaP-C) requirements; coordination with each Program Management Air (PMA) organization; management, oversight and support of each effort; and contracting and working with each Prime Vendor Integrator for the respective platform.					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Project currently consists of eleven (11) parallel efforts that integrate five (5) different Military Code (M-Code) Global Positioning System (GPS) receivers into different type model series aircraft. The M-Code receivers are being developed under two (2) Air Force programs, Miniaturized Airborne GPS receiver 2000-Modernization (MAGR2K-M) and Embedded GPS/Inertial Navigation System (EGI-M). The EGI-M program includes the LN-351, LN-300, Accurate Navigation System - Modernization (ANAV-M) and H-764-M. MV-22B/CMV-22B, and E-6B will integrate the MAGR2K-M. F/A-18E/F and EA-18G will integrate the ANAV-M. E-2D, CH-53K, P-8A, MQ-4C, MQ-8C will integrate the LN-351. KC-130J will integrate the H-764-M. MH-60 R/S will integrate the LN-300. ***FY 2022 Plans:*** Procure LN-351 test article receivers to provide production representative M-Code receivers to support integration and testing for E-2D, CH-53K and AH-1Z/UH-1Y. Continue to support Prime Vendor Integration (PVI) and began testing of Miniaturized Airborne GPS receiver 2000-Modernization (MAGR2K-M) GPS Receivers on three (3) air platforms: MV-22B, CMV-22B, and E-6B. MAGR2K-M GPS Receivers required minimal enhanced functionality and kept the same aviation form factor as the legacy MAGR2K-S receivers. Due to the developmental complexity of Embedded GPS Inertial-M-Code (EGI-M) GPS Receivers, PVI, and testing of EGI-M GPS Receivers will be delayed in order to incorporate enhanced capabilities as required by the EGI-M System Requirements Document (SRD). Continue CH-53K missionization to develop missionized CH-53K specific requirements for LN-351 integration. Continue providing overarching management, central coordination, government oversight and guidance, shared expertise, and engineering during MAGR2K-M/EGI-M receiver development to review MAGR2K-M/EGI-M. receiver requirements and ensure these requirements support aircraft performance and integration for MV-22B, CMV-22B, E-6B, F/A-18E/F, EA-18G, E-2D, MH-60 R/S, and CH-53K. Continue to support United States Space Force (USSF) MAGR2K-M & EGI-M GPS receiver development, performance, and certification testing. Continue to support United States Space Force (USSF) Miniaturized Airborne Global Positioning System (GPS) receiver 2000-Modernization (MAGR2K-M) & Embedded GPS/Inertial Navigation System (EGI-M) GPS receiver					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
program events to include but not limited to Systems Engineering and Technical Reviews (SETR), Integrated Baseline Reviews, Preliminary Design Reviews (PDR) and Critical Design Review (CDR). Continue laboratory testing of MAGR2K-M receivers in government labs. Continue teaming with the USSF to determine the feasibility of using a Janus Software Design Receiver (SDR) as a GPS Receiver Card and continue to study opportunities to incorporate improvements into GPS receivers. Complete F/A-18E/F, EA-18G, E-2D, and CH-53K structural analysis, electrical power load analysis, human engineering, product support analysis, and product support review of Engineering & Manufacturing Development (EMD) Contract Data Requirements List (CDRL) deliverable, Electromagnetic Interference (EMI) impact testing, Integrated Master Schedule (IMS) planning, and Technical Interchange Meeting (TIM). Complete development of the MH-60 R/S System Requirements Document (SRD) to support LN-300 integration.					
FY 2023 Base Plans: Procure for Accurate Navigation System - Modernization (ANAV-M) test article receivers to provide production representative to support integration and testing for F/A-18E/F and EA-18G. Commence Prime Vendor Integration (PVI) on the following five (5) air platforms: F/A-18E/F, EA-18G, E-2D, CH-53K, and AH-1Z/UH-1Y. Commence efforts for MH-60 R/S missionization to develop missionized MH-60 R/S specific requirements for LN-300 integration that will leverage Positioning, Navigation, and Timing (PNT) program office contracts. Commence Military Code (M-Code) integration efforts to include but not limited to Systems Requirement Review (SRR), structural analysis, electrical power load analysis, human engineering, product support analysis for P-8A, MQ-4C, MQ-8C, and KC-130J. Continue to support PVI and testing of MAGR2K-M GPS Receivers on three (3) air platforms: MV-22B, CMV-22B, and E-6B. Continue CH-53K missionization to develop missionized CH-53K specific requirements for LN-351 integration.					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Continue providing overarching management, central coordination, government oversight and guidance, shared expertise, and engineering during Military Code (M-Code) receiver development to review M-Code receiver requirements and ensure these requirements support aircraft performance and integration for MV-22B, CMV-22B, E-6B, F/A-18E/F, EA-18G, E-2D, MH-60 R/S, CH-53K, P-8A, MQ-4C, MQ-8C, and KC-130J. Continue to support United States Space Force (USSF) Miniaturized Airborne Global Positioning System (GPS) receiver 2000-Modernization (MAGR2K-M) & Embedded GPS/Inertial Navigation System (EGI-M) GPS receiver development, performance, and certification testing. Continue to support USSF MAGR2K-M & EGI-M GPS receiver program events to include but not limited to Systems Engineering and Technical Reviews (SETR), Integrated Baseline Reviews, Preliminary Design Reviews (PDR) and Critical Design Review (CDR). Continue teaming with the United States Air Force (USAF) to determine the feasibility of using a Janus Software Design Receiver (SDR) as a GPS Receiver Card and continue to study opportunities to incorporate improvements into GPS receivers. Complete laboratory testing of MAGR2K-M receivers in government labs. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding increase of $8.591M from FY 2022 to FY 2023 to support M-Code Prime Vendor Integration (PVI) on the following four (4) air platforms: F/A-18E/F, EA-18G, E-2D, and CH-53K.					
Accomplishments/Planned Programs Subtotals	41.593	28.903	36.380	0.000	36.380

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• OPN/2657: *NAVSTAR GPS Receivers (Space)*	38.043	33.097	30.439	-	30.439	36.699	41.720	42.585	43.360	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• APN/0577: *Common Avionics Changes*	123.341	118.839	136.883	-	136.883	156.471	279.705	311.422	338.773	1,632.973	5,996.633

Remarks

D. Acquisition Strategy

Both the Navigation Warfare (NAVWAR) Air and Sea programs will continue to integrate improved Anti-Jam (AJ) capability onto air and sea platforms and ensure compatibility with new Military Code (M-Code) signal.

Global Positioning System (GPS) - based Positioning, Navigation, and Timing (PNT) Service (GPNTS) program will develop, acquire, and field GPNTS, a scalable Selective Availability/Anti- Spoofing Module (SAASM) GPS-based service-oriented architecture PNT system that will provide an open, extensible, modernized replacement for the current fleet PNT systems. GPNTS will also integrate Military GPS User Equipment (MGUE) and the Office of Naval Research (ONR) developed Non-GPS Aided Positioning for Surface Ships (NoGAPSS) capabilities. A firm fixed price contract was awarded March 2018 to procure Low Rate Initial Production (LRIP) and Full Rate Production (FRP) systems.

GPS Modernization will manage the non-recurring engineering required to conduct systems engineering, integration and test of modernized GPS receivers and utilize United States Space Force (USSF) hardware contracts, and Navy air platform integration contracts.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Air NAVWAR Development	MIPR	Mayflower : Bedford, MA	2.319	0.573	Feb 2021	0.000		0.000		-		0.000	0.000	2.892	-
Air NAVWAR MAGNA-I Integration	C/CPIF	Bell Helicopter : Fort Worth, TX	0.000	2.071	Apr 2021	2.170	Jan 2022	0.588	Jan 2023	-		0.588	0.000	4.829	-
Air NAVWAR Development Support	WR	NAWC : Pax River, MD	1.795	0.000		0.000		0.000		-		0.000	0.000	1.795	-
Air NAVWAR Govt Eng Support	WR	NAWC : Pax River, MD	0.652	2.018	Dec 2020	1.338	Dec 2021	0.986	Dec 2022	-		0.986	Continuing	Continuing	Continuing
Air NAVWAR Systems Engineering	WR	NIWC PAC : San Diego, CA	0.000	0.250	Nov 2020	0.000		0.000		-		0.000	0.000	0.250	-
Air NAVWAR Product Development	WR	GPS Directorate : Los Angeles, CA	0.248	0.247	Dec 2020	0.000		0.000		-		0.000	0.000	0.495	-
Air NAVWAR Development - Studies	MIPR	MITRE : Bedford, MA	0.000	0.750	Nov 2020	0.370	Nov 2021	0.000		-		0.000	0.000	1.120	-
Sea NAVWAR Development Support	WR	SSC PAC, NUWC : San Diego, Newport	0.362	0.401	Dec 2020	0.464	Dec 2021	0.655	Dec 2022	-		0.655	Continuing	Continuing	Continuing
GPNTS SW / NoGAPSS Development	C/CPFF	Raytheon : San Diego, CA	6.427	5.883	Jan 2021	0.000		1.250	Jan 2023	-		1.250	Continuing	Continuing	Continuing
GPNTS Development Support	WR	NIWC PAC : San Diego, CA	1.365	0.265	Dec 2020	0.000		0.000		-		0.000	0.000	1.630	-
GPNTS Govt Eng Support	WR	NIWC PAC : San Diego, CA	1.800	0.343	Dec 2020	1.058	Dec 2021	1.055	Dec 2022	-		1.055	Continuing	Continuing	Continuing
GPS Mod Development - Requirements Development	C/IDIQ	Boeing : St Louis, MO	0.000	0.137	Dec 2020	0.450	Jan 2022	0.000		-		0.000	0.000	0.587	-
GPS Mod Development ANAV-M Integration F/18 E/F & EA-18G	C/CPIF	Boeing : St Louis, MO	0.000	0.000		0.164	Jan 2022	3.747	Jan 2023	-		3.747	0.000	3.911	-
GPS Mod Development - Requirements Development	C/IDIQ	Northup Grumman : Melbourne, FLA	0.000	0.557	Mar 2021	0.112	Jan 2022	0.000		-		0.000	0.000	0.669	-
GPS Mod Development LN-351 Integration E-2D	C/CPIF	Northup Grumman : Melbourne, FLA	0.000	0.000		0.000		3.214	Jan 2023	-		3.214	0.000	3.214	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GPS Mod Development MAGR2K-M MV-22B,CMV-22B	C/CPIF	Bell Boeing : Amarillo, TX	0.000	4.609	Jul 2021	3.444	Feb 2022	5.556	Feb 2023	-		5.556	Continuing	Continuing	Continuing
GPS Mod Development CH-53K	C/CPIF	Sikorsky : Stratford, CT	0.884	0.000		0.000		0.000		-		0.000	0.000	0.884	-
GPS Mod Development LN-351 Integration CH-53K	C/CPIF	Sikorsky : Stratford, CT	0.000	0.000		0.000		1.730	Jan 2023	-		1.730	Continuing	Continuing	Continuing
GPS Mod Development - Missionization	C/CPFF	Northrup Grumman : Los Angeles, CA	0.000	0.700	Jul 2021	3.371	Jan 2022	3.730	Jan 2023	-		3.730	0.000	7.801	-
GPS Mod Development LN-351 Hardware	C/IDIQ	Northup Grumman : Warner Robbins, GA	0.000	0.000		5.197	Jan 2022	0.000		-		0.000	0.000	5.197	-
GPS Mod Development MH-60	C/CPIF	Lockheed Martin : Owego, NY	0.000	1.068	Apr 2021	0.000		0.000		-		0.000	0.000	1.068	-
GPS Mod Product Development ANAV-M Hardware	C/IDIQ	Honeywell : Clearwater, FL	0.000	0.000		0.000		3.082	Jan 2023	-		3.082	0.000	3.082	-
GPS Mod Development - Studies	MIPR	MITRE : Bedford, MA	0.000	1.050	Nov 2020	1.187	Nov 2021	1.127	Nov 2022	-		1.127	0.000	3.364	-
GPS Mod Development Support	WR	NIWC PAC, NAWC : San Diego, Pax River	1.244	0.000		0.000		0.000		-		0.000	0.000	1.244	-
GPS Mod Govt Eng Support	WR	NIWC PAC, NAWC : San Diego, Pax River	18.934	2.750	Nov 2020	2.659	Nov 2021	2.712	Nov 2022	-		2.712	Continuing	Continuing	Continuing
GPS Mod Product Development	WR	GPS Directorate : Los Angeles, CA	0.478	0.921	Dec 2020	0.000		0.000		-		0.000	0.000	1.399	-
		Subtotal	36.508	24.593		21.984		29.432		-		29.432	Continuing	Continuing	N/A

Remarks

Funding increase of $7.448M from FY 2022 to FY 2023 is primarily due to M-Code Prime Vendor Integration (PVI) on the following four (4) air platforms: F/A-18E/F, EA-18G, E-2D, and CH-53K.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contract Engineering Services	C/CPAF	BAH : San Diego, Pax River, China Lake	1.425	0.998	Nov 2020	0.250	Nov 2021	0.205	Nov 2022	-		0.205	Continuing	Continuing	Continuing
Enginering Services	WR	NIWC PAC, NAWC : San Diego, Pax River	1.253	1.764	Nov 2020	1.645	Nov 2021	1.548	Nov 2022	-		1.548	Continuing	Continuing	Continuing
Integrated Logistics Support	WR	NIWC PAC, NAWC : San Diego, Pax River	1.788	1.414	Dec 2020	0.832	Dec 2021	0.482	Dec 2022	-		0.482	Continuing	Continuing	Continuing
Software Contract Support	C/CPFF	Raytheon : San Diego	2.553	6.015	Nov 2020	0.500	Nov 2021	0.445	Nov 2022	-		0.445	Continuing	Continuing	Continuing
		Subtotal	7.019	10.191		3.227		2.680		-		2.680	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Air NAVWAR Test & Evaluation	WR	NAWC : Pax River	0.718	1.536	Nov 2020	0.534	Nov 2021	0.809	Nov 2022	-		0.809	Continuing	Continuing	Continuing
Sea NAVWAR Test & Evaluation	WR	NIWC PAC, NUWC : San Diego, Newport	2.000	1.443	Nov 2020	0.000		0.000		-		0.000	0.000	3.443	-
GPNTS Test & Evaluation	WR	NIWC PAC : San Diego	1.100	0.274	Nov 2020	0.351	Nov 2021	0.183	Nov 2022	-		0.183	Continuing	Continuing	Continuing
		Subtotal	3.818	3.253		0.885		0.992		-		0.992	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPAF	BAH : San Diego, Pax River, China Lake	3.626	3.556	Nov 2020	2.807	Nov 2021	3.276	Nov 2022	-		3.276	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	3.626	3.556		2.807		3.276		-		3.276	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	50.971	41.593		28.903		36.380		-		36.380	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
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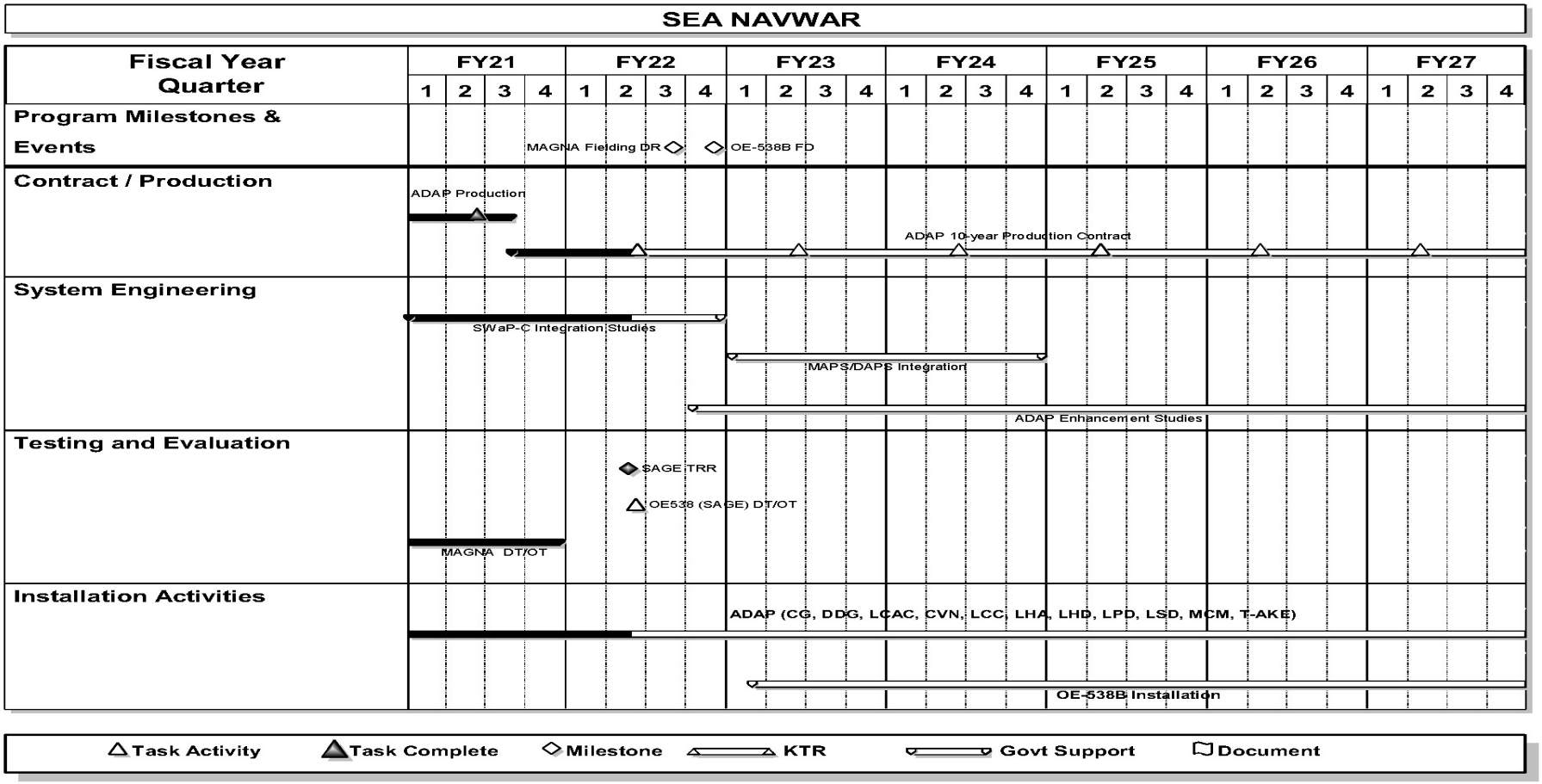

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
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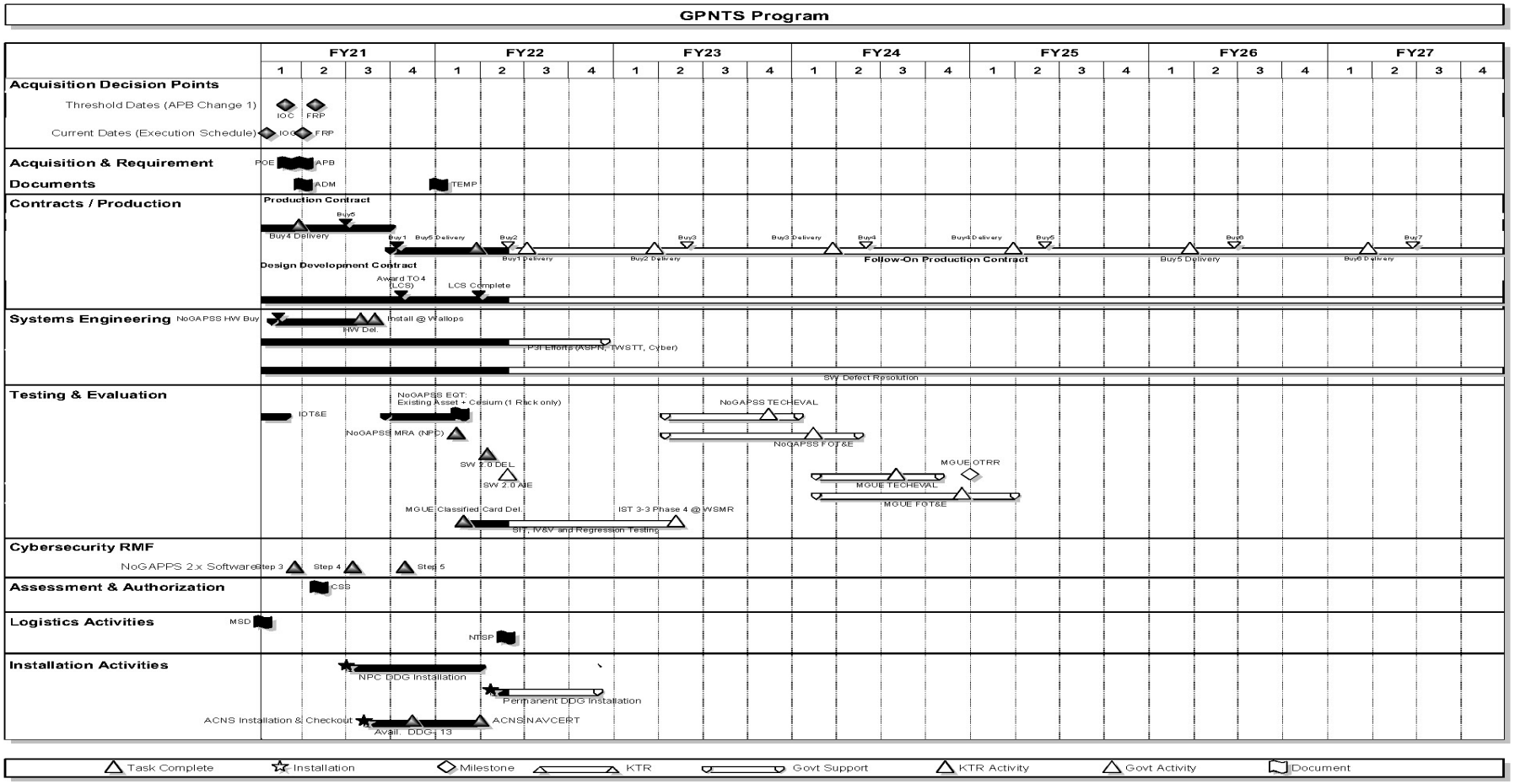

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
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Air Navigation

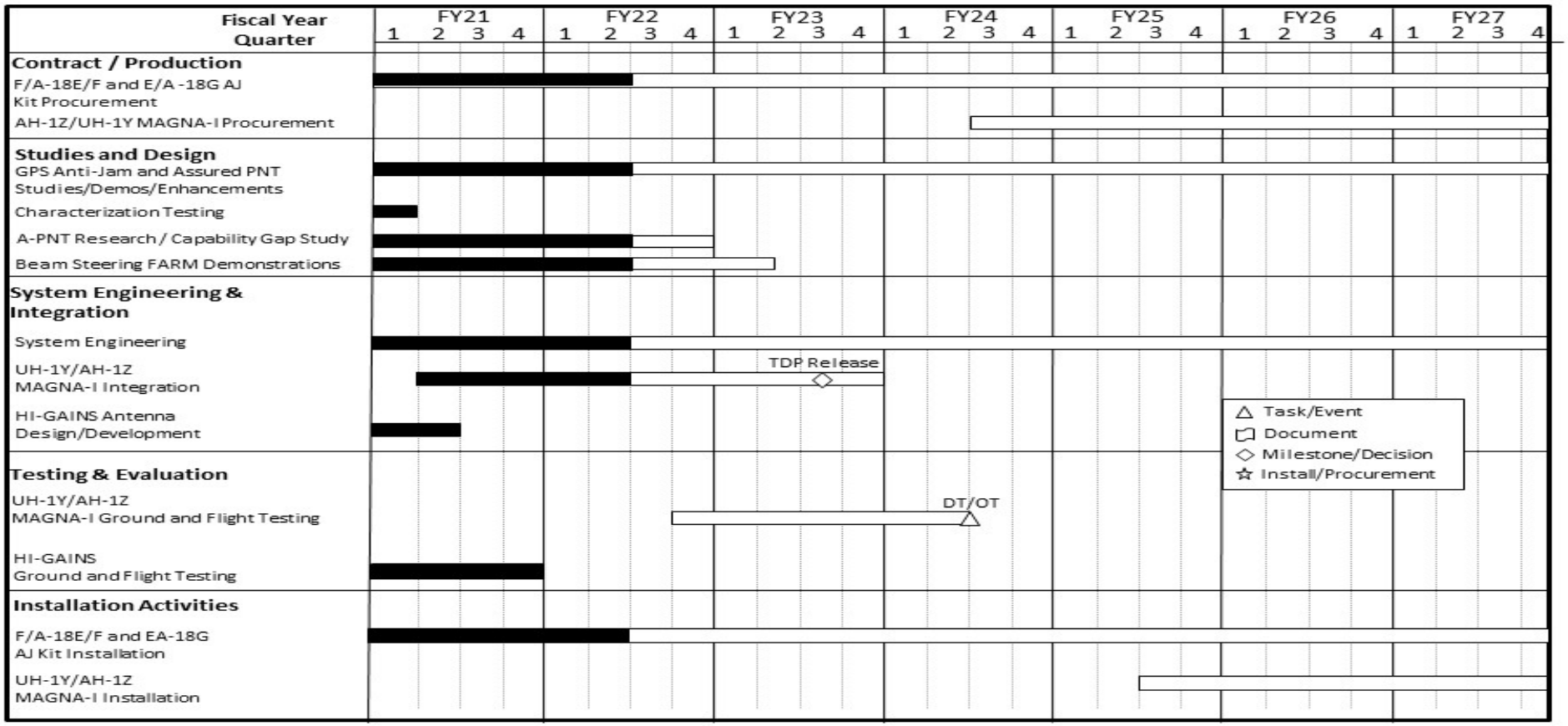

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
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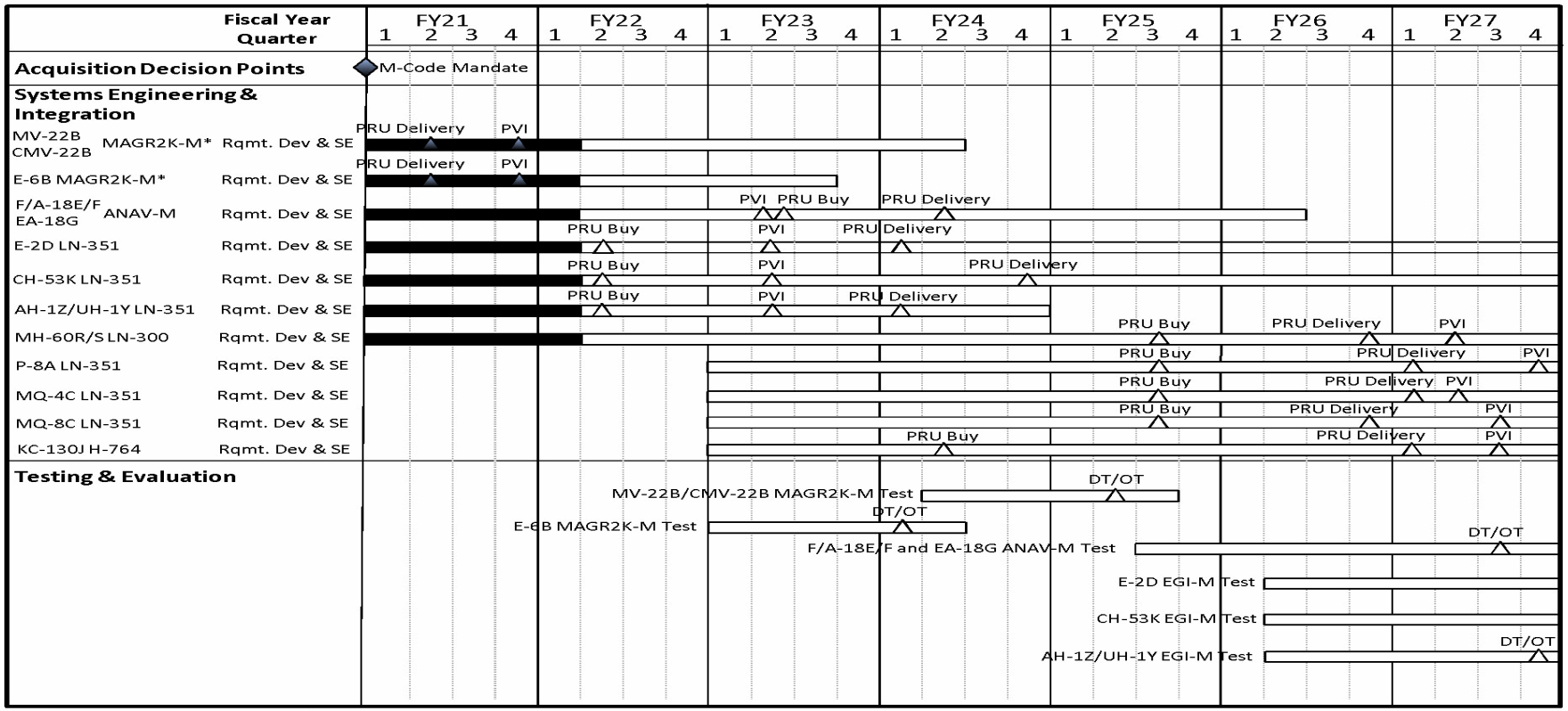
GPS Modernization



- * MAGR-2K-M PRUs were bought in FY17

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0921				
Sea NAVWAR: Sea Navigation MAGNA Fielding Decision Review	3	2022	3	2022
Sea NAVWAR: Sea Navigation OE-538B Fielding Decision	4	2022	4	2022
Sea NAVWAR: Sea Navigation ADAP 10 Year Production Contract	1	2021	4	2027
Sea NAVWAR: Sea Navigation ADAP Production Contract Award (FY21)	2	2021	2	2021
Sea NAVWAR: Sea Navigation ADAP Production Contract Award (FY22)	2	2022	2	2022
Sea NAVWAR: Sea Navigation ADAP Production Contract Award (FY23)	2	2023	2	2023
Sea NAVWAR: Sea Navigation ADAP Production Contract Award (FY24)	2	2024	2	2024
Sea NAVWAR: Sea Navigation ADAP Production Contract Award (FY25)	2	2025	2	2025
Sea NAVWAR: Sea Navigation ADAP Production Contract Award (FY26)	2	2026	2	2026
Sea NAVWAR: Sea Navigation ADAP Production Contract Award (FY27)	2	2027	2	2027
Sea NAVWAR: Sea Navigation SWaP-C Integration Studies	1	2021	4	2022
Sea NAVWAR: Sea Navigation MAPS/DAPS Integration	1	2023	4	2024
Sea NAVWAR: Sea Navigation ADAP Enhancement Studies	4	2022	4	2027
Sea NAVWAR: Sea Navigation OE-538B (SAGE) Test Readiness Review (TRR)	2	2022	2	2022
Sea NAVWAR: Sea Navigation OE-538B (SAGE) Development & Operational Test (DT/OT)	2	2022	2	2022
Sea NAVWAR: Sea Navigation MAGNA DT/OT	1	2021	4	2021
Sea NAVWAR: Sea Navigation ADAP Installations	1	2021	4	2027
Sea NAVWAR: Sea Navigation OE-538B (SAGE) Installations	1	2023	4	2027
GPS-based PNT Service (GPNTS): GPNTS Initial Operational Capability (IOC) Threshold Date (APB Change 1)	1	2021	1	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
GPS-based PNT Service (GPNTS): GPNTS Full Rate Production (FRP) Threshold Date (APB Change 1)	2	2021	2	2021
GPS-based PNT Service (GPNTS): GPNTS Initial Operational Capability (IOC) Current Date (Execution Schedule)	1	2021	1	2021
GPS-based PNT Service (GPNTS): GPNTS Full Rate Production (FRP) Current Date (Execution Schedule)	1	2021	1	2021
GPS-based PNT Service (GPNTS): GPNTS POE	1	2021	1	2021
GPS-based PNT Service (GPNTS): GPNTS APB	1	2021	1	2021
GPS-based PNT Service (GPNTS): GPNTS ADM	1	2021	1	2021
GPS-based PNT Service (GPNTS): GPNTS TEMP	1	2022	1	2022
GPS-based PNT Service (GPNTS): GPNTS Production Contract (LRIP)	1	2021	3	2021
GPS-based PNT Service (GPNTS): GPNTS Follow On Production Contract (FRP)	4	2021	4	2027
GPS-based PNT Service (GPNTS): GPNTS Buy 5 (LRIP)	2	2021	2	2021
GPS-based PNT Service (GPNTS): GPNTS Buy 1 (FRP)	4	2021	4	2021
GPS-based PNT Service (GPNTS): GPNTS Buy 2 (FRP)	2	2022	2	2022
GPS-based PNT Service (GPNTS): GPNTS Buy 3 (FRP)	2	2023	2	2023
GPS-based PNT Service (GPNTS): GPNTS Buy 4 (FRP)	2	2024	2	2024
GPS-based PNT Service (GPNTS): GPNTS Buy 5 (FRP)	2	2025	2	2025
GPS-based PNT Service (GPNTS): GPNTS Buy 6 (FRP)	2	2026	2	2026
GPS-based PNT Service (GPNTS): GPNTS Buy 7 (FRP)	2	2027	2	2027
GPS-based PNT Service (GPNTS): GPNTS Design Development Contract	1	2021	4	2027
GPS-based PNT Service (GPNTS): TO4 (LCS) Award	4	2021	4	2021
GPS-based PNT Service (GPNTS): LCS Complete	1	2022	1	2022
GPS-based PNT Service (GPNTS): GPNTS NoGAPSS Production Contract	1	2021	3	2021
GPS-based PNT Service (GPNTS): GPNTS NoGAPSS HW Buy	1	2021	1	2021
GPS-based PNT Service (GPNTS): GPNTS NoGAPSS HW Delivery	3	2021	3	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
GPS-based PNT Service (GPNTS): GPNTS Install at Wallops	3	2021	3	2021
GPS-based PNT Service (GPNTS): GPNTS P3I Efforts	1	2021	4	2022
GPS-based PNT Service (GPNTS): GPNTS SW Defect Resolution	1	2021	4	2027
GPS-based PNT Service (GPNTS): GPNTS Initial Operational Test and Evaluation (IOT&E)	1	2021	1	2021
GPS-based PNT Service (GPNTS): GPNTS NoGAPSS EQT	3	2021	1	2022
GPS-based PNT Service (GPNTS): GPNTS NoGAPSS MRA (NPC)	1	2022	1	2022
GPS-based PNT Service (GPNTS): GPNTS NoGAPSS SW 2.0 DEL	2	2022	2	2022
GPS-based PNT Service (GPNTS): GPNTS NoGAPSS AIE	2	2022	2	2022
GPS-based PNT Service (GPNTS): GPNTS NoGAPPS TECH EVAL	2	2023	1	2024
GPS-based PNT Service (GPNTS): GPNTS NoGAPPS FOT&E	2	2023	2	2024
GPS-based PNT Service (GPNTS): GPNTS MGUE TECH EVAL	1	2024	4	2024
GPS-based PNT Service (GPNTS): GPNTS MGUE OTRR	4	2024	4	2024
GPS-based PNT Service (GPNTS): GPNTS MGUE FOT&E	1	2024	1	2025
GPS-based PNT Service (GPNTS): GPNTS MGUE SIT, IV&V and Regression Testing	1	2022	2	2023
GPS-based PNT Service (GPNTS): GPNTS MGUE Classified Card Delivery	1	2022	1	2022
GPS-based PNT Service (GPNTS): GPNTS MGUE IST 3-3 Phase 4 @ WSMR	2	2023	2	2023
GPS-based PNT Service (GPNTS): GPNTS NoGAPSS 2.x Software Step 3	1	2021	1	2021
GPS-based PNT Service (GPNTS): GPNTS NoGAPSS 2.x Software Step 4	3	2021	3	2021
GPS-based PNT Service (GPNTS): GPNTS NoGAPSS 2.x Software Step 5	4	2021	4	2021
GPS-based PNT Service (GPNTS): GPNTS CSS	2	2021	2	2021
GPS-based PNT Service (GPNTS): GPNTS MSD	1	2021	1	2021
GPS-based PNT Service (GPNTS): GPNTS NTSP	2	2022	2	2022
GPS-based PNT Service (GPNTS): GPNTS NPC DDG Installation	3	2021	1	2022
GPS-based PNT Service (GPNTS): GPNTS Permanent DDG Installation	2	2022	4	2022
GPS-based PNT Service (GPNTS): GPNTS ACNS Installation and Checkout	3	2021	1	2022

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Air NAVWAR: Air Navigation F/A-18E/F & E/A-18G AJ Kit Procurement Contract	1	2021	4	2027
Air NAVWAR: Air Navigation AH-1Z/UH-1Y AJ MAGNA-I Procurement Contract	3	2024	4	2027
Air NAVWAR: Air Navigation GPS Anti-Jam and Assured PNT Studies/Demos/ Enhancements	1	2021	4	2027
Air NAVWAR: Air Navigation Aviation A-PNT Market Research/Capability Gap	1	2021	4	2022
Air NAVWAR: Air Navigation Characterization Testing	1	2021	1	2021
Air NAVWAR: Air Navigation FARM Demonstrations	1	2021	2	2023
Air NAVWAR: Air Navigation System Engineering	1	2021	4	2027
Air NAVWAR: Air Navigation UH-1Y/AH-1Z MAGNA-I Integration	2	2021	4	2023
Air NAVWAR: Air Navigation HI-GAINS Antenna Design/Development	1	2021	2	2021
Air NAVWAR: Air Navigation UH-1Y/AH-1Z MAGNA-I Ground and Flight Testing	4	2022	2	2024
Air NAVWAR: Air Navigation UH-1Y/AH-1Z MAGNA-I DT/OT	2	2024	2	2024
Air NAVWAR: Air Navigation HI-GAINS Ground and Flight Testing	1	2021	4	2021
Air NAVWAR: Air Navigation Installation of F/A-18E/F & EA-18G Kits	1	2021	4	2027
Air NAVWAR: Air Navigation Installation MAGNA-I on UH-1Y/AH-1Z	3	2025	4	2027
GPS Modernization: GPS Modernization M-Code Mandate	1	2021	1	2021
GPS Modernization: GPS Modernization MV-22B/CMV-22B MAGR2K-M Rqmt. Dev & SE	1	2021	2	2024
GPS Modernization: GPS Modernization MV-22B/CMV-22B MAGR2K-M Prime Vendor Integration (PVI)	4	2021	4	2021
GPS Modernization: GPS Modernization MV-22B/CMV-22B MAGR2K-M PRU Delivery 1	2	2021	2	2021
GPS Modernization: GPS Modernization E-6B MAGR2K-M Rqmt. Dev & SE	1	2021	3	2023
GPS Modernization: GPS Modernization E-6B MAGR2K-M PRU Delivery	2	2021	2	2021
GPS Modernization: GPS Modernization E-6B MAGR2K-M PVI	4	2021	4	2021
GPS Modernization: GPS Modernization F/A-18E/F & EA-18G ANAV-M Rqmt. Dev & SE	1	2021	2	2026

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
GPS Modernization: GPS Modernization F/A-18E/F & EA-18G ANAV-M PVI	2	2023	2	2023
GPS Modernization: GPS Modernization F/A-18E/F & EA-18G ANAV-M PRU Buy	2	2023	2	2023
GPS Modernization: GPS Modernization F/A-18E/F & EA-18G ANAV-M PRU Delivery	2	2024	2	2024
GPS Modernization: GPS Modernization E-2D LN-351 Rqmt. Dev & SE	1	2021	4	2027
GPS Modernization: GPS Modernization E-2D LN-351 PRU Buy	2	2022	2	2022
GPS Modernization: GPS Modernization E-2D LN-351 PRU Delivery	1	2024	1	2024
GPS Modernization: GPS Modernization E-2D LN-351 PVI	2	2023	2	2023
GPS Modernization: GPS Modernization CH-53K LN-351 Rqmt. Dev & SE	1	2021	4	2027
GPS Modernization: GPS Modernization CH-53K LN-351 PRU Buy	2	2022	2	2022
GPS Modernization: GPS Modernization CH-53K LN-351 PRU Delivery	4	2024	4	2024
GPS Modernization: GPS Modernization CH-53K LN-351 PVI	2	2023	2	2023
GPS Modernization: GPS Modernization AH-1Z/UH-1Y LN-351 Rqmt Dev & SE	1	2021	4	2024
GPS Modernization: GPS Modernization AH-1Z/UH-1Y LN-351 PRU Buy	2	2022	2	2022
GPS Modernization: GPS Modernization AH-1Z/UH-1Y LN-351 PRU Delivery	1	2024	1	2024
GPS Modernization: GPS Modernization AH-1Z/UH-1Y LN-351 PVI	2	2023	2	2023
GPS Modernization: GPS Modernization MH-60R/S LN-300 Rqmt Dev & SE	1	2021	4	2027
GPS Modernization: GPS Modernization MH-60R/S LN-300 PRU Buy	3	2025	3	2025
GPS Modernization: GPS Modernization MH-60R/S LN-300 PRU Delivery	4	2026	4	2026
GPS Modernization: GPS Modernization MH-60R/S LN-300 PVI	2	2027	2	2027
GPS Modernization: GPS Modernization P-8A LN-351 Rqmt Dev & SE	1	2023	4	2027
GPS Modernization: GPS Modernization P-8A LN-351 PRU Buy	3	2025	3	2025
GPS Modernization: GPS Modernization P-8A LN-351 PRU Delivery	1	2027	1	2027
GPS Modernization: GPS Modernization P-8A LN-351 PVI	4	2027	4	2027
GPS Modernization: GPS Modernization MQ-4C LN-351 Rqmt Dev & SE	1	2023	4	2027
GPS Modernization: GPS Modernization MQ-4C LN-351 PRU Buy	3	2025	3	2025

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
GPS Modernization: GPS Modernization MQ-4C LN-351 PRU Delivery	1	2027	1	2027
GPS Modernization: GPS Modernization MQ-4C LN-351 PVI	2	2027	2	2027
GPS Modernization: GPS Modernization MQ-8C LN-351 Rqmt Dev & SE	1	2023	4	2027
GPS Modernization: GPS Modernization MQ-8C LN-351 PRU Buy	3	2025	3	2025
GPS Modernization: GPS Modernization MQ-8C LN-351 PRU Delivery	4	2026	4	2026
GPS Modernization: GPS Modernization MQ-8C LN-351 PVI	3	2027	3	2027
GPS Modernization: GPS Modernization KC-130J H-764 Rqmt Dev & SE	1	2023	4	2027
GPS Modernization: GPS Modernization KC-130J H-764 PRU Buy	2	2024	2	2024
GPS Modernization: GPS Modernization KC-130J H-764 PRU Delivery	1	2027	1	2027
GPS Modernization: GPS Modernization KC-130J H-764 PVI	3	2027	3	2027
GPS Modernization: GPS Modernization MV-22B/CMV-22B MAGR2K-M Test	2	2024	3	2025
GPS Modernization: GPS Modernization MV-22B/CMV-22B MAGR2K-M DT/OT	2	2025	2	2025
GPS Modernization: GPS Modernization E-6B MAGR2K-M Test	1	2023	2	2024
GPS Modernization: GPS Modernization E-6B MAGR2K-M DT/OT	1	2024	1	2024
GPS Modernization: GPS Modernization F/A-18E/F & EA-18G ANAV-M Test	3	2025	4	2027
GPS Modernization: GPS Modernization F/A-18E/F & EA-18G ANAV-M DT/OT	3	2027	3	2027
GPS Modernization: GPS Modernization E-2D EGI-M Test	2	2026	4	2027
GPS Modernization: GPS Modernization CH-53K EGI-M Test	2	2026	4	2027
GPS Modernization: GPS Modernization AH-1Z/UH-1Y EGI-M Test	2	2026	4	2027
GPS Modernization: GPS Modernization AH-1Z/UH-1Y DT/OT	4	2027	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 1411 / *Sub Tact Comm System*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
1411: *Sub Tact Comm System*	13.038	13.759	13.575	14.274	-	14.274	14.475	14.461	14.667	14.930	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The details of Program Element 0604280N, Project 1411 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books. The details of S3S within project 1411 are classified.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Common Submarine Radio Room (CSRR)	10.012	10.412	10.743	0.000	10.743
Articles:	-	-	-	-	-
FY 2022 Plans: The details of Program Element 0604280N, Project 1411 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
FY 2023 Base Plans: The details of Program Element 0604280N, Project 1411 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: The details of Program Element 0604280N, Project 1411 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
Title: Link 16	2.334	3.163	3.223	0.000	3.223
Articles:	-	-	-	-	-
FY 2022 Plans: The details of Program Element 0604280N, Project 1411 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
FY 2023 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
The details of Program Element 0604280N, Project 1411 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The details of Program Element 0604280N, Project 1411 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.					
Title: S3S ***Articles:*** ***Description:*** Detailed information available at a higher classification. ***FY 2022 Plans:*** N/A ***FY 2023 Base Plans:*** The details of Program Element 0604280N, Project 1411 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Increase/decrease statement provided via SIPR RDOC.	1.413 -	0.000 -	0.308 -	0.000 -	0.308 -
Accomplishments/Planned Programs Subtotals	13.759	13.575	14.274	0.000	14.274

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• OPN/3130: *Submarine Communication Equipment*	54.823	64.642	74.569	-	74.569	82.378	81.531	81.629	82.258	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

D. Acquisition Strategy

The details of Program Element 0604280N, Project 1411 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 1411 / *Sub Tact Comm System*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	TBD	Not Specified : Not Specified	9.832	9.447	Dec 2020	9.892	Dec 2021	9.844	Dec 2022	-		9.844	Continuing	Continuing	Continuing
S3S Platform Integration	MIPR	Army/TSMO : Redstone Arsenal, AL	0.300	1.413	Sep 2021	0.000		0.308	Mar 2023	-		0.308	Continuing	Continuing	Continuing
		Subtotal	10.132	10.860		9.892		10.152		-		10.152	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	TBD	Not Specified : Not Specified	1.837	1.825	Nov 2020	2.147	Nov 2021	1.832	Nov 2022	-		1.832	Continuing	Continuing	Continuing
		Subtotal	1.837	1.825		2.147		1.832		-		1.832	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	TBD	Not Specified : Not Specified	0.120	0.199	Nov 2020	0.230	Nov 2021	1.118	Nov 2022	-		1.118	Continuing	Continuing	Continuing
		Subtotal	0.120	0.199		0.230		1.118		-		1.118	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Classified	TBD	Not Specified : Not Specified	0.949	0.875	Nov 2020	1.306	Nov 2021	1.172	Nov 2022	-		1.172	Continuing	Continuing	Continuing
		Subtotal	0.949	0.875		1.306		1.172		-		1.172	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 1411 / *Sub Tact Comm System*	

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	13.038	13.759		13.575		14.274		-		14.274	Continuing	Continuing	N/A

Remarks

- The details of Program Element 0604280N, Project 1411 are classified SECRET//NOFORN and are submitted to Congress in the classified budget justification books.

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Proj 1411.L39																												
Classified (Place Holder)	[redacted]																											

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1411.L39				
Classified (Place Holder)	1	2021	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 2126 / *ATDLS Integration*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
2126: *ATDLS Integration*	21.000	18.342	22.922	32.039	-	32.039	31.123	27.888	23.105	23.478	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops and improves the Navy's Tactical Data Link (TDL) systems. It includes the Advanced Tactical Data Link Systems (ATDLS) Integration Programs, specifically Link 16 Network, Command and Control Processor (C2P) and Link Monitoring and Management Tool (LMMT).

ATDLS Integration Program develops new and improved capabilities for Navy TDL users. The ATDLS Integration Programs perform technical analyses 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. The programs insert new technology enhancements via incremental software & hardware upgrades and deliver as annual build release. The Navy Link 16 Network Increment II requires Enhanced Throughput (ET), concurrent multi-netting (CMN), current contention receive (CCR), and tactical targeting networking technology (TTNT), and tech refresh with BU3. C2P is a critical component of the shipboard combat system enabling tactical data link integration with the combat systems. C2P is a critical component of the Aegis Ballistic Missile Defense (BMD) architecture. C2P Technology Refresh (TR) will modernize obsolete C2P system hardware components and improve C2P system cyber security posture. C2P Modernization (MOD) is a service life extension effort required to sustain C2P system viability and significantly improve its cyber resiliency. C2P MOD modernizes the legacy C2P system software to enable improved cyber resiliency, improved system operational availability and the ability to run in multiple hardware environments. Link 22 development and integration into the C2P allows for improved maritime tactical data link operations with coalition forces. LMMT will upgrade commercial off-the-shelf hardware and modernize software operating systems. LMMT will perform monitoring and management of all TDL and provide information in support of the Integrated Air & Missile Defense (IAMD) and Ballistic Missile Defense (BMD) missions.

Link 16 Network Increment II: (1) Develop and implement Cryptographic Modernization (CM) and Frequency Remapping (FR) mandates as a product improvement into existing legacy Joint Tactical Information Distribution System (JTIDS) and Multifunctional Information Distribution System (MIDS) on Ships (MOS) terminals and integration into Link 16 terminals, shore sites, ship [Next Generation Command and Control Processor, (NGC2P)], and current Navy Joint Tactical Information Distribution System (JTIDS) airborne platforms; (2) Developmental Testing (DT) / Operational Testing (OT) of Navy platform CM/FR modifications; (3) provide product improvement for continued production capability Multifunctional Information Distribution System (MIDS) on Ship (MOS) Modernization (MOS Mod) and extensibility to new Tactical Data Link capabilities of shipboard Link16 terminals, (4) qualification of replacement shipboard Link 16 antenna to replace end of life existing antenna. JTIDS, MOS, and MOS Mod efforts in support of Joint Chiefs of Staff Joint Requirements Oversight Council Memorandum (JROCM) 075-17 for installation and integration of MIDS J terminals. JROCM 097-20 direction for Crypto Modernization (CM), Frequency Remapping (FR), Enhanced Throughput (ET), concurrent multi-netting (CMN), current contention receive (CCR), and JROC validated MIDS JTRS CPD (DTG) for tactical targeting networking technology (TTNT). All Link 16 terminals are required to have these capabilities to support Link 16 Interoperability.

FY2023 Justification (Link 16): Integration of the MIDS Program Office (MPO) developed TTNT Transceiver and external power amp into the MOS and MOS-Mod shipboard cabinet assemblies.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 2126 / *ATDLS Integration*

Command and Control Processor (C2P): The two Research Development Test & Evaluation (RDT&E) initiatives are 1) C2P Technology Refresh (TR) cyber security update and 2) C2P Modernization which now includes Link 22 integration. C2P TR cyber security update is a new initiative driven by recently discovered cyber security risk to the C2P system in support of the BMD mission. The C2P TR Cyber security update is planned to support acceleration on all AEGIS BMD ships. C2P Modernization funds the transition of the C2Ps legacy Compiler Monitor System (CMS-2Y) software code (old Navy unique computer programming language from the 1980s) to a modern software language. Transition to a modern software language is required to sustain the system software, to adequately address growing cybersecurity and operational availability challenges, and to enable more affordable transition to new hardware processing components as a result of commercial of the shelf processor obsolescence. Link 22, which was previously planned for fielding in the C2P TR architecture, has been delayed until the fielding of C2P Modernization. This was based on prioritizing existing resources to address the emergent cyber security risk that has resulted in the C2P TR cybersecurity update plan. Link 22 is a modernized replacement for Link 11, providing beyond line of site (BLOS) tactical data communications using high frequency (HF) radios.

FY2023 Justification (C2P): Implementing the development initiatives above will improve C2P cybersecurity hygiene, provide more reliable hardware and create an architecture that is more cost effective for future upgrades and corrections to latent defects.
Link Monitoring and Management Tool (LMMT) is a system delivered on commercial off-the-shelf hardware (HW) providing gateway functions for multiple Tactical Data Link (TDL) interface, routing and display of TDL data to include Link 16, Joint Range Extension (JRE) and Link 22. LMMT is also capable of performing TDL network monitoring and management, data forwarding between the TDLs and providing tactical data to the Integrated Air & Missile Defense (IAMD), Ballistic Missile Defense (BMD) network, and Global Command and Control System (GCCS) for establishing the common operational picture. LMMT requirements will be incrementally developed and delivered in capability drops via the Joint Capabilities Integration Development System (JCIDS) IT Box approach.

FY2023 Justification (LMMT): Consolidate all enhancements and fixes to the final version of Capability Drop (CD) 3, perform regression testing and prepare all milestones for Fielding Technical Review (FTR) and Fielding Decision Review (FDR).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Link 16 Network Increment II - Cryptographic Modernization (CM) / Frequency Remapping (FR)	0.591	3.700	10.596	0.000	10.596
Articles:	-	-	-	-	-
FY 2022 Plans: Initiate MIDS Program Office contract for qualification of MIDS J BU3 (CMN) terminal with 1553 Platform M (Ship) interface. Evaluate options for higher throughput in the MIDS-J to C2P interface.					
FY 2023 Base Plans: Complete MIDS Program Office contract for qualification of MIDS J BU3 (CMN) terminal with 1553 Platform M (Ship) interface. Conduct government integration testing of MIDS J BU3 terminal with C2P. Initiate MOS and MOS Mod External Cabinet Assembly (ECA) hardware integration with MIDS J BU3/TTNT terminal to include TTNT external power amplifier.					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 2126 / *ATDLS Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Initiate MOS and MOS Mod terminal controller updates to support integration of MIDS J BU3/TTNT terminal. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** $6.896M increase from FY22 to FY23 is for the Link 16 Program to complete the vendor qualification and conduct government integration testing of the MIDS J BU3 terminal with shipboard 1553 interface into MOS Mod ECA. FY23 funding will initiate integration of the MPO developed TTNT Transceiver and external power amp into the MOS and MOS-Mod shipboard cabinet assemblies, which will require cabinet modifications for power and cooling.					
Title: Command and Control Proecessor (C2P) ***Articles:*** ***FY 2022 Plans:*** Continue C2P Modernization Development, Integration and Systems Engineering Complete SW Release A IV&V Release C2P Mod SW drop A ***FY 2023 Base Plans:*** Continue C2P Mod development, integration and engineering activity. C2P hardware development transitions into the Environmental Qualification test (EQT) phase as well as Factory Acceptance Test (FAT) for the Engineering Development Model (EDM) systems. Additional C2P Mod Capability Build (CB 2) software (SW) Drop B work initiates in FY23. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The $1.903M increase in funding reflects the increased requirement of personnel for the C2P Modernization development as it transitions from requirements analysis and design to code and unit test phases.	15.580 -	17.428 -	19.331 -	0.000 -	19.331 -
Title: Link Monitoring and Management Tool (LMMT) ***Articles:*** ***FY 2022 Plans:***	2.171 -	1.794 -	2.112 -	0.000 -	2.112 -

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 2126 / *ATDLS Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Complete Capability Drop (CD) 3 software development and perform various certification and test events to include development and operational testing ***FY 2023 Base Plans:*** Consolidate previous capability drops to create a single CD 3 version, perform regression testing, and prepare all CD 3 engineering and acquisition documents in preparation for FTR (Q2 FY23) and FDR (Q3 FY23) ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** $0.318M increase to LMMT to support the consolidation efforts of taking various existing fielded versions into a single CD3 version and performing regression testing before fielding.					
Accomplishments/Planned Programs Subtotals	18.342	22.922	32.039	0.000	32.039

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• OPN/2614: *Adv Tact Data Link Sys (ATDLS)*	103.835	101.595	73.675	-	73.675	74.312	73.026	77.246	72.231	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Joint Tactical Information Distribution System (JTIDS) Crypto Modernization (CM)/Frequency Remapping (FR) development and low rate initial production (LRIP) contract was awarded to Data Link Solutions (DLS). A sole source determination was approved for the production and integration of Joint Tactical Information Distribution System (JTIDS) Product Improvement (JPI) hardware. DLS will produce and integrate JPI hardware and software into existing JTIDS terminals. Multifunctional Information Distribution System (MIDS) on Ship (MOS) CM/FR will be accomplished through integration of the MIDS Low Volume Terminal (LVT) Block Upgrade (BU) 2 into the existing MOS cabinet. To address the WIN 10 implementation for the MOS system, a new MOS Terminal Controller hardware and software has been developed and is being produced on the MOS Lot 4 contract. MOS MOD contract will provide three engineering manufacturing development (EMD) units for developmental and operational testing. The MOS MOD contract will also provide full rate production units. A second MOS Mod Shipboard Cabinet Assembly contract for production has been competitively awarded to extend the production period and increase capacity. Once the MOS Mod high power amplifier (HPA) is mature, the Program Office intends to issue a separate competitively awarded production contract. MOS Mod integrates the MIDS JTRS terminal developed by the MIDS Program Office PMA-101. As the MIDS JTRS terminal is updated with BU3/TTNT, the Link 16 program will have to support environmental qualification testing (EQT), to include electro-magnetic interference/compatibility (EMI/EMC), host-interface updates and integration efforts for shipboard application.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 2126 / *ATDLS Integration*

The C2P Technology Refresh (TR) configuration will be replaced by C2P Modernization (MOD). C2P Mod will leverage existing commercial-off-the-shelf (COTS) hardware and be a complete modernization of the C2P software architecture significantly improving system cybersecurity. C2P Mod capabilities are implemented in software and will be developed in capability drops (CDs). C2P Mod development and support will be managed by Naval Information Warfare Center Pacific (NIWC PAC).

The Link Monitoring and Management Tool (LMMT) capability will replace previously-fielded Air Defense Systems Integrator (ADSI) systems. LMMT will leverage existing government-off-the-shelf (GOTS) software and commercial-off-the-shelf (COTS) hardware. LMMT capabilities are implemented primarily in software and will be developed in Capability Drops (CDs). Existing GOTS software will be updated to incorporate network performance monitoring and management capabilities by Naval Information Warfare Center Pacific (NIWC PAC).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 2126 / *ATDLS Integration*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Link 16 Network Technical Design Agents	C/CPFF	SeaPort- Various : San Diego, CA	0.784	0.000		0.000		0.000		-		0.000	0.000	0.784	-
Link 16 Network Systems Engineering	WR	NIWC PAC : San Diego, CA	1.039	0.000		0.000		0.000		-		0.000	0.000	1.039	-
Link 16 Network MIDS J Development and Qualification; TTNT GFE & Software	WR	PMA 101 : San Diego, CA	1.000	0.000		3.700	Mar 2022	2.520	Apr 2023	-		2.520	0.000	7.220	-
Link 16 Network JTIDS Development and Qualification	C/CPIF	DLS (BAE/Collins) : Wayne, NJ	0.000	0.383	Jan 2021	0.000		0.000		-		0.000	0.000	0.383	-
Link 16 Network ECA/ Shipboard Cabinet Development and Qualification	C/CPFF	TBD : TBD	0.000	0.000		0.000		5.503	Apr 2023	-		5.503	Continuing	Continuing	Continuing
C2P Systems Engineering	WR	NIWC PAC : San Diego, CA	5.174	2.004	Oct 2020	2.484	Oct 2021	2.970	Oct 2022	-		2.970	Continuing	Continuing	Continuing
C2P IV&V	WR	NIWC PAC : San Diego, CA	0.485	0.000		0.483	Oct 2021	0.613	Oct 2022	-		0.613	Continuing	Continuing	Continuing
C2P Development & Integration	WR	NIWC PAC : San Diego, CA	5.513	12.194	Oct 2020	12.889	Oct 2021	14.146	Oct 2022	-		14.146	Continuing	Continuing	Continuing
LMMT Development	WR	NIWC PAC : San Diego, CA	0.916	0.435	Oct 2020	0.350	Oct 2021	0.450	Oct 2022	-		0.450	Continuing	Continuing	Continuing
LMMT Systems Engineering	WR	NIWC PAC : San Diego, CA	0.570	0.550	Oct 2020	0.510	Oct 2021	0.550	Oct 2022	-		0.550	Continuing	Continuing	Continuing
LMMT IV&V	WR	NIWC PAC : San Diego, CA	0.190	0.528	Oct 2020	0.257	Oct 2021	0.352	Oct 2022	-		0.352	Continuing	Continuing	Continuing
		Subtotal	15.671	16.094		20.673		27.104		-		27.104	Continuing	Continuing	N/A

Remarks

Increase in product development in FY23 stems from Link 16 initiation of MIDS On Ship (MOS) and MOS Modernization (Mod) External Cabinet Assembly (ECA) hardware integration with MIDS J BU3/TTNT terminal to include TTNT external power amplifier and the initiation of MOS and MOS Mod terminal controller updates to support integration of MIDS J BU3/TTNT terminal. C2P Modernization development transitions from requirements analysis and design to code and unit test phases. LMMT works to support consolidation efforts of taking various existing fielded versions into a single Capability Drop 3 (CD3) version.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 2126 / *ATDLS Integration*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Link 16 Network T&E	WR	NIWC PAC : San Diego, CA	1.310	0.208	Oct 2020	0.000		2.573	Jan 2023	-		2.573	Continuing	Continuing	Continuing
C2P T&E	WR	NIWC PAC : San Diego, CA	1.800	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
LMMT T&E	WR	Various : Various	0.000	0.250	Oct 2020	0.257	Oct 2021	0.250	Oct 2022	-		0.250	0.000	0.757	-
		Subtotal	3.110	0.458		0.257		2.823		-		2.823	Continuing	Continuing	N/A

Remarks

Increase in test and evaluation in FY23 relates to Link 16 vendor qualification and government integration testing of the Multifunctional Information Distribution System Joint Tactical Radio System (MIDS JTRS or MIDS J) Block Upgrade 3 (BU3) terminal with shipboard 1553 interface into MOS Mod External Cabinet Assembly (ECA) as well as initiate integration of the MIDS Program Office (MPO) developed TTNT Transceiver and external power amp into the MOS and MOS Mod shipboard cabinet assemblies.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Link 16 Network Program Management Support	C/CPFF	SeaPort- Various : San Diego, CA	0.139	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
C2P Program Management Support	C/CPFF	SeaPort- Various : San Diego, CA	0.800	0.691	Oct 2020	0.786	Oct 2021	0.801	Oct 2022	-		0.801	Continuing	Continuing	Continuing
C2P Systems Engineering Support	C/CPFF	SeaPort- Various : San Diego, CA	0.800	0.691	Oct 2020	0.786	Oct 2021	0.801	Oct 2022	-		0.801	Continuing	Continuing	Continuing
LMMT Program Management	C/CPFF	SeaPort- Various : San Diego, CA	0.480	0.408	Oct 2020	0.420	Oct 2021	0.510	Oct 2022	-		0.510	Continuing	Continuing	Continuing
		Subtotal	2.219	1.790		1.992		2.112		-		2.112	Continuing	Continuing	N/A

Remarks

Increase in management services in FY23 aligns with the final preparation of the acquisition milestones for Fielding Technical Review (FTR) and Fielding Decision Review (FDR) related to the final version release of Capability Drop 3 (CD3) for LMMT and the ramp-up of personnel for the C2P Modernization development as it transitions from requirements analysis and design to code and unit test phases.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
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	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	21.000	18.342		22.922		32.039		-		32.039	Continuing	Continuing	N/A

Remarks

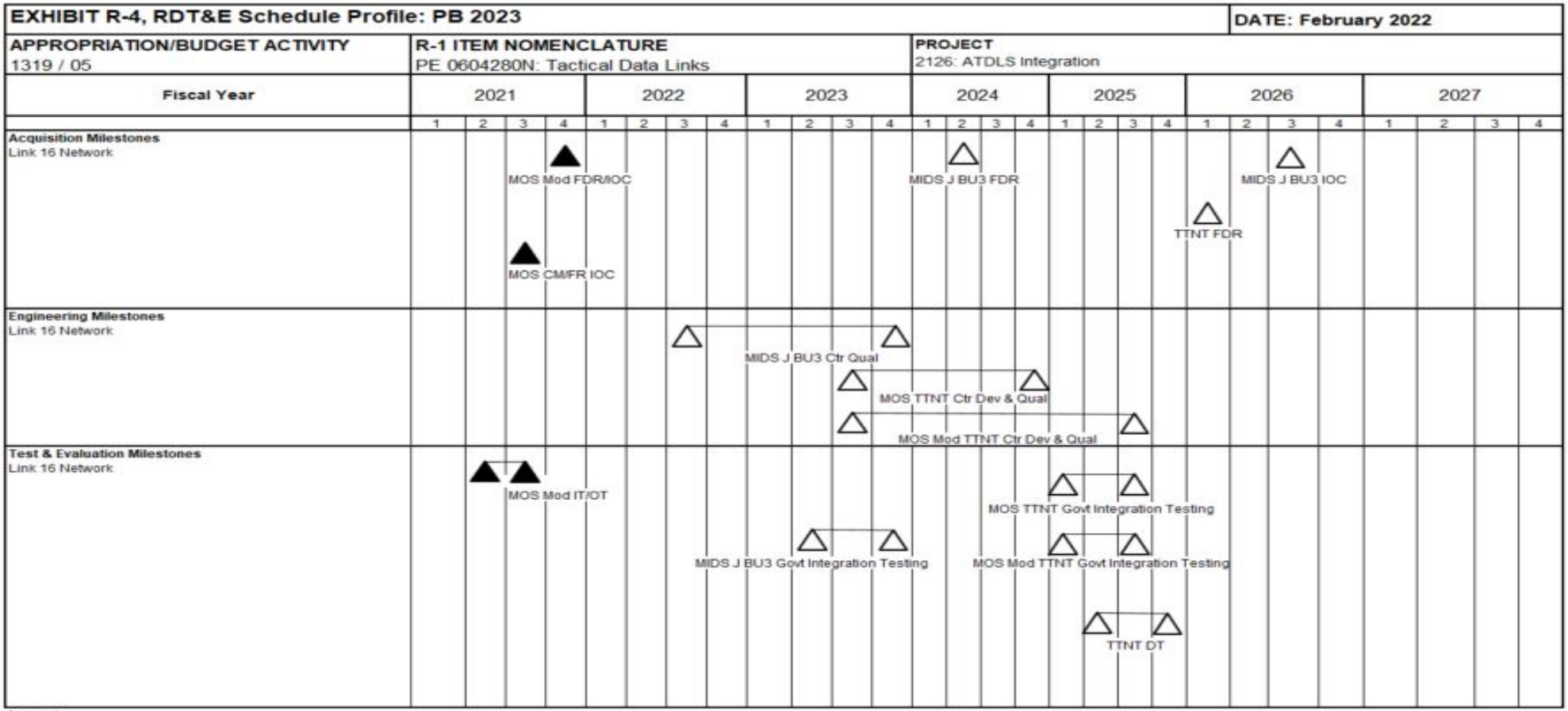
Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 2126 / *ATDLS Integration*

EXHIBIT R-4, RDT&E Schedule Profile: PB 2023 — **DATE: February 2022**

APPROPRIATION/BUDGET ACTIVITY: 1319 / 05

R-1 ITEM NOMENCLATURE: PE 0604280N: Tactical Data Links

PROJECT: 2126: ATDLS Integration



Legend:

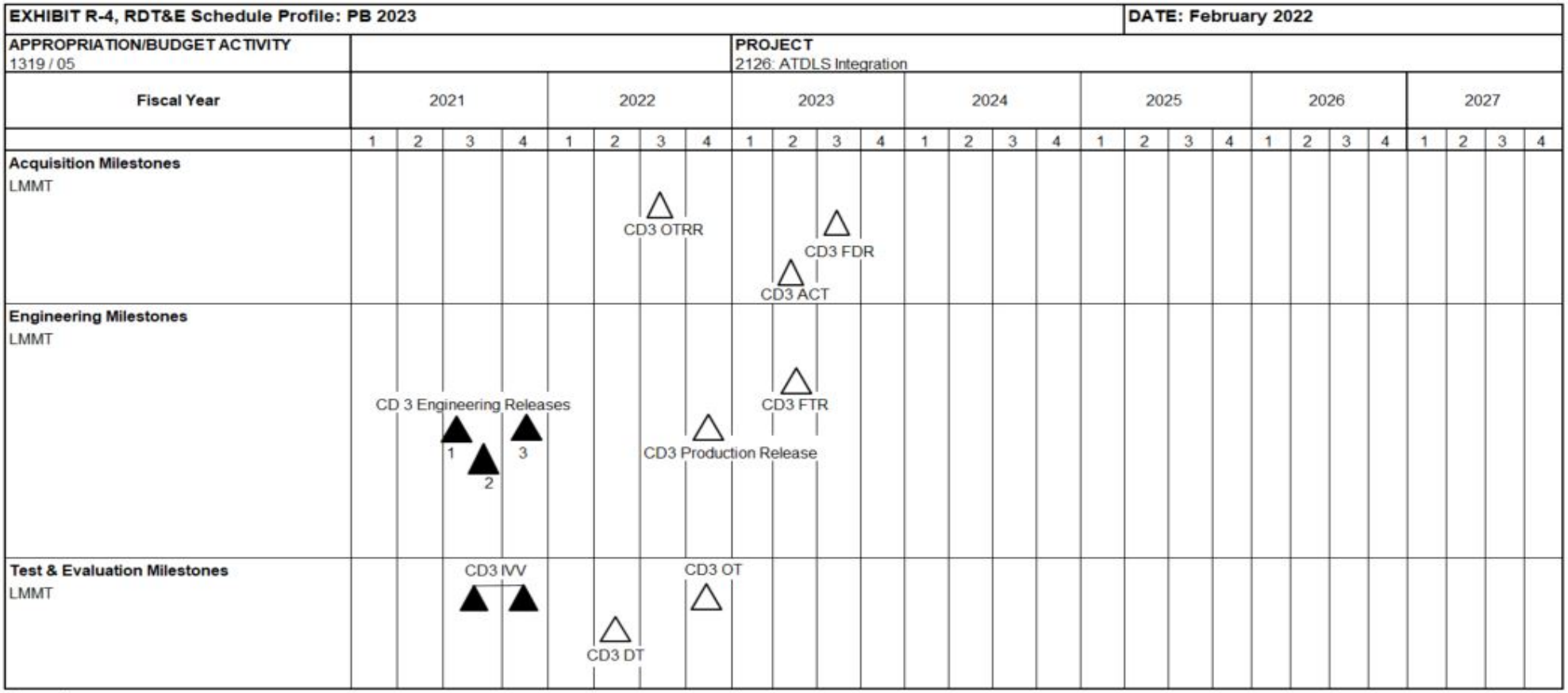
CM - Cryptographic Modernization
DT- Developmental Test
FDR - Fielding Decision Review
FR - Frequency Remapping
IOC - Initial Operating Capability
IT - Integrated Test
MOS - MIDS On Ship
TTNT - Tactical Targeting Networking Technology

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 2126 / *ATDLS Integration*

EXHIBIT R-4, RDT&E Schedule Profile: PB 2023 — **DATE: February 2022**

APPROPRIATION/BUDGET ACTIVITY
1319 / 05

PROJECT
2126: ATDLS Integration



Legend:

ACT - Acquisition Coordination Team
BD - Build Decision
BTR - Build Technical Review
CD - Capability Drop
FDR - Fielding Decision Review
FTR - Fielding Technical Review
IVV - Independent Verifcation and Validation
OT - Operational Test

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 2126 / *ATDLS Integration*

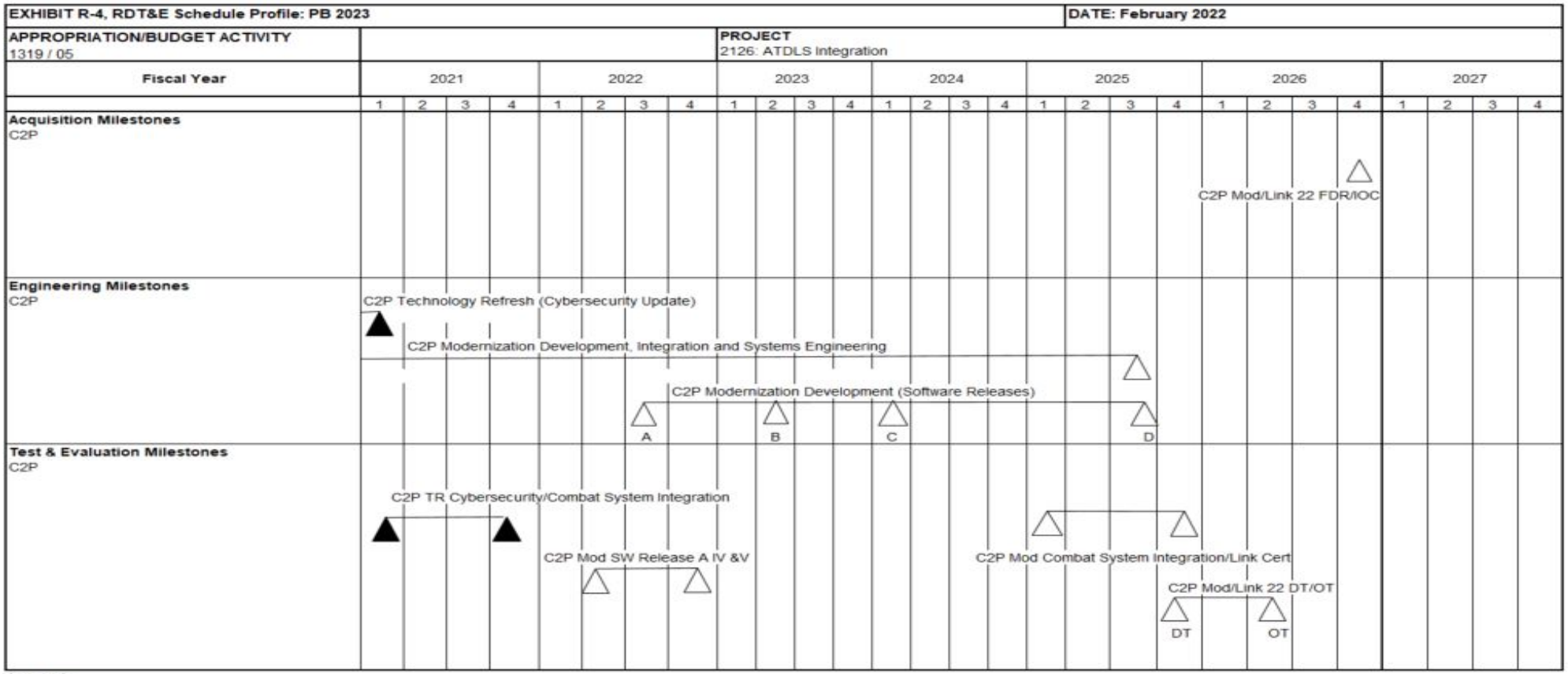


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 2126 / *ATDLS Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2126				
Link 16 MOS Mod IT/OT	2	2021	3	2021
Link 16 MOS CM/FR IOC	3	2021	3	2021
Link 16 MOS Mod FDR/IOC	4	2021	4	2021
Link 16 MIDS J BU3 Ctr Qual	3	2022	4	2023
Link 16 MOS TTNT Ctr Dev & Qual	3	2023	4	2024
Link 16 MOS Mod TTNT Ctr Dev & Qual	3	2023	3	2025
Link 16 MIDS J BU3 Govt Integration Testing	2	2023	4	2023
Link 16 MIDS J BU3 FDR	2	2024	2	2024
Link 16 MOS TTNT Govt Integration Testing	1	2025	3	2025
Link 16 MOS Mod TTNT Govt Integration Testing	1	2025	3	2025
Link 16 TTNT DT	2	2025	4	2025
Link 16 TTNT FDR	1	2026	1	2026
Link 16 MIDS J BU3 IOC	3	2026	3	2026
C2P TR (Cybersecurity Update)	1	2021	1	2021
C2P Modernization Development, Integration and Systems Engineering	1	2021	3	2025
C2P TR Cybersecurity/Combat System Integration	1	2021	4	2021
C2P Mod SW Release A IV&V	2	2022	4	2022
C2P Mod Software Release A	3	2022	3	2022
C2P Mod Software Release B	2	2023	2	2023
C2P Mod Software Release C	1	2024	1	2024
C2P Mod Software Release D	3	2025	3	2025

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 2126 / *ATDLS Integration*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
C2P Mod Combat Systems integration/Link 22 certification	1	2025	4	2025
C2P Mod/Link 22 DT/OT	4	2025	2	2026
C2P Mod/Link 22 FDR/IOC	4	2026	4	2026
LMMT CD3 Engineering Releases 1	3	2021	3	2021
LMMT CD3 Engineering Releases 2	3	2021	3	2021
LMMT CD3 Engineering Releases 3	4	2021	4	2021
LMMT CD3 IVV	3	2021	4	2021
LMMT CD3 DT	2	2022	2	2022
LMMT CD3 OTRR	3	2022	3	2022
LMMT CD3 Production Release	4	2022	4	2022
LMMT CD3 OT	4	2022	4	2022
LMMT CD3 FTR	2	2023	2	2023
LMMT CD3 ACT	2	2023	2	2023
LMMT CD3 FDR	3	2023	3	2023

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy											Date: April 2022	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*				Project (Number/Name) 3020 / *MIDS/JTRS*			
COST ($ in Millions)	**Prior Years**	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Cost To Complete**	**Total Cost**
3020: *MIDS/JTRS*	39.703	78.824	66.417	82.429	-	82.429	84.784	46.418	36.360	36.585	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 554

A. Mission Description and Budget Item Justification

The Multifunctional Information Distribution System (MIDS) program office is the Performing Activity in the Navy (Lead Service for Department of Defense (DOD)) Link 16 capability and consists of two (2) product lines, MIDS Low Volume Terminal (LVT) (legacy hardware defined radio) and MIDS Joint Tactical Radio System (JTRS) (software (SW) defined radio). MIDS-LVT effort is a cooperative development program between France, Germany, Italy, Spain, and the United States with United States joint service participation (Navy, Army, Air Force), and has provided over 11,000 terminals to 48 Nations providing interoperability with North Atlantic Treaty Organization (NATO) and coalition partners. The Department of Defense (DoD) established the program to design, develop, and deliver low volume, lightweight tactical information system terminals for U.S. and allied fighter aircraft, bombers, helicopters, ships, and ground sites. MIDS-LVT significantly increases force effectiveness and minimizes hostile actions and friend-on-friend engagements. MIDS-LVT Block Upgrade 2 was executed as an ECP and provides the critical upgrades to the MIDS-LVT Terminal to enable U.S., Coalition and International partners' ability to meet the National Security Agency (NSA) mandated timelines for Cryptographic Modernization (CM) and the National Telecommunications and Information Agency (NTIA) and Federal Aviation Agency (FAA) mandated timelines for Frequency Remapping (FR).

MIDS JTRS, designed as a Pre-Planned Product Improvement (P3I) and executed as an Engineering Change Proposal (ECP) to the production MIDS-LVT configuration, and is fully compatible with MIDS-LVT. The MIDS JTRS Core Terminal achieved Full Production & Fielding (FP&F) in March 2012. It facilitated the JTRS incremental approach for fielding advanced JTRS transformational networking capability and transformed the MIDS-LVT into a 4-channel, SW Communications Architecture (SCA) compliant, Joint Tactical Radio. A form-fit-function replacement to MIDS-LVT, MIDS JTRS also adds three programmable 2 Megahertz (MHz) to 2 Gigahertz (GHz) channels capable of hosting the JTRS legacy and networking waveforms. In addition to Link 16, Tactical Air Navigation (TACAN), and voice functionality found in MIDS-LVT, MIDS JTRS has four channels and adds capabilities such as Link 16 Enhanced Throughput (ET), Link 16 FR, SW programmability, CM, and Four Net Concurrent Multi-Netting with Concurrent Contention Receive (CMN-4).

MIDS JTRS Tactical Targeting Network Technology (TTNT), is a block upgrade to the MIDS JTRS CMN-4 Terminal providing an Internet Protocol-based networking capability on tactical aircraft. TTNT is a low latency, high throughput waveform that has the capability to support data exchange between fast-moving tactical aircraft, weapons, and unmanned aircraft, in addition to air, land, and sea-based command and control nodes, in a variety of air-to-air and air-to-ground missions including time sensitive targeting, air warfare, close air support, non-traditional ISR, and anti-surface warfare. TTNT and MIDS JTRS CMN-4 directly supports Naval Integrated Fire Control (NIFC) capability requirements. These capabilities provide Joint Airborne Network-Tactical Edge functionality to run advanced mission applications in a cross-platform/cross-domain tactical network enterprise.

Currently when updated software or any bug fixes are available, the warfighter must return the terminal to the vendor and pay for the labor to install the latest software push. With the new Field Loadable capability, the vendors will update the terminal's software to allow the warfighter to use the front panel of the terminal to load the

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latest software build in the field. The Field Loadable capability entails updating and rewriting the specifications documents for the front panel, new software to enable users in the field to push updates and retrofitting government furnished equipment for use in the new testing environments.

The FY 2023 Budget completes the first software drop (Block Cycle 1) for the MIDS Modernization Software and Firmware development and completes the Electromagnetic Compatibility (EMC) Features testing for BC1 and the Field Loadable capability. Improvements to other MIDS JTRS Hardware begins in FY2023. The FY 2023 budget also supports the lead service core waveform development requirements for developing a reference implementation platform for prototyping and conducting frequency testing for the Link 16 and TTNT waveforms.

The FY 2023 Budget continues to fund critical warfighter improvements to the TTNT Terminal Software and Waveform in order to out pace the threat. It completed the development of the TTNT Consolidated Automated Support System (CASS) Test Program Sets (TPS). New TTNT enhancements are funded in the FY2023 budget that add classified capabilities to the terminal.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: MIDS	78.824	66.417	82.429	0.000	82.429
Articles:	-	-	-	-	-
FY 2022 Plans: Industry will conduct regression Electromagnetic Compatibility (EMC) Features testing on all SW enhancements per the Navy Marine Corp Spectrum Center and FAA. These tests are conducted by industry and witnessed by NMSC to ensure no previous enhancements interfere in the L-band as Link 16 does not have an exclusive frequency allocation. This additional testing extended the time before the new Block Cycle upgrades could begin. Complete the MIDS JTRS Link 16 transceiver hardware upgrade development effort by conducting Contractor First Article Qualification Testing (CFAQT) and EMC Features testing and transitioned the new Link 16 hardware into Production. Begin testing the Field Loading capability in MIDS JTRS and MIDS JTRS TTNT terminals. Continue MIDS Modernization SW/FW development for the MIDS JTRS terminal enhancements. Industry will finalize the Functional Baseline (FBL) and Allocated Baseline (ABL) requirements, hold technical reviews with the Government, complete SW/FW development and execute system I&T. Conduct Test Readiness Review and enter formal contractor testing. Industry will begin work on this new capability as a Block Cycle upgrade to the Link 16 transceiver hardware program (Software drop 1). Complete the development/build of MIDS test equipment for a new government depot/test lab and the support for the depot/lab. Test and accept a new Test Bench for the new depot. Create test procedures for the newly developed Test Bench.					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Begin TTNT Waveform Changes/Gap Improvements with new problem report fixes from platform testing for Software drops. Classified characteristics improvements were integrated into the terminal. Solutions from Federally Funded Research and Development Centers and Small Business will be investigated and integrated by the MIDS prime vendors to provide warfighter capability. Correct and implement problem reports into the terminals from EA-18G, F/A-18E/F (H-16 release) and E-2D Operational Testing (DSSC 4). Continue the TTNT System of Systems (SoS) Modeling and Simulation (M&S) effort by incorporating platform simulators, applications and networks modeling to optimize the TTNT networks for warfighter capability. Continue the Consolidated Automated Support System (CASS) Test Program Sets (TPS) efforts for the MIDS JTRS TTNT terminal. Complete design and testing of the CASS TPS; build and test the three prototypes for qualification testing. Continue MIDS systems engineering, communication security, IA and program management support. Begin Core Waveform, Link 16 Lead Service work in accordance with OSD memorandum dated 29MAR19. Work encompasses all eleven duties as laid out in the memorandum including System of Systems Analysis of Link 16 networks, waveform Mission Threads/Kill Chains and associated Information Exchange Requirements (IERs) to guide Joint fielding and terminal development recommendations with associated prioritizations. Develop basic digital model to guide Link 16 development strategies. Develop a Link 16 reference implementation platform for prototyping and to conduct frequency testing and testing other changes in standards and/or mandated updates. Continue with Link 16 development fixes and updates.					
FY 2023 Base Plans: Complete the MIDS Modernization Block Cycle 1 software drop implementing new Link 16 software and firmware enhancements. Conduct government testing, EMC Features testing and field the new software capability. Complete Front Panel Loading testing. Continue MIDS JTRS CMN-4 Software Enhancements efforts to improve MIDS JTRS software capability by investigating new technologies to reduce cost, schedule and performance impacts to platform integrators. Investigate and begin modernization of MIDS JTRS hardware to support new waveform capabilities and maintain current Link 16 and TACAN functionality.					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Continue TTNT Waveform updates with Problem Report fixes and capability gap improvements with new Integrated Builds for Software drops to support EA-18G, F/A-18E/F (H-16 release) and E-2D Operational Testing (DSSC 4). Continue supporting Operational Test and correct any problem reports/deficiencies found during testing. Conduct EMC Features testing on TTNT that is not already included in the MIDS JTRS EMC Features testing. Classified characteristics improvements qualification testing will begin. Solutions from Federally Funded Research and Development Centers and Small Business will move into testing. Complete the Consolidated Automated Support System (CASS) Test Program Sets (TPS) efforts for the MIDS JTRS TTNT terminal. Continue Core Waveform, Link 16 Lead Service work in accordance with OSD memorandum dated 29MAR19. Work will encompass all eleven duties as laid out in the memorandum including System of Systems Analysis of Link 16 networks, waveform Mission Threads/Kill Chains and associated Information Exchange Requirements (IERs) to guide Joint fielding and terminal development recommendations with associated prioritizations. Develop basic digital model to guide Link 16 development strategies. Utilize the Link 16 reference implementation platform for prototyping and conduct frequency testing and testing other changes in standards and/or mandated updates. Continue with Link 16 development fixes and updates. Continue MIDS systems engineering, communication security, IA and program management support. Starting in FY23 the MIDS prime vendors will analyze system requirements, technical performance data, and terminal integration approaches to develop new operationally-focused enhancements to the (Tactical Targeting Network Technology) TTNT Waveform, Internet Protocol (IP) applications, and network routing protocols to provide expanded networking capabilities and throughput capacities directly supporting the Naval Tactical Grid (NTG). These enhancements include the J-series messages Over IP Networks (JOIN), Dynamic Link Exchange Protocol (DLEP), Vital Smoke (VS), and other classified development efforts. JOIN provides enhanced translation and routing of Link 16 J-series and IP messages internal to the MIDS JTRS CMN4 TTNT terminal. DLEP is a routing protocol that provides smarter message routing and network capacity awareness of the TTNT network in support of Communications as a Service (CaaS) and expanded operational Kill Chains. VS includes multiple software updates to meet classified Tactical Data Dissemination initiative (TDDi) requirements that will expand existing warfighting capabilities at the tactical edge. MIDS prime vendors will update the TTNT software to incorporate these enhancements, support Modeling and Simulation (M&S) execution, conduct initial					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
integration and test (I&T), coordinate and execute Technical Exchange Meetings (TEM), provide incremental software releases, execute program management review with critical stakeholders, and conduct Preliminary Design Review (PDR) of the software enhancements and terminal modifications for government review and approval. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY2022 to FY2023 increase of $16.012M funds the new development enhancements for the TTNT Waveform, Internet Protocol (IP) applications, and network routing protocols. Enhancements include the J-series messages Over IP Networks (JOIN), Dynamic Link Exchange Protocol (DLEP), Vital Smoke (VS), and other classified development efforts.					
Accomplishments/Planned Programs Subtotals	78.824	66.417	82.429	0.000	82.429

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Multifunctional Information Distribution System Joint Tactical System (MIDS JTRS) development was initiated as a major modification to the MIDS-LVT using an Engineering Change Proposal to the existing production contracts. The U.S. prime contractors from the MIDS-LVT program, Data Link Solutions (DLS) and Viasat Inc., cooperatively designed and developed each of the MIDS JTRS terminal variants and Block Upgrade 2 for MIDS-LVT. The U.S. implemented a continuous competition strategy between DLS and ViaSat that will be maintained throughout the MIDS-LVT and MIDS JTRS production phases. This strategy has been successfully used on all MIDS variants.

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Link 16 Waveform Development	WR	NIWC PAC : San Diego, CA	0.523	0.300	Jan 2021	0.300	Dec 2021	0.300	Jan 2023	-		0.300	Continuing	Continuing	Continuing
TTNT Waveforrm/SW Update	C/CPFF	DLS : Cedar Rapids, IA	0.000	2.605	Jan 2021	4.592	Oct 2021	2.400	Dec 2022	-		2.400	Continuing	Continuing	Continuing
TTNT Waveforrm/SW Update	C/CPFF	ViaSat : San Diego, CA	0.000	1.268	Jan 2021	2.586	Jan 2022	1.600	Dec 2022	-		1.600	Continuing	Continuing	Continuing
TTNT Post Dev Problem Report Fixes	C/CPFF	DLS : Cedar Rapids, IA	0.000	0.900	Dec 2020	3.518	Oct 2021	1.994	Jan 2023	-		1.994	Continuing	Continuing	Continuing
TTNT Post Dev Problem Report Fixes	C/CPFF	Viasat : San Diego, CA	0.000	1.685	Jan 2021	0.910	Nov 2021	1.330	Jan 2023	-		1.330	Continuing	Continuing	Continuing
MIDS JTRS L16 HW Upgrade	C/CPFF	DLS : Cedar Rapids, IA	17.262	15.608	Nov 2020	1.311	Apr 2022	0.000		-		0.000	0.000	34.181	39.906
MIDS JTRS L16 HW Upgrade	C/CPFF	Viasat : San Diego, CA	8.691	9.777	Nov 2020	9.063	Oct 2021	0.000		-		0.000	0.000	27.531	27.531
MIDS EMC Features Updates/Firmware Update	C/CPFF	Viasat : San Diego, CA	1.433	0.304	Jun 2021	0.000		0.000		-		0.000	0.000	1.737	1.737
MIDS EMC Features Updates	C/CPFF	DLS : Cedar Rapids, IA	0.000	0.621	Jun 2021	1.855	Nov 2021	0.000		-		0.000	0.000	2.476	2.476
MIDS Mod SW/FW Risk Reduction	C/CPFF	DLS : Cedar Rapids, IA	0.301	0.282	Jan 2021	0.000		0.000		-		0.000	0.000	0.583	0.583
MIDS Mod SW/FW Risk Reduction	C/CPFF	Viasat : San Diego, CA	0.060	1.207	Jan 2021	0.000		0.000		-		0.000	0.000	1.267	1.267
MIDS Mod SW/FW Full Development	C/CPFF	DLS : Cedar Rapids, IA	0.000	0.960	Jul 2021	7.155	Oct 2021	16.985	Jan 2023	-		16.985	Continuing	Continuing	Continuing
MIDS Mod SW/FW Full Development	C/CPFF	Viasat : San Diego, CA	0.000	0.224	Jul 2021	4.527	Dec 2021	11.323	Jan 2023	-		11.323	Continuing	Continuing	Continuing
Field Loadable Cap Risk Reduction	C/CPFF	DLS : Cedar Rapids, IA	4.012	6.181	Dec 2020	0.000		0.000		-		0.000	0.000	10.193	10.193
Field Loadable Cap Risk Reduction	C/CPFF	Viasat : San Diego, CA	2.313	2.804	Dec 2020	0.000		0.000		-		0.000	0.000	5.117	5.117
Field Loadable Capability Dev	C/CPFF	DLS : Cedar Rapids, IA	0.000	0.000		2.103	Nov 2021	0.000		-		0.000	0.000	2.103	2.103

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Field Loadable Capability Dev	C/CPFF	Viasat : San Diego, CA	0.000	0.000		0.199	Nov 2021	0.000		-		0.000	0.000	0.199	0.199
Modernize Special Test Equipment WIN10	C/CPFF	DLS : Cedar Rapids, IA	0.000	3.685	Nov 2020	0.000		0.000		-		0.000	0.000	3.685	3.685
Modernize Special Test Equipment WIN10	C/CPFF	ViaSat : San Diego, CA	0.000	0.443	Nov 2020	0.000		0.000		-		0.000	0.000	0.443	0.443
NSA Security Requirement Update	C/CPFF	DLS : Cedar Rapids, IA	0.234	0.213	Nov 2020	0.000		0.000		-		0.000	0.000	0.447	0.447
NSA Security Requirement Update	C/CPFF	ViaSat : San Diego, CA	0.140	0.129	Nov 2020	0.000		0.000		-		0.000	0.000	0.269	0.269
Test Bench Equipment for depot/lab	C/FFP	ViaSat : San Diego, CA	0.000	10.099	Sep 2021	0.000		0.000		-		0.000	0.000	10.099	10.099
Test Equipment for Depot/ lab	C/FFP	DLS : Cedar Rapids, IA	0.676	2.576	Mar 2021	4.175	Dec 2021	0.000		-		0.000	0.000	7.427	7.427
Test Equipment for Depot/ lab	C/FFP	ViaSat : San Diego, CA	0.589	1.269	Mar 2021	3.167	Dec 2021	0.000		-		0.000	0.000	5.025	5.025
MIDS JTRS CMN-4 Software Enhancements	C/CPFF	TBD : TBD	0.000	0.000		0.000		4.196	Jan 2023	-		4.196	Continuing	Continuing	Continuing
TTNT Advanced Techniques	C/CPFF	DLS : Cedar Rapids, IA	0.000	0.000		0.000		13.040	Nov 2022	-		13.040	Continuing	Continuing	Continuing
TTNT Advanced Techniques	C/CPFF	ViaSat : San Diego, CA	0.000	0.000		0.000		8.694	Nov 2022	-		8.694	Continuing	Continuing	Continuing
MIDS JTRS HW Modernization	C/CPFF	DLS : Cedar Rapids, IA	0.000	2.000	Aug 2021	0.000		5.400	Feb 2023	-		5.400	Continuing	Continuing	Continuing
MIDS JTRS HW Modernization	C/CPFF	ViaSat : San Diego, CA	0.000	1.500	Aug 2021	0.000		3.600	Feb 2023	-		3.600	Continuing	Continuing	Continuing
Depot Equipment	WR	NAWC : Pax River, MD	0.000	0.182	Oct 2021	0.000		0.000		-		0.000	0.000	0.182	0.182
TTNT Enhancements/Tech 1	C/CPFF	MIT LL : Hanscom, MA	0.000	0.000		0.719	Dec 2021	0.550	Dec 2022	-		0.550	Continuing	Continuing	Continuing
		Subtotal	36.234	66.822		46.180		71.412		-		71.412	Continuing	Continuing	N/A

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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CSS TPS/Depot Support	WR	NAVAIR : North Island San Diego, CA	0.078	2.220	Oct 2020	0.000		1.363	Jan 2023	-		1.363	0.000	3.661	3.661
Modeling and Sim Suppt TTNT	WR	NAVAIR : China Lake, CA	0.371	0.650	Dec 2020	0.720	Apr 2022	1.270	Dec 2022	-		1.270	Continuing	Continuing	Continuing
Logistics Depot Test Facility Support	WR	NIWC PAC : San Diego, CA	0.127	0.080	Sep 2021	0.000		0.000		-		0.000	0.000	0.207	0.207
CORE Waveform Support	WR	NIWC PAC : San Diego, CA	0.000	0.000		3.799	Oct 2021	3.750	Oct 2022	-		3.750	Continuing	Continuing	Continuing
I-Level Support Equipment	C/CPFF	Viasat : San Diego, CA	0.000	1.619	Nov 2020	1.152	Oct 2021	0.000		-		0.000	0.000	2.771	2.771
NSA Certification Support	MIPR	NSA : Fort Meade, MD	0.000	0.030	Mar 2021	0.200	Apr 2022	0.100	Dec 2022	-		0.100	Continuing	Continuing	Continuing
Modeling and Sim Suppt TTNT	MIPR	MIT LL : Hanscom, MA	0.000	1.500	Mar 2021	0.000		0.000		-		0.000	0.000	1.500	1.500
Logistics Depot Support	C/CPFF	Sentek : San Diego, Ca	0.000	0.251	Jun 2021	0.000		0.000		-		0.000	0.000	0.251	0.251
MIDS Modernization/ Mission Network Support	WR	NAVAIR : China Lake, CA	0.000	0.081	Jan 2021	5.455	Oct 2021	0.445	Nov 2022	-		0.445	Continuing	Continuing	Continuing
Link16 Pulse Deconfliction Server Support	WR	NMSC : Fort Meade, MD	0.000	0.000		0.365	Apr 2022	0.365	Apr 2023	-		0.365	Continuing	Continuing	Continuing
NRL Support	WR	NRL : Washington DC	0.000	0.000		0.100	Feb 2022	0.000		-		0.000	0.000	0.100	0.100
IA Cert SUpport	WR	NIWC LANT : Charleston, SC	0.000	0.000		0.123	Apr 2022	0.123	Jan 2023	-		0.123	Continuing	Continuing	Continuing
		Subtotal	0.576	6.431		11.914		7.416		-		7.416	Continuing	Continuing	N/A

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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JTEL	WR	NIWC PAC : San Diego, CA	0.000	0.000		0.300	Apr 2022	0.300	Jan 2023	-		0.300	Continuing	Continuing	Continuing
TTNT DT/OT Support	WR	NIWC PAC : San Diego, CA	0.000	2.361	Feb 2021	3.281	Nov 2021	0.245	Nov 2022	-		0.245	0.000	5.887	5.887
MIDS JTRS Link 16 Hardware Testing	WR	NIWC PAC : San Diego, CA	0.000	0.000		0.545	Jan 2022	0.300	Jan 2023	-		0.300	Continuing	Continuing	Continuing
DT OT Support	WR	COMOPTEVFOR : Norfolk, VA	0.050	0.135	Aug 2021	0.120	May 2022	0.192	Dec 2022	-		0.192	0.000	0.497	0.497
		Subtotal	0.050	2.496		4.246		1.037		-		1.037	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering Support	MIPR	MITRE : Bedford, MA	0.100	1.439	Dec 2020	2.336	Dec 2021	0.879	Dec 2022	-		0.879	Continuing	Continuing	Continuing
Government Engineering Support	WR	NIWC PAC : San Diego,CA	1.359	0.699	Nov 2020	0.700	Nov 2021	0.750	Nov 2022	-		0.750	Continuing	Continuing	Continuing
Information Assurance	MIPR	CERDEC : Aberdeen Proving Ground, MD	0.000	0.199	Jan 2021	0.000		0.000		-		0.000	0.000	0.199	0.199
Data Link Analysis	WR	NAVAIR : Pax River, MD	0.122	0.213	Jan 2021	0.256	Jan 2022	0.150	Dec 2022	-		0.150	Continuing	Continuing	Continuing
Engineering Support	C/CPFF	Sentek Global : San Diego, Ca	0.440	0.250	Jul 2021	0.485	Apr 2022	0.485	Dec 2022	-		0.485	0.000	1.660	1.660
Information Assurance, Risk and Program Support	C/CPFF	G2 : San Diego, Ca	0.717	0.000		0.000		0.000		-		0.000	0.000	0.717	0.717
SIPR Connections	MIPR	ARL : Aberdeen, MD	0.105	0.000		0.000		0.000		-		0.000	0.000	0.105	0.105
Information Assurance, Risk and Program SupportText	MIPR	AFRL : Rome, NY	0.000	0.275	Feb 2021	0.300	Dec 2021	0.300	Dec 2022	-		0.300	Continuing	Continuing	Continuing
		Subtotal	2.843	3.075		4.077		2.564		-		2.564	Continuing	Continuing	N/A

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	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	39.703	78.824		66.417		82.429		-		82.429	Continuing	Continuing	N/A

Remarks

Prior Year cost data is provided under PE 0205604N Project 3020

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EXHIBIT R4, Schedule Profile

APPROPRIATION/BUDGET ACTIVITY
RDT&E, N / BA-5

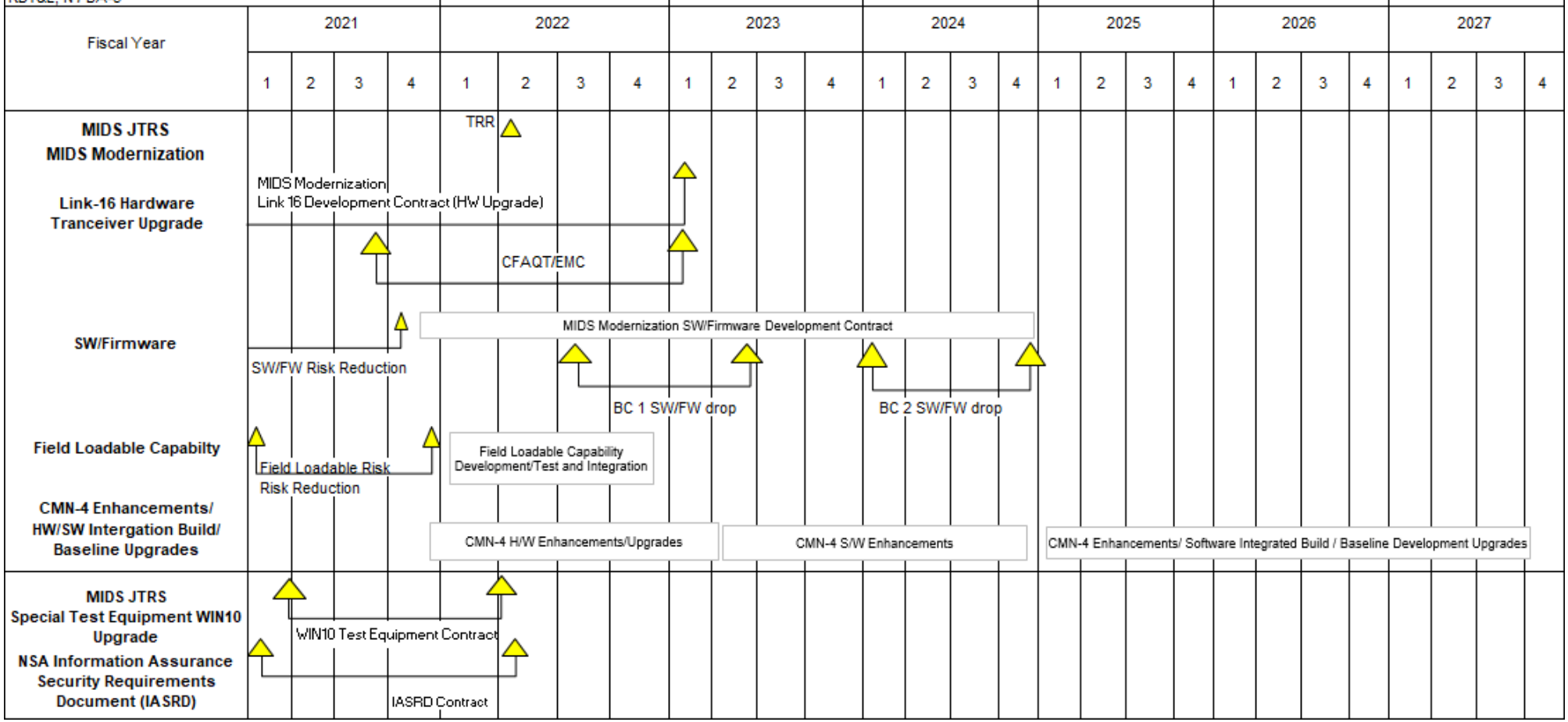

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 3020 / *MIDS/JTRS*

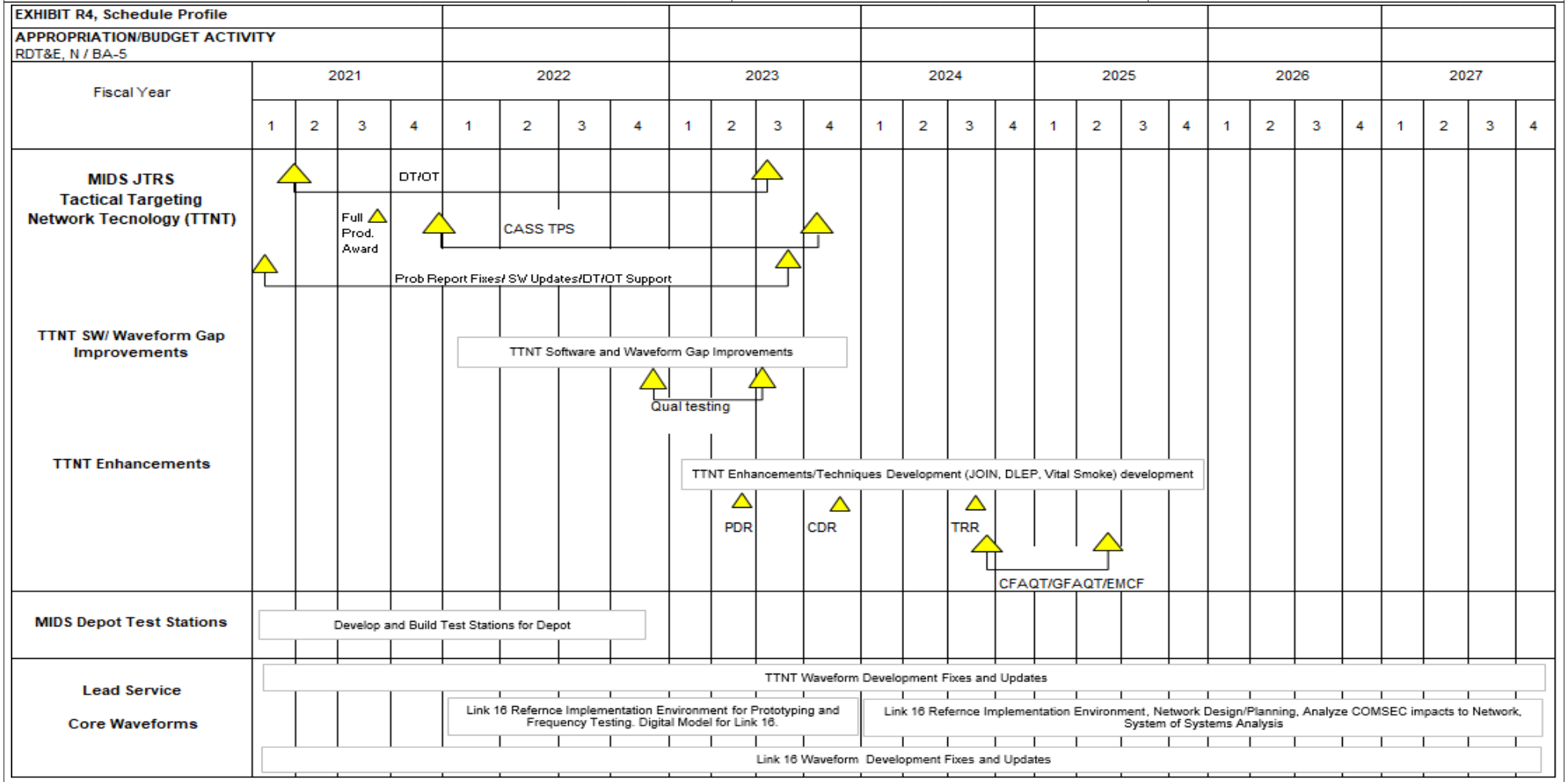

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 3020 / *MIDS/JTRS*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3020				
MIDS JTRS Modernization Link 16 Hardware Transceiver Upgrade: Development Contract	1	2021	3	2022
MIDS JTRS Modernization Link 16 Hardware Transceiver Upgrade: Test Readiness Review	4	2021	4	2021
MIDS JTRS Modernization Link 16 Hardware Transceiver Upgrade: Contractor First Article Qualification Test (CFAQT)/EMC Testing	3	2021	1	2023
MIDS JTRS Modernization Software/Firmware: Risk Reduction Work	1	2021	4	2021
MIDS JTRS Modernization Software/Firmware: MIDS Modernization SW/FW development contract	4	2021	4	2024
MIDS JTRS Modernization Software/Firmware: BC 1 SW/FW Drop 1	3	2022	2	2023
MIDS JTRS Modernization Software/Firmware: BC 2 SW/FW Drop 2	1	2024	4	2024
Field Loadable Capability: Risk Reduction Work	1	2021	4	2021
Field Loadable Capability: Field Loadable Capability Development/Test and Integration	1	2022	4	2022
CMN-4 Enhancements/SW Baseline: CMN-4 H/W Enhancements	4	2021	2	2023
CMN-4 Enhancements/SW Baseline: CMN-4 Enhancements/Software Integrated Build	1	2025	4	2027
CMN-4 Enhancements/SW Baseline: CMN-4 S/W Enhancements	2	2023	4	2024
MIDS JTRS Modernization Special Test Equipment (STE): STE Update WIN10 Contract	1	2021	2	2022
NSA Information Assurance Security Requirements Document (IASRD): IASRD Contract	1	2021	2	2022
MIDS JTRS Tactical Targetting Network Technology (TTNT): Platform Developmental Test (DT) and Operational Test (OT)	1	2021	3	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 3020 / *MIDS/JTRS*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MIDS JTRS Tactical Targetting Network Technology (TTNT): Consolidated Automated Support System (CASS) Test Program Sets (TPS)	4	2021	4	2023
MIDS JTRS Tactical Targetting Network Technology (TTNT): Problem Report Fixes/ SW Updates DT/OT Support	1	2021	3	2023
MIDS JTRS Tactical Targetting Network Technology (TTNT): Full Production Award	3	2021	3	2021
TTNT Waveform Gap Improvements: TTNT SW/Waveform Gap Improvements	1	2022	4	2023
TTNT Waveform Gap Improvements: Qual Testing	4	2022	3	2023
TTNT Enhancements: Enhancements/Techniques Contract Award	1	2023	4	2026
TTNT Enhancements: Enhancements/Techniques Preliminary Design Review	2	2023	2	2023
TTNT Enhancements: Enhancements/Techniques Critical Design Review	4	2023	4	2023
TTNT Enhancements: Test Readiness Review	3	2024	3	2024
TTNT Enhancements: CFAQT/GFAQT/EMCF	3	2024	2	2025
MIDS Depot Test Stations: Test Station	1	2021	4	2022
MIDS Core Waveforms: TTNT Waveform Development Fixes and Updates	1	2021	4	2027
MIDS Core Waveforms: Link 16 Waveform Development Fixes and Updates	1	2021	4	2027
MIDS Core Waveforms: Link 16 Reference Implementation Environment for Prototyping and Frequency Testing	1	2022	4	2023
MIDS Core Waveforms: Link 16 Refernce Implementation Environment, Network Design/Planning, Analyze COMSEC impacts to Network, System of Systems Analysis	1	2024	1	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 3078 / *Digital Modular Radio*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
3078: *Digital Modular Radio*	51.227	2.663	2.530	6.347	-	6.347	7.019	6.823	6.773	6.899	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Digital Modular Radio (DMR) with Integrated Waveform (IW) and Mobile User Objective System (MUOS) capable hardware is the Navy's technical solution for the IW/ MUOS requirement. The DMR AN/USC-61(C), is the first software defined radio to become a communications system standard for the U.S. Military. The compact, multi-channel DMR provides 3G, Wideband Code Division Multiple Access (WCDMA) technology, for high speed/capacity voice and data satellite communications. DMR radios currently operate aboard U.S. Navy surface and subsurface vessels, fixed-sites and other Department of Defense (DoD) communication platforms using frequencies ranging from 2 MHz to 2 GHz. Certified to pass secure voice and data at Multiple Independent Levels of Security (MILS) over High Frequency (HF), Very High Frequency (VHF), Ultra High Frequency (UHF), and Satellite Communications (SATCOM) channels, the DMR system was developed to the U.S. Navy's specifications and meets all the stringent environmental, Electromagnetic Interference (EMI) and performance requirements for use in the U.S. Fleet. This system is formally specified by both Fleet Commanders as a threshold capability, for global maritime command control and communications in a Distributed Maritime Environment, to execute current warfighting plans and is required for National Command and Control capability. This program is for continued development/integration of the IW and MUOS waveforms into the DMR in accordance with Military Standards 188-181,2,3. Additionally, the enhancements of High Frequency Distribution Amplifier Group (HFDAG) and, HF Automated Link Establishment (ALE) and Second-Generation Anti-Jam Tactical UHF Radio for NATO (SATURN) will also be developed/ integrated into the DMR. HFDAG is a follow-on HF solution to fulfill transmit and receive HF communication capability with various modes of operation, such as ALE, for Navy platforms. HFDAG will utilize the existing DMR as the exciter/receiver. Generation 3 (GEN 3) HF ALE/HF wideband provides Navy users with improved HF communications, increased transmission rates from radio to radio, and serves as a supplement to SATCOM when SATCOM networks are overloaded or unavailable. SATURN is the follow-on HAVEQUICK II anti-jamming solution in accordance with NATO Standardization Agreement 4372. (Retirement date for HAVEQUICK II is no later than 1OCT24.) SATURN capability will counter adversaries' jamming efforts and ensure Navy's Assured Command and Control UHF communications operational end-to-end capability as well as enhance interoperability within/between DMR users and with Allied/Coalition partners. IW uses a Time Division Multiple Access (TDMA) communication system in an attempt to improve satellite bandwidth utilization over legacy SATCOM waveforms. This enables demand assigned services on UHF SATCOM networks to support new applications that require better performance and higher channel throughput. The MUOS waveform will enable MUOS satellites to provide worldwide communication satellite coverage for DoD requirements. MUOS will provide functionality comparable to commercial mobile phone systems.

FY 2023 will fund DMR to develop the SATURN waveform from the currently used HAVEQUICK II (HQII) waveform; continue porting and begin integration of the MUOS waveform 3.2; and the continued development of Crypto Mod SINCGARS 3.x Phase 2.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: DMR	2.663	2.530	6.347	0.000	6.347
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 3078 / *Digital Modular Radio*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Description: Overall program efforts include investigation of emerging technologies through study, development and associated testing for feasibility of program insertion. DMR, with IW and MUOS capable hardware, is the Navy's technical solution for the IW/MUOS requirement. As the Navy's primary technical solution, DMR provides the UHF SATCOM IW and MUOS waveform capability to the Fleet. The MUOS waveform enables MUOS satellites to provide worldwide communication satellite coverage for DoD requirements, with functionality comparable to commercial mobile phone systems. ***FY 2022 Plans:*** FY 2022 DMR will continue Advanced HF(AHF) Functionality Development, continue submarine Emissions Control (EMCON) testing to meet core capability requirements for submarines, continue 3.1.6 development support activities in preparation for porting the new waveform starting in FY22, and continue development of updated DMR SINCGARS 3.1 Cryptographic Equipment Application (CEA) software to be compliant with the latest National Security Agency (NSA) cryptographic modernization specifications. Program will also continue with MUOS w/f 3.2 development. ***FY 2023 Base Plans:*** FY23 DMR will complete Advanced HF(AHF) Functionality Development, continue crypto mod development, and begin integration of MUOS w/f 3.2 and Second generation Anti-jam Tactical UHF Radio for North Atlantic Treaty Organization (NATO) (SATURN) development. GDMS shall evaluate the 3.1 and 3.2 advanced modems which will require the confirmation and operational capability on the DMR. The Current 100W amplifiers will additionally need to be evaluated for performance with the SATURN WF. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The $3.817M increase in funding from FY22 to FY23 is for the SATURN waveform development and MUOS waveform 3.2 integration.					
Accomplishments/Planned Programs Subtotals	2.663	2.530	6.347	0.000	6.347

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 3078 / *Digital Modular Radio*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• OPN/3010: *Shipboard Tactical Comms*	53.743	43.212	36.941	-	36.941	32.809	31.822	32.442	35.246	Continuing	Continuing

Remarks

D. Acquisition Strategy

General Dynamics Mission Systems (GDMS), formerly General Dynamics C4 Systems (GDC4S), owns the technical data rights to the Digital Modular Radio (DMR). Due to this fact, they are the only contractor with the unique capabilities and technical know-how to perform the required design work to complete the Integrated Waveform (IW) upgrade, the Mobile User Objective System (MUOS) interoperability efforts, and cryptographic modernization development.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 3078 / *Digital Modular Radio*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
IW/MUOS Development	C/CPIF	GDMS : Scottsdate, AZ	24.671	0.000		0.000		0.000		-		0.000	0.000	24.671	-
AHF Functionality Development	C/CPIF	GDMS : Scottsdale, AZ	10.069	1.103	May 2021	1.547	Oct 2021	0.000		-		0.000	0.000	12.719	-
IW/MUOS Development	WR	NIWC PAC : San Diego, CA	0.600	0.000		0.000		0.000		-		0.000	0.000	0.600	-
AHF Functionality Development	WR	NIWC PAC : San Diego, CA	0.713	0.417	Mar 2021	0.200	Oct 2021	0.150	Oct 2022	-		0.150	0.000	1.480	-
Cryptographic Modernization Development	C/CPIF	GDMS : Scottsdale, AZ	0.870	0.300	May 2021	0.000		0.000		-		0.000	0.000	1.170	-
Cryptographic Modernization Development	WR	NIWC PAC : San Diego, CA	0.132	0.238	Mar 2021	0.200	Dec 2021	0.300	Dec 2022	-		0.300	Continuing	Continuing	Continuing
SATURN Development	C/CPIF	GDMS : Scottsdale, AZ	0.000	0.000		0.000		4.128	Oct 2022	-		4.128	Continuing	Continuing	Continuing
SATURN Development	WR	NIWC PAC : San Diego, CA	0.000	0.000		0.000		1.084	Oct 2022	-		1.084	Continuing	Continuing	Continuing
		Subtotal	37.055	2.058		1.947		5.662		-		5.662	Continuing	Continuing	N/A

Remarks

Product development increase between FY22 to FY23 is due to the SATURN development effort.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering Support	C/CPFF	NIWC PAC : San Diego, CA	7.842	0.249	Mar 2021	0.228	Dec 2021	0.228	Dec 2022	-		0.228	Continuing	Continuing	Continuing
		Subtotal	7.842	0.249		0.228		0.228		-		0.228	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 3078 / *Digital Modular Radio*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Testing	C/CPFF	NIWC PAC : San Diego, CA	2.624	0.227	Mar 2021	0.229	Dec 2021	0.229	Dec 2022	-		0.229	0.000	3.309	-
JITC Testing	WR	JITC : Ft. Huachuca, AZ	0.569	0.000		0.000		0.000		-		0.000	0.000	0.569	-
Interoperability Testing	WR	NIWC PAC : San Diego, CA	0.402	0.129	Mar 2021	0.063	Nov 2021	0.063	Nov 2022	-		0.063	Continuing	Continuing	Continuing
Test and Evaluation	WR	NIWC PAC : San Diego, CA	0.179	0.000		0.000		0.065	Dec 2022	-		0.065	0.000	0.244	-
Certification Authorization	MIPR	NSA : Ft. Meade, MD	0.030	0.000		0.000		0.000		-		0.000	0.000	0.030	-
		Subtotal	3.804	0.356		0.292		0.357		-		0.357	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPFF	BAH : San Diego, CA	2.526	0.000		0.063	Nov 2021	0.100	Nov 2022	-		0.100	Continuing	Continuing	Continuing
		Subtotal	2.526	0.000		0.063		0.100		-		0.100	Continuing	Continuing	N/A

Remarks

Increase in program management support is due to increase in development efforts from FY22 to FY23.

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	51.227	2.663		2.530		6.347		-		6.347	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 3078 / *Digital Modular Radio*

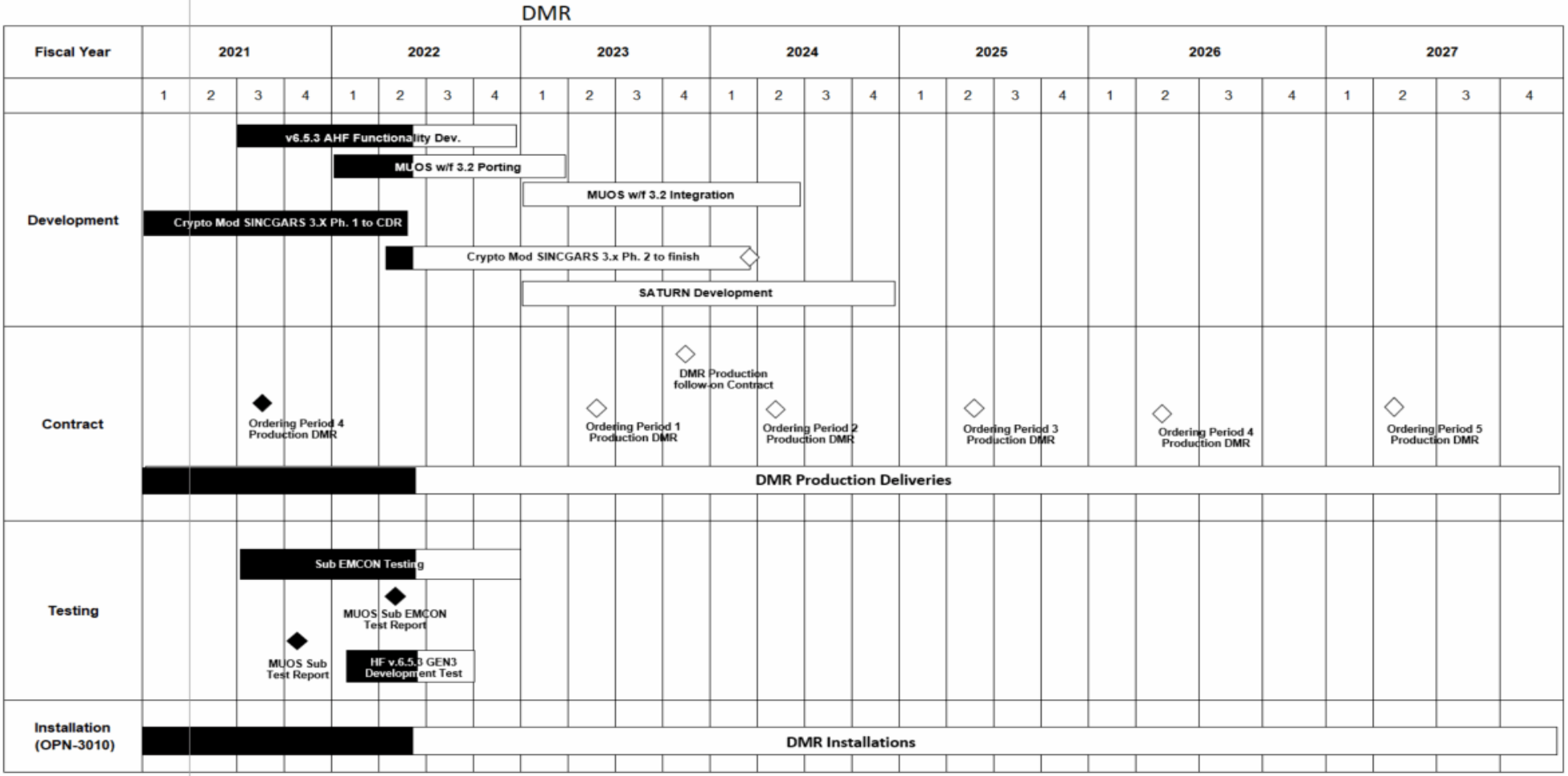

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 3078 / *Digital Modular Radio*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3078				
Production Deliveries	1	2021	4	2027
DMR Installations	1	2021	4	2027
MUOS Sub Test Report	4	2021	4	2021
Crypto Mod SINCGARS 3.x Ph. 1 to CDR	1	2021	2	2022
Submarine EMCON Testing	3	2021	4	2022
HF ALE GEN 3 AHF Functionality Development (v6.5.3)	3	2021	1	2023
MUOS w/f 3.2 Porting	1	2022	1	2023
MUOS w/f 3.2 Integration	1	2023	2	2024
MUOS Sub EMCON Test Report	2	2022	2	2022
Crypto Mod SINCGARS 3.x Ph. 2 to finish	2	2022	1	2024
HF ALE GEN 3 Software Development (v6.5.3) Development Test	1	2022	3	2022
GDMS SATURN Development	1	2023	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 3341 / *Network Tactical Common Data Link*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
3341: *Network Tactical Common Data Link*	30.775	40.521	19.096	6.037	-	6.037	5.526	5.475	5.530	5.622	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Network Tactical Common Data Link (NTCDL) provides the ability to transmit/receive real-time Intelligence, Surveillance, and Reconnaissance (ISR) data simultaneously from multiple sources (surface, airborne, sub-surface, man-portable), and exchange command and control information (voice, data, imagery, and Full Motion Video) across dissimilar joint, service, coalition, and civil networks. NTCDL provides warfighters with the capability to support multiple, simultaneous, networked operations with currently fielded Common Data Link (CDL)-equipped air platforms (e.g. MH-60R), in addition to next generation manned and unmanned platforms (e.g., P-8, Triton, MQ-25 (Stingray), small tactical unmanned aircraft systems (STUAS) and Fire Scout). NTCDL is an incremental capability (surface, airborne, sub-surface, man-portable) providing modular, scalable, multiple-link networked communications. NTCDL benefits the fleet by providing a horizon extension for line-of-sight sensor systems for use in time-critical strike missions and supports tasking, collection, processing, exploitation, and dissemination (TCPED) via its ISR networking capability. NTCDL supports Resilient Command and Control (RC2) through its relay capability, and supports TCPED through its ISR networking capability.

FY 2023 request is for NTCDL to continue development of Initial Capability to support high speed waveforms, high speed data rates (274 Mpbs), and increased range (240 nautical miles), while adding additional and simultaneous links via X/Ku band antennas; complete Delta CDR for Full Capability; and mature system maintenance, interoperability, training (Computer Based Training module), and system software.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Network Tactical Common Data Link (NTCDL)	40.521	19.096	6.037	0.000	6.037
Articles:	2	-	-	-	-
Description: Network Tactical Common Data Link (NTCDL) provides the ability to transmit/receive real-time Intelligence, Surveillance, and Reconnaissance (ISR) data simultaneously from multiple sources (surface, airborne, sub-surface, man-portable), and exchange command and control information (voice, data, imagery, and Full Motion Video) across dissimilar joint, service, coalition, and civil networks. NTCDL provides warfighters with the capability to support multiple, simultaneous, networked operations with currently fielded Common Data Link (CDL)-equipped air platforms (e.g. MH-60R), in addition to next generation manned and unmanned platforms (e.g., P-8, Triton, MQ-25 (Stingray), small tactical unmanned aircraft systems (STUAS) and Fire Scout). NTCDL is an incremental capability (surface, airborne, sub-surface, man-portable) providing modular, scalable, multiple-link networked communications. NTCDL benefits the fleet by providing a horizon extension for line-of-sight sensor systems for use in time-critical strike missions and supports tasking, collection, processing,					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 3341 / *Network Tactical Common Data Link*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
exploitation, and dissemination (TCPED) via its ISR networking capability. NTCDL supports Resilient Command and Control (RC2) through its relay capability, and supports TCPED through its ISR networking capability. ***FY 2022 Plans:*** FY 2022 plans include the delivery of the EDM PAA system and the delivery of Developmental Testing COTF Report. Attain National Security Agency (NSA) Type 1 certification of ECU and final delivery of GFS Fleet Capability Release with GFS maintenance and updates to follow. ***FY 2023 Base Plans:*** FY 2023 plans include development of Engineering Development Models (EDM) Initial Capability software (X/Ku). Conduct and complete Joint Interoperability Test Command (JITC) Common Data Link (CDL) Interoperability E2E testing. Continued maturation of software supporting the initial hardware capability and providing increased CDL bandwidth, platform communication equipment, and data rates. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The FY 2023 funding request was reduced by $13.059 million due to major product development in support of EDM test events completing in FY 2022. FY 2023 funds the remaining development required to complete the Initial Capability EDM.					
Accomplishments/Planned Programs Subtotals	40.521	19.096	6.037	0.000	6.037

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• OPN/2950: *Network Tactical Common Data Link (CDL)*	3.556	8.795	11.792	-	11.792	10.257	9.017	8.347	7.377	Continuing	Continuing

Remarks

NTCDL is the follow-on program for the CDLS Tech Refresh. The OPN for this program began in FY22.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 3341 / *Network Tactical Common Data Link*

D. Acquisition Strategy

NTCDL will utilize the evolutionary acquisition approach for: surface, air, sub-surface, man-portable in a scalable development approach. EDMs and LRIPs will provide Ku-band Phased Array Antennas (PAAs) with 4 simultaneous links, with a range of 110-150 nautical miles and speeds of 45mbs; with the future ability to deliver Full Capability which will include 2 additional simultaneous links (X/Ku), increase range up to 240 nautical miles, and increase speeds up to 274mbs.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 3341 / *Network Tactical Common Data Link*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Product Development	C/CPIF	BAE Systems, Int : Wayne, NJ	25.898	32.260	Oct 2020	16.549	Oct 2021	3.581	Oct 2022	-		3.581	Continuing	Continuing	Continuing
NTCDL Software Development	WR	NIWC PAC : San Diego, CA	1.545	1.681	Nov 2020	0.450	Nov 2021	0.400	Nov 2022	-		0.400	Continuing	Continuing	Continuing
NTCDL Software Development	C/IDIQ	Technology Unlimited Group : San Diego, CA	0.690	0.636	Feb 2021	0.255	Feb 2022	0.255	Feb 2023	-		0.255	Continuing	Continuing	Continuing
		Subtotal	28.133	34.577		17.254		4.236		-		4.236	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Systems Engineering	WR	NIWC PAC : San Diego, CA	1.406	2.075	Nov 2020	0.230	Nov 2021	0.433	Nov 2022	-		0.433	Continuing	Continuing	Continuing
NTCDL Logistics Engineering	C/CPFF	CSA : San Diego, CA	0.000	0.202	Nov 2020	0.000		0.000		-		0.000	0.000	0.202	-
		Subtotal	1.406	2.277		0.230		0.433		-		0.433	Continuing	Continuing	N/A

Remarks

Deferred work in FY22 and additional testing in FY23 requires increased engineering support. This includes first article testing, additional developmental testing, software problem resolution, and delivery of final technical data package and technical manuals.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Test and Evaluation	WR	NIWC PAC : San Diego, CA	1.207	2.689	Nov 2020	0.750	Nov 2021	0.700	Nov 2022	-		0.700	Continuing	Continuing	Continuing
NTCDL Test and Review	MIPR	JITC : Fort Huachuca, AZ	0.005	0.038	Dec 2020	0.040	Dec 2021	0.220	Nov 2022	-		0.220	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 3341 / *Network Tactical Common Data Link*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Waveform Certification	MIPR	COMOPTEVFOR : Norfolk, VA	0.024	0.020	Dec 2020	0.022	Dec 2021	0.230	Nov 2022	-		0.230	Continuing	Continuing	Continuing
		Subtotal	1.236	2.747		0.812		1.150		-		1.150	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Program Management Support	C/CPFF	BAH : San Diego, CA	0.000	0.920	Nov 2020	0.800	Nov 2021	0.218	Nov 2022	-		0.218	Continuing	Continuing	Continuing
		Subtotal	0.000	0.920		0.800		0.218		-		0.218	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	30.775	40.521		19.096		6.037		-		6.037	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 3341 / *Network Tactical Common Data Link*

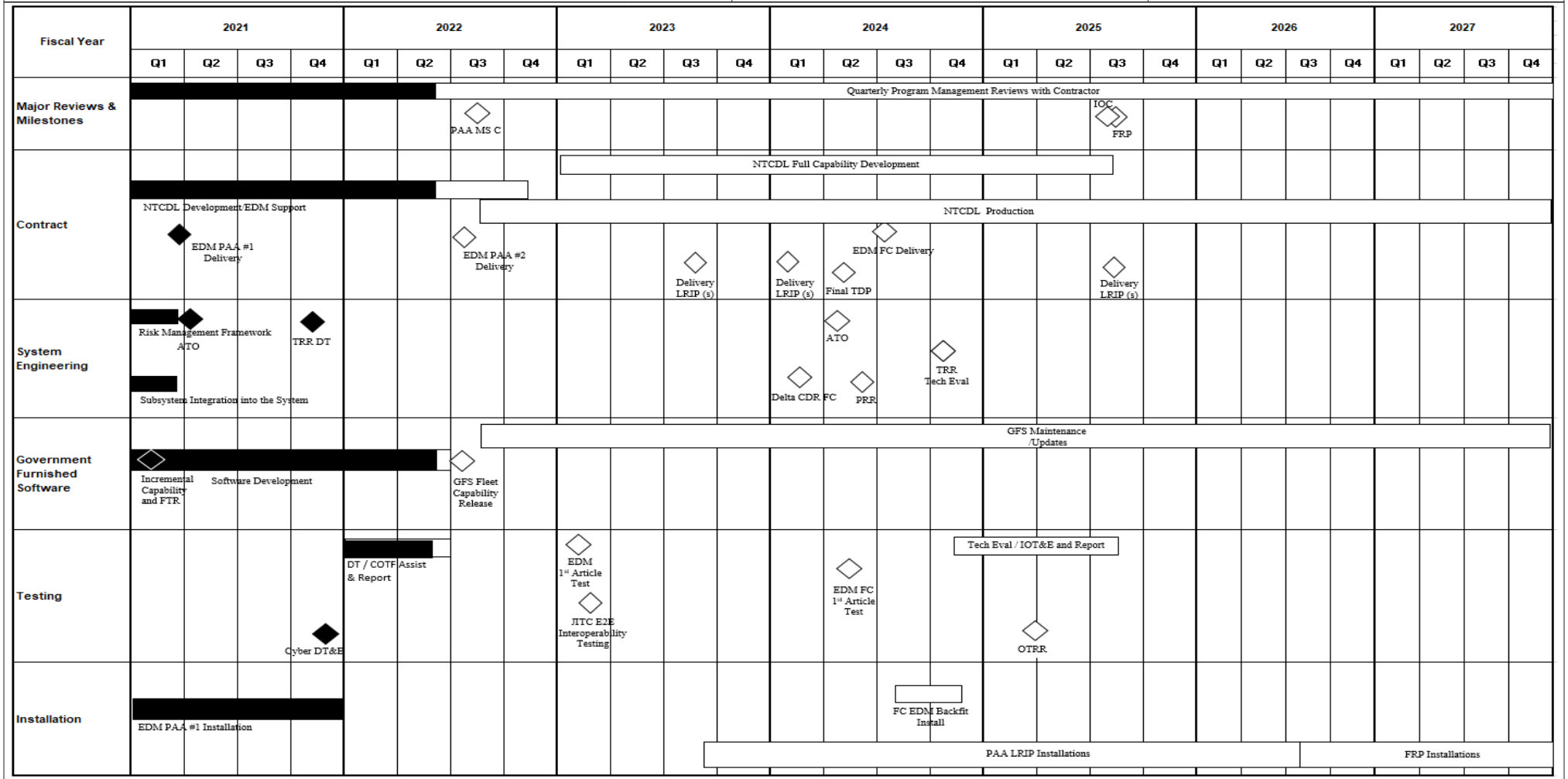

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 3341 / *Network Tactical Common Data Link*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3341				
Quarterly Program Management Review with Contractor	1	2021	4	2027
Development Contract	1	2021	4	2022
Risk Management Framework (RMF)	1	2021	1	2021
Subsystem Integration into the System	1	2021	1	2021
Government Furnished Software (GFS) Development	1	2021	2	2022
EDM 1 PAA Delivery (Qty 1)	1	2021	1	2021
Authority to Operate (ATO) 1	2	2021	2	2021
TRR Development Testing (DT)	4	2021	4	2021
GFS Incremental Capability and Field Technical Release (FTR)	1	2021	1	2021
Development Testing (DT) / COTF Assist & Report	1	2022	2	2022
Operational Test Readiness Review (OTRR) 1	1	2025	1	2025
NTCDL Full Capability Development	1	2023	3	2025
GFS Fleet Capability Release	3	2022	3	2022
EDM PAA #2 Cyber Development, Testing, and Evaluation (DT&E)	4	2021	4	2021
EDM First Article Test	1	2023	1	2023
JITC E2E Interoperability Testing	1	2023	1	2023
Milestone C	3	2022	3	2022
NTCDL Production Contract	3	2022	4	2027
GFS Maintenance/Updates	3	2022	4	2027
EDM 2 PAA Delivery (QTY 1)	3	2022	3	2022
EDM FC First Article Test	2	2024	2	2024

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 3341 / *Network Tactical Common Data Link*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Delta Critical Design Review (CDR) Full Capability (FC)	1	2024	1	2024
Final Technical Data Package (TDP)	2	2024	2	2024
EDM CVN 72 Installation	1	2021	1	2022
Low Rate Initial Production (LRIP) 1 Delivery	3	2023	3	2023
TRR Tech Eval	4	2024	4	2024
Tech Evaluation / IOT&E and Report	4	2024	3	2025
PAA LRIP Installations	3	2023	3	2026
Initial Operational Capability (IOC)	3	2025	3	2025
ATO 2	2	2024	2	2024
EDM Full Capability (FC) Delivery	3	2024	3	2024
LRIP 2 Delivery	1	2024	1	2024
Production Readiness Review (PRR)	2	2024	2	2024
EDM Full Capability Installation	4	2024	1	2025
LRIP 3 Delivery	3	2025	3	2025
FRP Installations	3	2026	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 4011 / *Naval Coastal Warfare Surv and C4I Sys*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
4011: *Naval Coastal Warfare Surv and C4I Sys*	2.699	2.795	2.141	3.314	-	3.314	3.246	3.010	3.057	3.106	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Navy Expeditionary project supports the Navy Expeditionary Combat Command (NECC) mission to detect, deter or interdict potential threats to DoN assets using agile, modular and scalable technology. NECC units have a number of current and future Command, Control, Communications, Computers & Intelligence (C4I) technological requirements for Tactical/Command Operations Center, tactical vehicles, combatant craft, and dismounted personnel. NECC operations require units to maintain effective command and control, develop and display a common tactical picture, and share intelligence and current operational information with higher headquarters, subordinate units, joint forces and coalition allies. Small, Medium and Large Scale Communication Systems (LSCS) are the C4I hub for the NECC; Navy Enterprise Tactical Command and Control (NETC2) is the converged LSCS baseline. Future C4I research and development include enhanced information transport, network cyber security posture, cloud-based architecture, assured communications in denied environments along with agility and mobility. Funding also supports testing and evaluation of cyber security issues associated with obsolescence of network items and if not addressed will impact the ability of the Program Office to maintain system accreditation under Risk Management Framework (RMF) revoking multiple LSCS assets authority to connectivity on the Department of Defense Information Network (DoDIN). Efforts are in alignment with NECC's strategic Expeditionary Warfare Improvement Program (EXWIP) Integrated Priority Capability List (IPCL) priorities and maintain alignment with greater DoD initiatives, such as Joint Information Environment (JIE), Mission Partner Environment (MPE) in order to maintain interoperability and drive down DoN enterprise costs.

The future of large scale communications assets such as Navy Enterprise Tactical Command and Control (NETC2) (V) 1 and 2, Expeditionary Carry-on Network (ExCON), Assured Command and Control (AC2), will be converging to a Common Expeditionary and Shore Baseline culminating in a single RMF Authority to Operate (ATO). Next generation air, surface and subsurface surveillance systems, as well as enhanced C4I capabilities, are required to meet operational objectives. Future technologies are being evaluated as enabling capabilities to expand situational awareness, providing additional tactical decision aids to the local area commander. Future C4I research and development efforts will be identified within NECC strategic Expeditionary Warfare Improvement Program (EXWIP) Integrated Priority Capability List (IPCL) priorities to increase agility, mobility and network security posture. Additional efforts will be driven by greater DoD initiatives, such as JIE Inc II, in order to maintain interoperability and drive down DoN enterprise costs.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: NECC C4ISR Modernization	2.795	2.141	3.314	0.000	3.314
Articles:	-	-	-	-	-
FY 2022 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 4011 / *Naval Coastal Warfare Surv and C4I Sys*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Evaluating technologies to support migration to Department of Defense cloud environments. Expanding capabilities of common infrastructure to increase speed to capability through containerization technologies and utilization of Development, Security, and Operations (DevSecOps) in order to rapidly deliver mission tailored applications and cloud based services. Implementing software defined wide area network (SD-WAN) technologies to increase cyber posture. ***FY 2023 Base Plans:*** Continue to evaluate technologies to support migration to Impact level 6 (IL6) and Impact Level 7 (IL7) cloud environments. Keep expanding capabilities of common infrastructure to increase speed to capability through containerization technologies and utilization of DevSecOps in order to rapidly deliver mission tailored applications and cloud based services. Develop Tier 1 capabilities to support multi-cloud environments. Additionally, C4I Arsenal will participate in military exercises to prove concept and timing requirements can be met. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Increase of $1.173 million from FY22 to FY23 is associated with development of Tier 1 capabilities to support multi-cloud environments.					
Accomplishments/Planned Programs Subtotals	2.795	2.141	3.314	0.000	3.314

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Funding supports an evolutionary acquisition strategy supporting the dynamically evolving rapid action mission of Navy Expeditionary Forces. Small, Medium and Large Scale Communication Systems (LSCS) funding will align LSCS to the Deployable Joint Command and Control (DJC2) product baseline. The project will continuously analyze operational
utilization of the systems and will roll analysis results into periodic system upgrades to address cyber security vulnerabilities, obsolescence, and maximize operational effectiveness. The intent of this strategy is to drive down development, production, and logistics costs, while leveraging technologies developed for other agencies to increase the capabilities of Navy Expeditionary Forces. The baseline configuration for Large Scale Communication Systems (LSCS) is the Navy Enterprise Tactical Command and Control (NETC2), a system scalable to Adaptive Force Package (AFP) levels. Efforts include development of capabilities based on emergent

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 4011 / *Naval Coastal Warfare Surv and C4I Sys*

requirements, operational feedback, alignment with Dept. of Defense initiatives such as Joint Information Environment (JIE) / Mission Partner Environment, and identification through strategic Expeditionary and Warfare Improvement Program (EXWIP) Integrated Priority Capability List (IPCL) priorities to include reach back for tactical vehicles and craft, blue force tracking, tactical data link capability, and sensor technologies in support of surveillance and reconnaissance missions.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 4011 / *Naval Coastal Warfare Surv and C4I Sys*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering - Expeditionary	WR	NSWC : PANAMA CITY, FL	0.740	0.763	Nov 2020	0.586	Nov 2021	0.895	Nov 2022	-		0.895	Continuing	Continuing	Continuing
Hardware/Software Development	C/CPAF	GTRI : ATLANTA, GA	1.150	1.193	Nov 2020	0.912	Nov 2021	1.425	Nov 2022	-		1.425	Continuing	Continuing	Continuing
		Subtotal	1.890	1.956		1.498		2.320		-		2.320	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation - Expeditionary	WR	NSWC : PANAMA CITY, FL	0.580	0.587	Nov 2020	0.458	Nov 2021	0.696	Nov 2022	-		0.696	Continuing	Continuing	Continuing
		Subtotal	0.580	0.587		0.458		0.696		-		0.696	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support - Expeditionary	WR	NIWC PAC : SAN DIEGO, CA	0.229	0.252	Nov 2020	0.185	Nov 2021	0.298	Nov 2022	-		0.298	Continuing	Continuing	Continuing
		Subtotal	0.229	0.252		0.185		0.298		-		0.298	Continuing	Continuing	N/A

	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	2.699	2.795		2.141		3.314		-		3.314	Continuing	Continuing	N/A

Remarks

Prior Year cost data is provided under PE 0604230N Project 4011

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 4011 / *Naval Coastal Warfare Surv and C4I Sys*

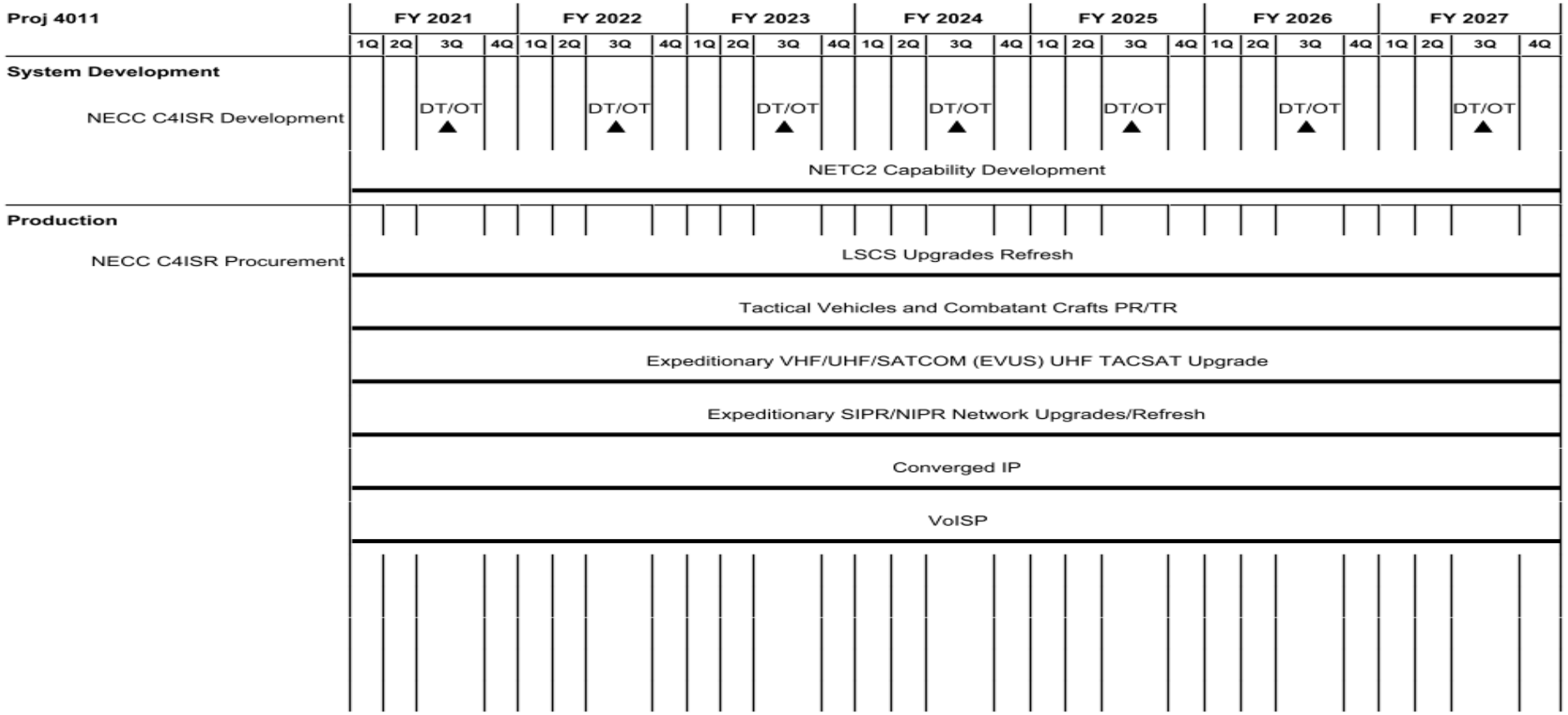

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 4011 / *Naval Coastal Warfare Surv and C4I Sys*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 4011				
System Development: NECC C4ISR Development: Navy C4I Test and Certification Events FY21	3	2021	3	2021
System Development: NECC C4ISR Development: Navy C4I Test and Certification Events FY22	3	2022	3	2022
System Development: NECC C4ISR Development: Navy C4I Test and Certification Events FY23	3	2023	3	2023
System Development: NECC C4ISR Development: Navy C4I Test and Certification Events FY24	3	2024	3	2024
System Development: NECC C4ISR Development: Navy C4I Test and Certification Events FY25	3	2025	3	2025
System Development: NECC C4ISR Development: Navy C4I Test and Certification Events FY26	3	2026	3	2026
System Development: NECC C4ISR Development: Navy C4I Test and Certification Events FY27	3	2027	3	2027
System Development: NECC C4ISR Development: NETC2 Capability Development	1	2021	4	2027
Production: NECC C4ISR Procurement: LSCS Upgrades Refresh	1	2021	4	2027
Production: NECC C4ISR Procurement: Tactical Vehicles and Combatant Crafts PR/TR	1	2021	4	2027
Production: NECC C4ISR Procurement: Expeditionary VHF/UHF/SATCOM (EVUS) UHF TACSAT Upgrade	1	2021	4	2027
Production: NECC C4ISR Procurement: Expeditionary SIPR/NIPR Network Upgrades/Refresh	1	2021	4	2027
Production: NECC C4ISR Procurement: Converged IP	1	2021	4	2027
Production: NECC C4ISR Procurement: VoISP	1	2021	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.000	3.861	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.861
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Multifunctional Information Distribution System (MIDS) program office is the Performing Activity for the Navy (Lead Service for Department of Defense (DOD)), Link 16 capability and consists of two (2) product lines, MIDS Low Volume Terminal (LVT) (legacy hardware defined radio) and MIDS Joint Tactical Radio System (JTRS) (software defined radio). MIDS-LVT effort is a cooperative development program between France, Germany, Italy, Spain, and the United States with United States joint service participation (Navy, Army, Air Force), and has provided over 11,000 terminals to 48 Nations providing interoperability with North Atlantic Treaty Organization (NATO) and coalition partners. The Department of Defense (DoD) established the program to design, develop, and deliver low volume, lightweight tactical information system terminals for U.S. and allied fighter aircraft, bombers, helicopters, ships, and ground sites. MIDS-LVT significantly increases force effectiveness and minimizes hostile actions and friend-on-friend engagements. MIDS-LVT Block Upgrade 2 was executed as an ECP and provides the critical upgrades to the MIDS-LVT Terminal to enable U.S., Coalition and International partners' ability to meet the National Security Agency (NSA) mandated timelines for Cryptographic Modernization (CM) and the National Telecommunications and Information Agency (NTIA) and Federal Aviation Agency (FAA) mandated timelines for Frequency Remapping (FR).

MIDS JTRS, designed as a Pre-Planned Product Improvement (P3I) and executed as an Engineering Change Proposal (ECP) to the production MIDS-LVT configuration, and is fully compatible with MIDS-LVT. The MIDS JTRS Core Terminal achieved Full Production and Fielding (FP&F) in March 2012. It facilitated the JTRS incremental approach for fielding advanced JTRS transformational networking capability and transformed the MIDS-LVT into a 4-channel, Software Communications Architecture (SCA) compliant, Joint Tactical Radio. A form-fit-function replacement to MIDS-LVT, MIDS JTRS also adds three programmable 2 Megahertz (MHz) to 2 Gigahertz (GHz) channels capable of hosting the JTRS legacy and networking waveforms. In addition to Link 16, Tactical Air Navigation (TACAN), and voice functionality found in MIDS-LVT, MIDS JTRS has four channels and adds capabilities such as Link 16 Enhanced Throughput (ET), Link 16 FR, software programmability, CM, and Four Net Concurrent Multi-Netting with Concurrent Contention Receive (CMN-4).

MIDS JTRS Tactical Targeting Network Technology (TTNT), is a block upgrade to the MIDS JTRS CMN-4 Terminal providing an Internet Protocol-based networking capability on tactical aircraft. TTNT is a low latency, high throughput waveform that has the capability to support data exchange between fast-moving tactical aircraft, weapons, and unmanned aircraft, in addition to air, land, and sea-based command and control nodes, in a variety of air-to-air and air-to-ground missions including time sensitive targeting, air warfare, close air support, non-traditional ISR, and anti-surface warfare. TTNT and MIDS JTRS CMN-4 are critical Tactical Data Link capabilities and directly supports Naval Integrated Fire Control (NIFC) capability requirements. These capabilities provide Joint Airborne Network-Tactical Edge functionality to run advanced mission applications in a cross-platform/cross-domain tactical network enterprise.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022
Congressional Add: Multifunciontal Information Distribution System Acceleration	3.861	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 9999 / *Congressional Adds*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022
FY 2021 Accomplishments: Began the software and firmware development to add Ethernet and algorithms to the MIDS JTRS terminals for advancement and improvement (MIDS Modernization capabilities). Awarded the development contract to allow Ethernet capabilities into MIDS JTRS. Began incorporating new algorithms into the operating environment. ***FY 2022 Plans:*** N/A		
Congressional Adds Subtotals	3.861	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Multifunctional Information Distribution System Joint Tactical System (MIDS JTRS) development was initiated as a major modification to the MIDS-LVT using an Engineering Change Proposal to the existing production contracts. The U.S. prime contractors from the MIDS-LVT program, Data Link Solutions (DLS) and Viasat Inc., cooperatively designed and developed each of the MIDS JTRS terminal variants and Block Upgrade 2 for MIDS-LVT. The U.S. implemented a continuous competition strategy between DLS and ViaSat that will be maintained throughout the MIDS-LVT and MIDS JTRS production phases. This strategy has been successfully used on all MIDS variants.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 9999 / *Congressional Adds*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SW/FW Dev Contract	C/CPFF	DLS : Cedar Rapids, IA	0.000	2.867	Jul 2021	0.000		0.000		-		0.000	0.000	2.867	-
SW/FW Dev Contract	C/CPFF	ViaSat : San Diego, CA	0.000	0.994	Jul 2021	0.000		0.000		-		0.000	0.000	0.994	-
		Subtotal	0.000	3.861		0.000		0.000		-		0.000	0.000	3.861	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	3.861		0.000		0.000		-		0.000	0.000	3.861	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 9999 / *Congressional Adds*

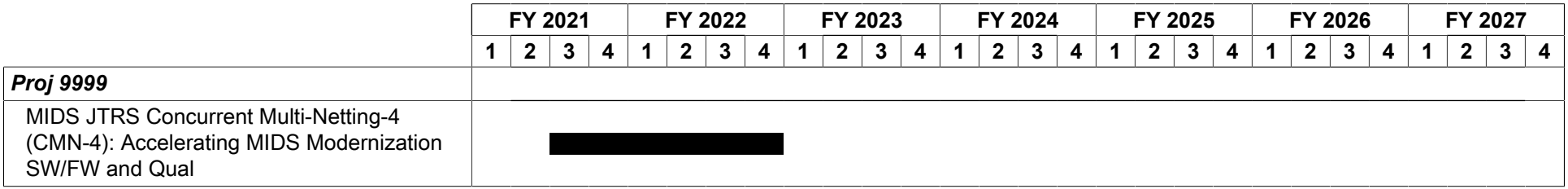

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT TACTICAL RADIO SYSTEM (JTRS)*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 9999				
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): Accelerating MIDS Modernization SW/FW and Qual	3	2021	4	2022