Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy												Date: March 2019
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0205604N / *Tactical Data Links*							
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
Total Program Element	1,189.059	75.523	88.979	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,353.561
2126: *ATDLS Integration*	796.366	19.612	31.295	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	847.273
3020: *MIDS/JTRS*	306.593	38.876	43.798	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	389.267
3341: *Network Tactical Common Data Link*	86.100	17.035	13.886	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	117.021
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 554												

Note

Funding for the following projects has been realigned out of PE 0205604N into PE 0604280N as part of Program Element Consolidation starting in FY20: Project 3020 (MIDS/JTRS), Project 2126 (ATDLS Integration) and Project 3341 (Network Tactical Common Data Link).

A. Mission Description and Budget Item Justification

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); and Network Tactical Common Data Link (NTCDL) Program which provides the ability to transmit/ receive real-time intelligence, surveillance, and reconnaissance (ISR) data simultaneously from multiple sources (surface, air, sub-surface, man-portable), and exchange command and control information (voice, data, imagery, and full motion video (FMV)) across dissimilar joint, service, coalition, and civil networks. The program element also develops and tests tactical data link capability to distribute other data types to new and existing platforms.

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. 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 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).

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy	Date: March 2019
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*

The Multifunctional Information Distribution System (MIDS) program office is the 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. The current development program for LVT is the Block Upgrade 2 (BU2) effort designed to meet the Cryptographic Modernization (CM) and Frequency Remapping (FR) mandates required for all US and international users which occurs inside the FYDP. MIDS-LVT BU2 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 CM and the National Telecommunications and Information Agency (NTIA) and Federal Aviation Agency (FAA) mandated timelines for 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, completed qualification in the first quarter of fiscal year 2010. 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 the Link 16, Tactical Air Navigation, and voice functionality found in MIDS-LVT, MIDS JTRS has four channels and adds capabilities such as Link 16 Enhanced Throughput, Link 16 Frequency Re-mapping, software programmability, cryptographic modernization, and Four Net concurrent multi-netting with concurrent contention receive (CMN-4). MIDS Modernization Increment 1 will be fielded with all MIDS JTRS CMN4 terminals. The upgrade of the Link 16 transceiver will provide more capacity to host software and firmware and increase multi-path use.

The TTNT waveform is the next waveform to be added to the MIDS JTRS terminal. 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 capability integration into the MIDS JTRS 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 TTNT capability will be in addition to the CMN-4 terminal providing Link 16 capability, and the ability to simultaneously participate in four Link 16 Nets.

MIDS JTRS Tactical Targeting Network Technology (TTNT), is a block upgrade to the MIDS JTRS CMN-4 Terminal provides 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 capability integration into the MIDS JTRS 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy	Date: March 2019
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*

Network Tactical Common Data Link (NTCDL) provides the ability to transmit/receive real-time intelligence, surveillance, and reconnaissance (ISR) data simultaneously from multiple sources (air, surface, sub-surface, and 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 the capability to support multiple, simultaneous, networked operations with in-service Common Data Link (CDL) equipped aircraft (e.g., F/A-35, P-3, and MH- 60R) in addition to next-generation manned and unmanned platforms (e.g., P-8 Poseidon, Triton, MQ-25 (Stingray), small tactical unmanned aircraft systems (STUAS), and Fire Scout). NTCDL benefits the Fleet by providing a horizon extension for line-of-sight systems for use in time-critical strike missions.

Network Tactical Common Data Link (NTCDL) High Capacity Backbone (HCB) efforts support Joint Aerial Layer Network-Maritime (JALN-M) System of Systems development, integration, and testing. JALN-M is the Navy implementation of the JALN architecture which provides assured communications in an Anti-Access/Area Denial (A2/AD) environment. With disruption or loss of Space tier communications, JALN-M establishes and/or restores connectivity with the HCB tier, the Distribution Access Range Extension (DARE) tier, and the Transition tier. JALN-M is a robust, assured communications capability providing joint connectivity via the HCB and Navy platform connectivity via a pseudo satellite DARE capability. Flight test demonstration completed in FY18.

B. Program Change Summary ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	89.852	104.696	101.709	-	101.709
Current President's Budget	75.523	88.979	0.000	-	0.000
Total Adjustments	-14.329	-15.717	-101.709	-	-101.709
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-15.717			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.994	0.000			
• SBIR/STTR Transfer	-2.335	0.000			
• Program Adjustments	0.000	0.000	-11.122	-	-11.122
• Rate/Misc Adjustments	0.000	0.000	-90.587	-	-90.587
• Congressional Directed Reductions Adjustments	-10.000	-	-	-	-

Change Summary Explanation

ATDLS Integration (2126):
Funding was realigned to the new PE (0604280N/2126 ATDLS Integration) starting in FY20. The changes are listed in the new PE.

MIDS (3020):
Funding was realigned to the new PE (0604280N/3020 MIDS/JTRS) starting in FY20. The changes are listed in the new PE.

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy	Date: March 2019
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0205604N *I Tactical Data Links*

NTCDL (3341):
Funding was realigned to the new PE (0604280N/3341 Network Tactical Common Data Link) starting in FY20. The changes are listed in the new PE.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy											Date: March 2019	
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205604N / *Tactical Data Links*				Project (Number/Name) 2126 / *ATDLS Integration*			
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
2126: *ATDLS Integration*	796.366	19.612	31.295	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	847.273
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Funding has been realigned out of PE 0205604N Project 2126, into PE 0604280N as part of RDTEN PE Consolidation starting in FY20.

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 consists of Dynamic Network Management (DNM), Cryptographic Modernization (CM) and Frequency Remapping (FR). C2P Technology Refresh (TR) and C2P Interoperability will modernize legacy C2P processing components to address C2P component obsolescence and fleet interoperability issues. C2P is a critical component in the Aegis Ballistic Missile Defense (BMD) architecture. C2P Modernization is a service life extension program required to sustain C2P support of Naval Integrated Air and Missile Defense (IAMD) and BMD capabilities. Link 22 development and integration into the C2P allows for standard data link communication with Coalition forces. LMMT will upgrade commercial off-the-shelf hardware and modernize software operating systems. LMMT will improve TDL performance monitoring and management in support of the Integrated Air & Missile Defense (IAMD) and Ballistic Missile Defense (BMD) missions.

Link 16 Network Increment II: (1) Develop and implement CM and FR mandates as a product improvement into Link 16 terminals and integration into shore sites, ship (NGC2P, Next Generation Command and Control Processor), 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 Link 16 terminals, (4) qualification of replacement shipboard Link 16 antenna to replace end of life existing antenna. JTIDS, MOS CM/FR, and MOS Mod efforts are in support of NSA and Joint Chiefs of Staff mandates for the modernization of the cryptographic algorithm used in Link 16 terminals and the Department of Defense and the Department of Transportation Memorandum of Agreement for the implementation of a capability to remap any 14 of the existing 51 frequencies in order to remain operable within the United States and its possessions. All Link 16 terminals are required to have this capability to support Link 16 Interoperability.

Command and Control Processor (C2P) Technology Refresh (TR) funds a product improvement effort to the legacy C2P hardware components and allows legacy C2P software to execute on modern processors, thereby extending its effective service life. Product improvement efforts will include C2P software development, hardware integration, update of the C2P development environment to promote sustainability and testing to include follow-on test and evaluation (FOT&E) of the C2P TR baseline. Software development contractors will transform C2P legacy software code with modern supportable software code. "C2P, Phase 3", Increment 2 is planned to include Link 22, which is a modernized replacement for Link 11, providing beyond line of sight (BloS) tactical data communication system utilizing fixed frequency or frequency

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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hopping techniques in the high frequency (HF) (3-30 Megahertz (MHz)) and/or the ultra high frequency (UHF) (225-400 MHz) bands. C2P Modernization is required to address Cybersecurity challenges, Operational Availability (Ao) challenges and sustainment issues associated with the current C2P system configurations. C2P Modernization funds the transition of the C2P's legacy 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 and to address growing cybersecurity and Ao 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 providing gateway functions for multiple Tactical Data Link (TDL) interface, routing and display of TDL data to include Link 16 and Joint Range Extension (JRE). LMMT is also capable of performing TDL network planning, monitoring, management, data forwarding between the TDLs and providing tactical data to the 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.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Link 16 Network Increment II - Cryptographic Modernization (CM) / Frequency Remapping (FR)	9.083	10.937	0.000	0.000	0.000
Articles:	1	10	-	-	-
FY 2019 Plans: Conduct government testing and correct identified deficiencies in JTIDS CM/FR LRIP units including shipboard integration. Initiate JTIDS CM/FR shipboard integrated testing including operational test. Continue preparations for JTIDS CM/FR Fielding Decision Review (FDR). Complete testing of the integration of JTIDS CM/FR with the E-2C. Continue MOS CM/FR integration testing and deficiency testing of MOS unit using MIDS LVT CM/FR updated terminals and HPA switch. Correct identified deficiencies in MOS CM/FR and MIDS LVT CM/FR terminal. Initiate MOS CM/FR integrated shipboard testing including operational test. Continue vendor testing of MOS Mod EMD units. Continue government testing and conduct at sea integrated and operational testing of MOS Mod. Correct identified deficiencies in MOS Mod and MIDS JTRS terminals. Continue preparations for MOS Mod FDR fielding decision review. Continue to integrate and test MIDS JTRS CMN terminal into MOS Modernization terminal. Identify MIDS JTRS CMN terminal deficiencies to be corrected by MIDS Program Office Continue Link 16 Network integration logistics support. Conduct Fielding Decision for Link 16 Antenna.					
FY 2020 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
FY20 funding has been realigned to PE 0604280N Project 2126 as part of PE Consolidation. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program decrease is due to realigning funds as part of PE Consolidation. FY20 justification and change explanation is provided under PE 0604280N Project 2126.					
Title: Command and Control Processor (C2P) ***Articles:*** ***FY 2019 Plans:*** Continue Link 22 development. Initiate and complete Link 22 IV&V testing. Continue C2P Modernization systems engineering and initiate software design activities. Commence C2P software Modernization Design and Development and document the Functional and Allocated baselines. Document and approve C2P Modernization development efforts through the conduct and completion of the System Requirement Review (SRR), Software Specification Review (SSR) and prepare for the Preliminary Design Review (PDR) and Critical Design Review (CDR). ***FY 2020 Base Plans:*** FY20 funding has been realigned to PE 0604280N Project 2126 as part of PE Consolidation. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program decrease is due to realigning funds as part of PE Consolidation. FY20 justification and change explanation is provided under PE 0604280N Project 2126.	8.696 -	18.707 -	0.000 -	0.000 -	0.000 -
Title: Link Monitoring and Management Tool (LMMT) ***Articles:*** ***FY 2019 Plans:*** Complete CD2 Fielding Technical Review (FTR) and the Fielding Decision Review (FDR). Prepare for Build Technical review (BTR) and then Build Decision (BD) for CD 3.	1.833 -	1.651 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 2126 / *ATDLS Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Complete CD 2 maintenance release and to conduct IVV. ***FY 2020 Base Plans:*** FY20 funding has been realigned to PE 0604280N Project 2126 as part of the PE Consolidation. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program decrease is due to realigning funds as part of PE Consolidation. FY20 justification and change explanation is provided under PE 0604280N Project 2126.					
Accomplishments/Planned Programs Subtotals	19.612	31.295	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• OPN/2614: *Adv Tact Data Link Sys (ATDLS)*	34.873	30.085	52.753	-	52.753	66.952	82.338	57.660	61.728	Continuing	Continuing
• RDTEN/0604280N/2126: *Adv Tact Data Link Sys (ATDLS)*	0.000	0.000	18.201	-	18.201	22.862	21.206	22.611	23.063	Continuing	Continuing

Remarks

D. Acquisition Strategy

The JTIDS Crypto Modernization (CM)/Frequency Remapping (FR) development and low rate initial production (LRIP) contract was awarded to Data Link Solutions (DLS). The associated production contract for JTIDS CM/FR will be competitively awarded to support procurement after decision review. Multifunctional Information Distribution System (MIDS) on Ship (MOS) CM/FR will be accomplished through integration of the MIDS LVT Block Upgrade 2 (BU) into the existing MOS cabinet and development of a High-Power Amplifier (HPA) bypass switch. HPA bypass switch development was conducted by SSC Pacific. Production of HPA Switch will be performed by SSC PAC for existing MOS systems. To address the WIN 10 implementation for the MOS system, a new MOS Terminal Controller hardware and software has been developed and will be 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 contract for production will be competitively awarded to extend the production period and increase capacity.

The C2P Technology Refresh (TR) and Link 22 development contract was awarded to Northrop Grumman. The Data Terminal Set (DTS) contract to support the Link 11/ Link 22 functions of the C2P system was awarded in August 2016. An existing IDIQ MAC contract will be used to procure initial TR units with a new ATDLS production contract planned for future procurements in FY 19 and beyond.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 2126 / *ATDLS Integration*

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 Space and Naval Warfare (SPAWAR) System Center (SSC).

E. Performance Metrics

Link 16 Network Dynamic Network Management (DNM): Successfully achieve initial operational capability. Successfully conduct full deployment decision review. Successfully complete operation test readiness review (OTRR). Successfully complete developmental test / operational test.

Link 16 Network Cryptographic Modernization: Successful implementation of updated cryptographic algorithm as specified by National Security Agency (NSA) certification in Joint Tactical Information Distribution System (JTIDS), Multifunctional Information Distribution System (MIDS) on Ship (MOS), and MOS Modernization (MOS Mod) Link 16 terminals.

Link 16 Network Frequency Remapping: Successful implementation of a frequency remapping capability as specified in Department of Defense/Department of Transportation Memorandum of Agreement regarding the 960-1215 MHz frequency band of 31 Dec 02 in Joint Tactical Information Distribution System (JTIDS), Multifunctional Information Distribution System (MIDS) on Ship (MOS) and MOS Modernization (MOS Mod) Link 16 Terminals.

Link 16 Antenna: Meet existing antenna performance specifications.

Link 16 Network Production Capability: Production shipboard Link 16 terminals available to meet new construction shipboard requirements.

Command and Control Processor (C2P): Successfully achieve C2P Technology Refresh fielding and thereby maintain operational availability.

Link 22: Successfully achieve Link 22 implementation fielding, meeting operational requirement.

LMMT: Successfully meet operational requirements and achieve fielding decision reviews (FDR) for Capability Drops 1, 2 and 3.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ATDLS Product Development and Integration	Various	Various : Various	436.906	0.000		0.000		0.000		-		0.000	0.000	436.906	387.088
Link 16 Network Development (JTIDS)	C/CPIF	DLS (BAE/ Rockwell) : Wayne, NJ	61.010	0.000		2.028	Oct 2018	0.000		-		0.000	0.000	63.038	Continuing
Link 16 Network E-2C Integration	WR	PMA 231 : Pax River, MD	11.284	2.154	Oct 2017	1.043	Oct 2018	0.000		-		0.000	0.000	14.481	Continuing
Link 16 Network Development (MOS MOD)	C/FPIF	DLS (BAE/ Rockwell) : Wayne, NJ	16.929	1.036	Oct 2017	1.630	Oct 2018	0.000		-		0.000	0.000	19.595	Continuing
Link 16 Network Integrated Logistics Support	C/CPFF	SeaPort-E : San Diego, CA	2.875	0.087	Oct 2017	0.023	Oct 2018	0.000		-		0.000	0.000	2.985	Continuing
Link 16 Network Technical Design Agents	C/CPFF	SeaPort-E : San Diego, CA	6.294	0.832	Oct 2017	0.734	Oct 2018	0.000		-		0.000	0.000	7.860	Continuing
Link 16 Network Systems Engineering	WR	SPAWARSYSCEN PAC : San Diego, CA	54.866	1.301	Oct 2017	1.270	Oct 2018	0.000		-		0.000	0.000	57.437	Continuing
C2P Development (Link 22)	C/IDIQ	Northrop Grumman : San Diego, CA	5.108	1.811	Nov 2017	0.000		0.000		-		0.000	0.000	6.919	Continuing
C2P Systems Engineering	WR	SPAWARSYSCEN PAC : San Diego, CA	22.038	0.000	Oct 2017	2.927	Oct 2018	0.000		-		0.000	0.000	24.965	Continuing
C2P IV&V	WR	SPAWARSYSCEN PAC : San Diego, CA	12.719	2.534	Oct 2017	3.288	Oct 2018	0.000		-		0.000	0.000	18.541	Continuing
C2P Development & Integration	WR	SPAWARSYSCEN PAC : San Diego, CA	15.900	1.069	Oct 2017	8.645	Oct 2018	0.000		-		0.000	0.000	25.614	Continuing
LMMT Development	WR	SPAWARSYSCEN PAC : San Diego, CA	9.206	0.000		0.000		0.000		-		0.000	0.000	9.206	Continuing
LMMT Systems Engineering	WR	SPAWARSYSCEN PAC : San Diego, CA	4.797	0.543	Oct 2017	1.237	Oct 2018	0.000		-		0.000	0.000	6.577	Continuing
LMMT IV&V	WR	SPAWARSYSCEN PAC : San Diego, CA	1.779	0.259	Oct 2017	0.000		0.000		-		0.000	0.000	2.038	-
		Subtotal	661.711	11.626		22.825		0.000		-		0.000	0.000	696.162	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / *Tactical Data Links*	Project (Number/Name) 2126 / *ATDLS Integration*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks															
FY20 cost data is provided under PE 0604280N Project 2126															

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ATDLS Test and Evaluation	Various	Various : Various	65.171	0.000		0.000		0.000		-		0.000	0.000	65.171	65.171
Link 16 Network T&E	WR	SPAWARSYSCEN PAC : San Diego, CA	12.439	3.512	Dec 2017	3.826	Dec 2018	0.000		-		0.000	0.000	19.777	Continuing
C2P T&E	WR	SPAWARSYSCEN PAC : San Diego, CA	2.251	1.846	Nov 2017	2.251	Oct 2018	0.000		-		0.000	0.000	6.348	Continuing
LMMT T&E	WR	SPAWARSYSCEN PAC : San Diego, CA	3.200	0.515	Oct 2017	0.000		0.000		-		0.000	0.000	3.715	Continuing
		Subtotal	83.061	5.873		6.077		0.000		-		0.000	0.000	95.011	N/A

Remarks

FY20 cost data is provided under PE 0604280N Project 2126

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ATDLS System Engineering Support	Various	Various : Various	35.988	0.000		0.000		0.000		-		0.000	0.000	35.988	35.988
Link 16 Network Program Management Support	C/CPFF	SeaPort-E : San Diego, CA	5.437	0.161	Oct 2017	0.385	Oct 2018	0.000		-		0.000	0.000	5.983	Continuing
C2P Program Management Support	C/CPFF	SeaPort-E : San Diego, CA	7.472	0.716	Nov 2017	0.777	Nov 2018	0.000		-		0.000	0.000	8.965	Continuing
C2P Systems Engineering Support	C/CPFF	SeaPort-E : San Diego, CA	1.176	0.720	Nov 2017	0.817	Nov 2018	0.000		-		0.000	0.000	2.713	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / *Tactical Data Links*	Project (Number/Name) 2126 / *ATDLS Integration*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
LMMT Program Management Support	C/CPFF	SeaPort-E : San Diego, CA	1.521	0.516	Oct 2017	0.414	Nov 2018	0.000		-		0.000	0.000	2.451	Continuing
		Subtotal	51.594	2.113		2.393		0.000		-		0.000	0.000	56.100	N/A

Remarks

FY20 cost data is provided under PE 0604280N Project 2126

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	796.366	19.612		31.295		0.000		-		0.000	0.000	847.273	N/A

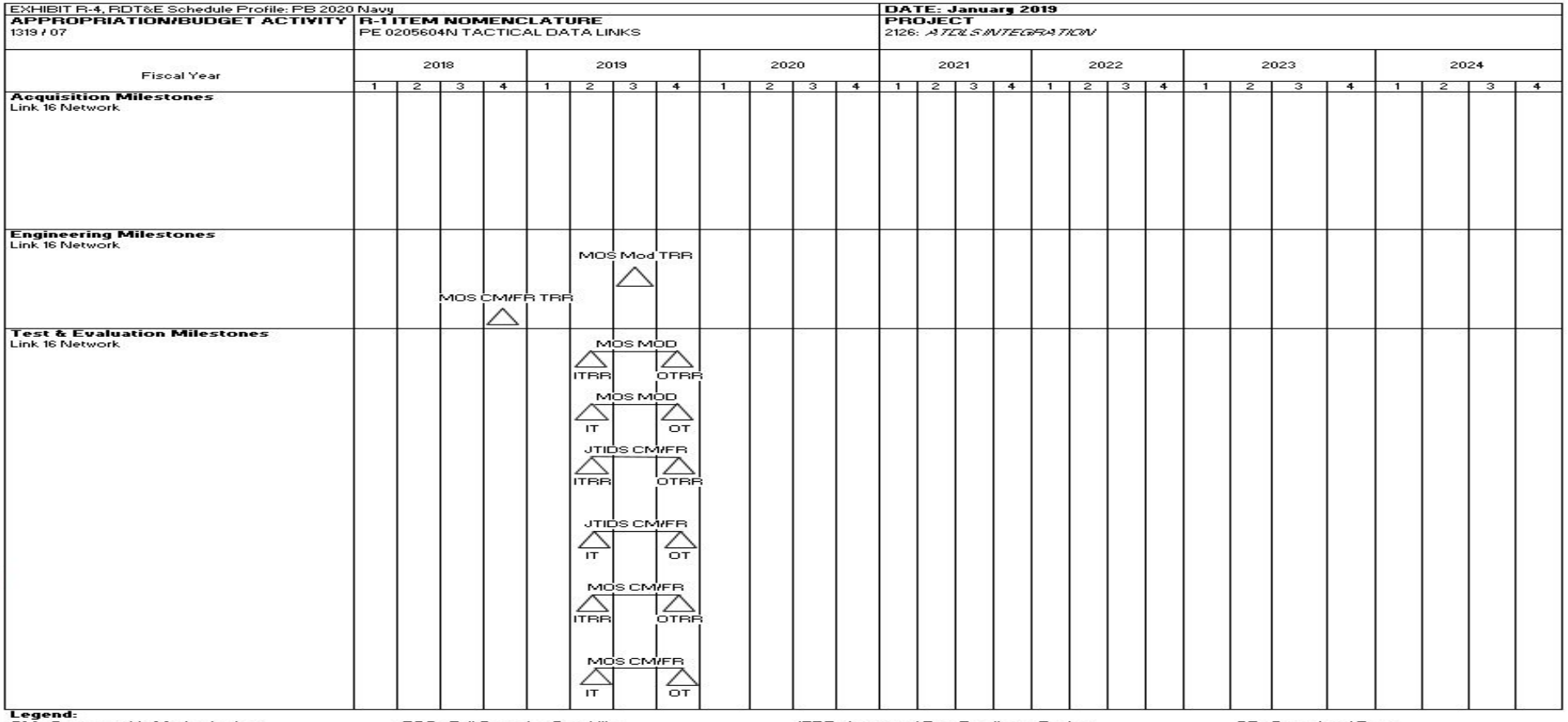
Remarks

FY20 cost data is provided under PE 0604280N Project 2126

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 2126 / *ATDLS Integration*

EXHIBIT R-4, RDT&E Schedule Profile: PB 2020 Navy

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	DATE: January 2019
1319 / 07	PE 0205604N TACTICAL DATA LINKS	PROJECT 2126: ATDLS INTEGRATION



Legend:

CM - Cryptographic Modernization
DNM - Dynamic Network Management
DT - Developmental Test
DTRR - Developmental Test Readiness Review
FDR - Fielding Decision Review
FOC - Full Operating Capability
FOT&E - Follow-on Operational Test & Evaluation
FR - Frequency Remapping
IOC - Initial Operating Capability
IT - Integrated Test
ITRR - Integrated Test Readiness Review
IV&V - Independent Verificaiton and Validation
JTIDS - Joint Tactical Information Distribution System
MOS - MIDS On Ship
MOS MOD - MOS Modernization
OT - Operational Test
OTRR - Operational Test Readiness Review
PRR - Production Readiness Review
TRR - Test Readiness Review

Efforts in FY20 and out are funded under PE 0604280N Proj 2126

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 2126 / *ATDLS Integration*

EXHIBIT R-4, RDT&E Schedule Profile: PB 2020 Navy		DATE: Januarg 2019
APPROPRIATION/BUDGET AC 1319 / 07	R-1 ITEM NOMENCLATURE PE 0205604N TACTICAL DATA LINKS	PROJECT 2126: ATDLS INTEGRATION

Fiscal Year	2018				2019				2020				2021				2022				2023				2024			
	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
Acquisition Milestones C2P																												
Engineering Milestones C2P	LINK 22		Software Build 3				SRR																					
Test & Evaluation Milestones C2P					LINK 22		IV&V																					

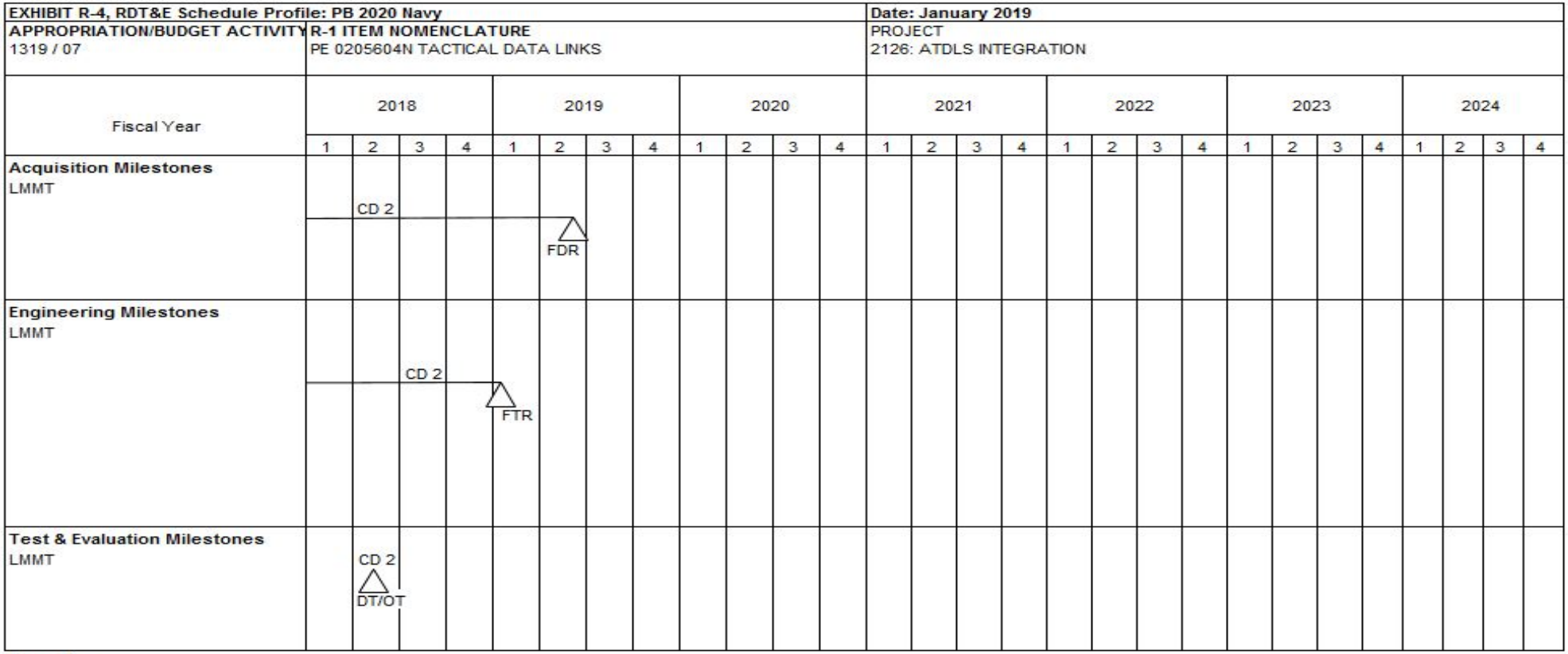
Legend:

C2P - Command and Control Processor
CDR - Critical Design Review
DT - Developmental Test
DTRR - Developmental Test Readiness Review
FDR - Fielding Decision Review
FOTE - Follow on Test and Evaluation
IOC - Initial Operating Capability
IV&V - Independent Verificaiton and Validation
OTRR - Operational Test Readiness Review
PDR - Preliminary Design Review
SRR - System Requirement Review

Efforts in FY20 and out are funded under PE 0604280N Proj 2126

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 2126 / *ATDLS Integration*

EXHIBIT R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: January 2019
APPROPRIATION/BUDGET ACTIVITY 1319 / 07	R-1 ITEM NOMENCLATURE PE 0205604N TACTICAL DATA LINKS	PROJECT 2126: ATDLS INTEGRATION



Legend:

BD - Build Decision	CD - Capability Drop	FDR - Fielding Decision Review	FTR - Fielding Technical Review	OT - Operational Test
BTR - Build Technical Review	DT - Developmental Test	FOC - Full Operational Capability	IOC - Initial Operating Capability	OTRR - Operational Test Readiness Review

Efforts in FY20 and out are funded under PE 0604280N Proj 2126

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 2126 / *ATDLS Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2126				
LMMT CD 2 Developmental/Operational Testl	2	2018	2	2018
C2P Link 22 Software Build 3	3	2018	3	2018
Link 16 MOS CM/FR Test Readiness Review	4	2018	4	2018
C2P Link 22 Independed Verification and Validation	1	2019	4	2019
LMMT CD 2 Fielding Technical Review	1	2019	1	2019
Link 16 MOS Mod Test Readiness Review	3	2019	3	2019
Link 16 MOS Mod Integrated Test Readiness Review	2	2019	2	2019
Link 16 MOS Mod Integrated Test	2	2019	2	2019
Link 16 JTIDS CM/FR Integrated Test Readiness Review	2	2019	2	2019
Link 16 JTIDS CM/FR Integrated Test	2	2019	2	2019
Link 16 MOS CM/FR Integrated Test Readiness Review	2	2019	2	2019
Link 16 MOS CM/FR Integrated Test	2	2019	2	2019
LMMT CD 2 Fielding Decision Review	2	2019	2	2019
C2P Modernization Development System Requirement Review	3	2019	3	2019
Link 16 MOS Mod Operational Test Readiness Review	4	2019	4	2019
Link 16 MOS Mod Operational Test	4	2019	4	2019
Link 16 JTIDS CM/FR Operational Test Readiness Review	4	2019	4	2019
Link 16 JTIDS CM/FR Operational Test	4	2019	4	2019
Link 16 MOS CM/FR Operational Test Readiness Review	4	2019	4	2019
Link 16 MOS CM/FR Operational Test	4	2019	4	2019

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy											Date: March 2019	
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205604N / *Tactical Data Links*				Project (Number/Name) 3020 / *MIDS/JTRS*			
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
3020: *MIDS/JTRS*	306.593	38.876	43.798	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	389.267
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 554

Note

Funding has been realigned out of PE 0205604N Project 3020, into PE 0604280N as part of RDTEN PE Consolidation starting in FY20.

A. Mission Description and Budget Item Justification

The Multifunctional Information Distribution System (MIDS) program office is the 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. The current development program for LVT is the Block Upgrade 2 (BU2) effort designed to meet the Cryptographic Modernization (CM) and Frequency Remapping (FR) mandates required for all US and international users which occurs inside the FYDP. MIDS-LVT BU2 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 CM and the National Telecommunications and Information Agency (NTIA) and Federal Aviation Agency (FAA) mandated timelines for 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 Fielding & Production (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 Frequency Re-mapping (FR), software programmability, Cryptographic Modernization (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 provides 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 capability integration into the MIDS JTRS 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.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3020 / *MIDS/JTRS*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: MIDS	38.876	43.798	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans: Award the MIDS JTRS Link 16 hardware transceiver upgrade full development contract (formerly MIDS Modernization Increment 2) for systems engineering requirements analysis, a joint industry/Government System Functional Review (SFR), further Link 16 transceiver design efforts, and porting of the Link 16 waveform into the new hardware transceiver. Conduct the Preliminary Design Review (PDR) to approve the Allocated Baseline (ABL), upgrade Link 16 transceiver hardware, systems integration, and continue software/firmware updates to allow the new hardware to use the Link 16 waveform and allow for the use of multi-path in the MIDS JTRS terminal. Complete MIDS JTRS Concurrent Multi-Netting with Concurrent Contention Receive (CMN-4) post Block Cycle 3 (BC3) software builds to support E-2D and MIDS on Ship (MOS) Modernization (MOS MOD) CMN-4 fielding. Complete TTNT Contractor First Article Qualification testing and began Government First Article Qualification testing. Begin developmental testing of the TTNT terminal, external powered amplifiers and high powered amplifiers for E-2D and EA-18G platform requirements. Continue MIDS systems engineering, communication security, IA and program management support. Continue with Link 16 Waveform development fixes and updates.					
FY 2020 Base Plans: FY20 funding has been realigned to PE 0604280N Project 3020 as part of PE Consolidation.					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement: Program decrease is due to realigning funds as part of PE Consolidation. FY20 justification and change explanation is provided under PE 0604280N Project 3020 (JT Tact Radio Sys (JTRS)/MIDS/JTRS).					
Accomplishments/Planned Programs Subtotals	38.876	43.798	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3020 / *MIDS/JTRS*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• RDTE/0604280N/3020: *MIDS/JTRS*	0.000	0.000	39.214	-	39.214	31.198	29.480	30.515	31.673	Continuing	Continuing

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.

E. Performance Metrics

The MIDS-LVT and MIDS JTRS programs are employing mature, software-defined radio technologies and developing hundreds of thousands of lines of code. These software metrics are used to quantify the quality and progress of each software product's development over time. MIDS employs earned value metrics to monitor contract performance on its prime development contracts, as required.

MIDS-LVT: The 11 performance measures are: Link 16 Waveform Compatibility, Link 16 Message Standards, Link 16 IER; Interoperability, Link 16 Coded Error Message Probability, Weight/Volume, Link 16 JAM Resistance, Link 16 Voice Channels, Link 16 Communication Range Data, Link 16 Communications Range Voice, Link 16 Relay.

MIDS JTRS: The 15 performance measures are: Link 16 Waveform Compatibility, Link 16 Waveform Standards, Link 16 Coded Error Message Probability, Link 16 Jamming Resistance, Link 16 Communication Range-Data, Link 16 Communications Range-Voice, Link 16 Relay, Start-up (Terminal Single Channel), Operational Communications - Passive Synchronization, Operational Communications - Automatic Message Acknowledgement, Operational Communications - Multi-Net, Operational Communications, Crypto Control, Navigation.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3020 / *MIDS/JTRS*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development Prior Years	Various	Various : Various	254.622	0.000		0.000		0.000		-		0.000	0.000	254.622	254.622
BU2 Integration	C/CPFF	Lockheed Martin : Bethesda, MD	0.500	1.500	Nov 2017	0.000		0.000		-		0.000	0.000	2.000	2.000
TTNT Development Contract (L Band)	C/CPFF	DLS : Cedar Rapids, IA	10.831	11.245	Nov 2017	2.361	Oct 2018	0.000		-		0.000	0.000	24.437	Continuing
TTNT Development Contract (L Band)	C/CPFF	ViaSat : San Diego, Ca	1.020	4.861	Apr 2018	1.886	Jan 2019	0.000		-		0.000	0.000	7.767	Continuing
Link 16 Waveform Development	WR	SSC PAC : San Diego, CA	3.093	0.551	Oct 2017	0.775	Nov 2018	0.000		-		0.000	0.000	4.419	Continuing
MIDS Mod Inc 2 Risk Reduction	C/CPFF	DLS : Cedar Rapids, IA	2.747	4.397	Nov 2017	0.000		0.000		-		0.000	0.000	7.144	5.367
MIDS Mod Inc 2 Risk Reduction	C/CPFF	ViaSat : San Diego, CA	1.779	4.324	Jan 2018	0.000		0.000		-		0.000	0.000	6.103	3.684
Investigation Reports	C/CPFF	DLS : Cedar Rapids, IA	0.381	0.894	Nov 2017	0.150	Dec 2018	0.000		-		0.000	0.000	1.425	1.556
Investigation Reports	C/CPFF	Viasat : San Diego	0.067	0.735	Feb 2018	0.000		0.000		-		0.000	0.000	0.802	0.792
High Powered Amplifier	C/CPFF	TBD : TBD	0.000	0.300	Sep 2018	0.000		0.000		-		0.000	0.000	0.300	0.223
Link 16 hardware upgrade	C/CPFF	DLS : Cedar Rapids, IA	0.000	0.000		17.945	Feb 2019	0.000		-		0.000	0.000	17.945	Continuing
Link 16 hardware upgrade	C/CPFF	ViaSat : San Diego, CA	0.000	0.000		11.963	Feb 2019	0.000		-		0.000	0.000	11.963	Continuing
MIDS JTRS BU2/BC0/1/2 (ER3A&3B) (MIDS JTRS BC3+)	C/CPFF	DLS : Cedar Rapids, IA	0.000	4.804	Mar 2018	1.872	Mar 2019	0.000		-		0.000	0.000	6.676	4.804
MIDS JTRS BU2/BC0/1/2 (ER3A&3B) (MIDS JTRS BC3+)	C/CPFF	ViaSat : San Diego, CA	0.000	0.883	Mar 2018	0.403	Mar 2019	0.000		-		0.000	0.000	1.286	0.883
MIDS JTRS TTNT Development Problem Reports	C/CPFF	TBD : TBD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	0.321
MIDS JTRS TTNT Reliability Growth	C/CPFF	TBD : TBD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	1.100

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / *Tactical Data Links*	Project (Number/Name) 3020 / *MIDS/JTRS*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	275.040	34.494		37.355		0.000		-		0.000	0.000	346.889	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Modeling and Simulation	MIPR	MIT Lincoln Labs : Lexington, MA	0.000	0.000		0.500	Nov 2018	0.000		-		0.000	0.000	0.500	-
Multi-level security analysis	WR	NAVAIR : China Lake, Ca	0.000	0.393	Nov 2017	0.000		0.000		-		0.000	0.000	0.393	0.393
Modeling and Simulation	WR	NAVAIR : China Lake, Ca	3.874	0.808	Mar 2018	0.400	Jan 2019	0.000		-		0.000	0.000	5.082	Continuing
		Subtotal	3.874	1.201		0.900		0.000		-		0.000	0.000	5.975	N/A

Remarks

Consolidated Automated Support System (CASS) Test Program Sets (TPS)

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Eval Prior Years	Various	Various : Various	8.144	0.000		0.000		0.000		-		0.000	0.000	8.144	8.144
MIDS JTRS CMN-4/MIDS Mod GFAQT and JTEL LAB	WR	SSC : San Diego, CA	1.237	0.248	Dec 2017	0.205	Oct 2018	0.000		-		0.000	0.000	1.690	Continuing
COMOPTEVFOR	MIPR	COMOPTEVFOR : Norfolk, VA	0.000	0.056	Jul 2018	0.038	Jan 2019	0.000		-		0.000	0.000	0.094	0.056
TTNT DT/OT Support	WR	TBD : TBD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	1.600
JTEL Testing Support	C/CPFF	G-2 : San Diego, CA	0.095	0.042	Nov 2017	0.095	Mar 2019	0.000		-		0.000	0.000	0.232	Continuing
		Subtotal	9.476	0.346		0.338		0.000		-		0.000	0.000	10.160	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3020 / *MIDS/JTRS*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Services Prior Years	Various	Various : Various	1.201	0.000		0.000		0.000		-		0.000	0.000	1.201	1.201
Systems Engineering Support	MIPR	MITRE : Bedford, MA	6.210	1.493	Nov 2017	0.806	Jan 2019	0.000		-		0.000	0.000	8.509	Continuing
Government Engineering Support TTNT	WR	SSC : San Diego, CA	8.155	0.816	Oct 2017	2.072	Dec 2018	0.000		-		0.000	0.000	11.043	Continuing
Govt Program Support NIFC-CA	WR	NAVAIR : Pax River, MD	0.939	0.030	Nov 2017	0.058	Nov 2018	0.000		-		0.000	0.000	1.027	0.969
Infomation Assurance	MIPR	CERDEC : Aberdeen Proving Ground, MD	0.000	0.000		0.268	Jan 2019	0.000		-		0.000	0.000	0.268	-
COR and Logistics Support	WR	SSC : Charleston, SC	0.076	0.075	Nov 2017	0.064	Nov 2018	0.000		-		0.000	0.000	0.215	Continuing
Information Assurance	MIPR	NSA : Fort Meade, MD	0.051	0.055	Mar 2018	0.000		0.000		-		0.000	0.000	0.106	Continuing
Contractor Engineering/ Programmatic Support	C/CPFF	Sentek : San Diego, Ca	1.179	0.270	Sep 2018	0.682	Nov 2018	0.000		-		0.000	0.000	2.131	Continuing
ARL SIPRNET Connection	MIPR	ARL : Adelphi, MD	0.096	0.096	Jan 2018	0.101	Jan 2019	0.000		-		0.000	0.000	0.293	Continuing
Contractor Program Management and Financial Support	C/CPFF	G2 : San Diego, CA	0.296	0.000		1.154	Nov 2018	0.000		-		0.000	0.000	1.450	Continuing
		Subtotal	18.203	2.835		5.205		0.000		-		0.000	0.000	26.243	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	306.593	38.876		43.798		0.000		-		0.000	0.000	389.267	N/A

Remarks

FY20 cost data is provided under PE 0604280N Project 3020.

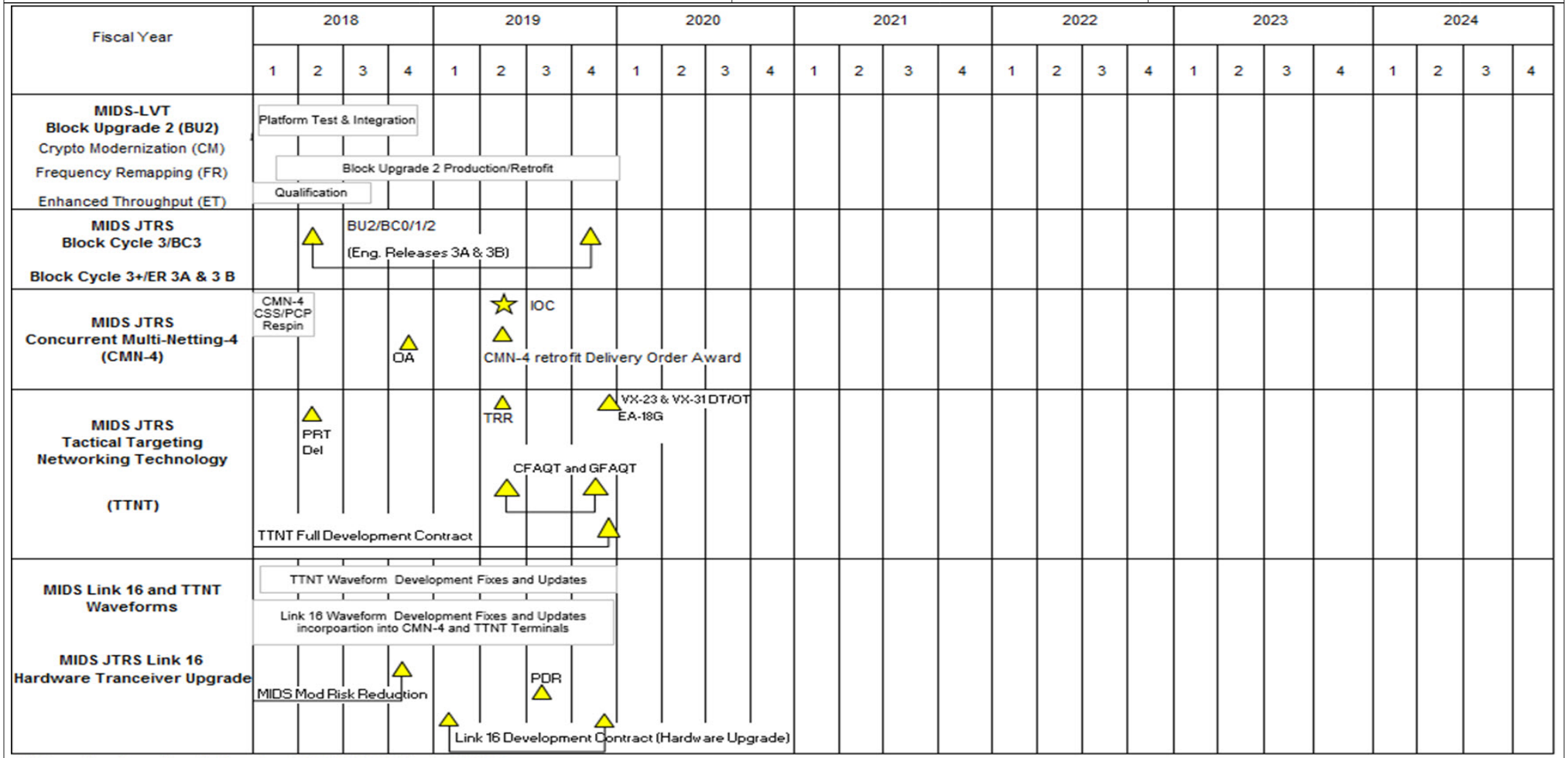
LCM - MIDS-LVT Crypto Module WF - Waveform BU2 - Block Upgrade 2 BC3 - Block Cycle 3
TTNT - Tactical Targeting Network Technology CSS/PCP - Cryptographic Sub System/Protected Core Processor
ER0F - Engineering Release 0F ER0G - Engineering Release 0G DLS - Data Link Solutions
NIFC-CA - Naval Integrated Fire Control - Counter Air PDR - Preliminary Design Review CDR - Critical Design Review
TRR - Test Readiness Review DT - Development Test IR - Information Repository JTEL - Joint Test and Evaluation Lab

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / *Tactical Data Links*	Project (Number/Name) 3020 / *MIDS/JTRS*	

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract

CFAQT - Contractor First Article Qualification Test GFAQT - Gov't First Article Qualification Test

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3020 / *MIDS/JTRS*



FY20 and out are funded under PE 0604280N Project 3020.

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3020 / *MIDS/JTRS*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MIDS				
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Qualification and Certification/FAQT	1	2018	3	2018
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Block Upgrade 2 Production/Retrofit	1	2018	4	2019
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Platform Test and Integration	1	2018	4	2018
MIDS JTRS Block Cycle 3 (BC3): Block Cycle 3+ (ER 3A & 3B)	2	2018	4	2019
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): Operational Assessment	4	2018	4	2018
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): CMN-4 Retrofit Delivery Order	2	2019	4	2019
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): CMN-4 CSS/PCP Respin	1	2018	2	2018
MIDS JTRS Tactical Targeting Networking Technology (TTNT): TTNT Full Development Contract	1	2018	4	2019
MIDS JTRS Tactical Targeting Networking Technology (TTNT): PRT Deliveries	2	2018	2	2018
MIDS JTRS Tactical Targeting Networking Technology (TTNT): CFAQT and GFAQT	2	2019	4	2019
MIDS JTRS Tactical Targeting Networking Technology (TTNT): TTNT Technolgy Readiness Review (TRR)	2	2019	2	2019
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Developmental Test/ Operational Assessment	4	2019	4	2019
MIDS Link 16 and TTNT Waveform: Link 16 Waveform Development Fixes and Updates	1	2018	4	2019
MIDS Link 16 and TTNT Waveform: TTNT Waveform Development Fixes and Updates	1	2018	4	2019
MIDS JTRS Link 16 Hardware Tranceiver Upgrade: MIDS Modernization (Now Link 16 hardware) Spec Development/Risk Reduction	1	2018	4	2018
MIDS JTRS Link 16 Hardware Tranceiver Upgrade: Link 16 hardware Full Development Effort	2	2019	4	2019
MIDS JTRS Link 16 Hardware Tranceiver Upgrade: MIDS Mod PDR	3	2019	3	2019

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / *Tactical Data Links*	Project (Number/Name) 3341 / *Network Tactical Common Data Link*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
3341: *Network Tactical Common Data Link*	86.100	17.035	13.886	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	117.021
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Funding has been realigned out of PE 0205604N Project 3341, into PE 0604280N as part of RDTEN PE Consolidation starting in FY20.

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. F/ A-35, P-3, and 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.

Network Tactical Common Data Link (NTCDL) High Capacity Backbone (HCB) efforts support Joint Aerial Layer Network-Maritime (JALN-M) System of Systems development, integration, and testing. Efforts included the development of capabilities to integrate shipboard NTCDL terminals with the HCB in an Anti-Access/Area Denial (A2/AD) environment. JALN-M is the Navy implementation of the JALN-M architecture which provides assured communications in any environment. Flight test demonstration completed in FY18.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Network Tactical Common Data Link (NTCDL)	16.535	13.886	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: NTCDL is the only High Data Rate (HDR), Line of Sight (LOS) solution delivering Intelligence, Surveillance, and Reconnaissance (ISR), sensor control information and unmanned aircraft system (UAS) command and control. NTCDL uses Joint Department of Defense specifications for Common Data Link (CDL) waveforms and LOS networks across the allocated CDL frequency spectrum. New technical specifications require increasing number of simultaneous CDL links to support increasing number of CDL/ISR platforms and missions. The software for NTCDL is developed by both contractor and government. The contractor software development is responsible for the internal control of the NTCDL hardware whereas the Government Furnished					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3341 / *Network Tactical Common Data Link*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Software (GFS) is responsible for interfacing with various external networks (e.g. Automated Digital Network System (ADNS)) and users (e.g. Consolidated Afloat Networks and Enterprise Services (CANES)). EDM development is a multi-year effort with delivery planned in FY 2021. ***FY 2019 Plans:*** FY 2019 plans include the continued development of the three major components of Network Tactical Common Data Link's (NTCDL) Engineering Design Model (EDM): 1) the contractor developed Link Control Subsystem (LCS) software, 2) Government Furnished Software (GFS), and 3) the contractor developed hardware subsystems (Phased Array Antenna (PAA), End Cryptographic Unit (ECU), Below Deck Equipment (BDE) racks, and radio terminals). The prime vendor will begin porting, integrating, and testing Common Data Link (CDL) waveforms. Conduct Critical Design Review (CDR) with the vendor to review and approve the final engineering product baseline. Begin documentation development for the Software Development Plan (SDP) and subsystem Interface Design Descriptions (IDD). Continue development of test plans to support future Developmental Test and Operational Assessment (DT/OA). Continue logistics efforts, including provisioning conference, Navy Training Systems Plan (NTSP), and Maintenance demonstration (M-Demo). Complete acquisition documentation updates to the Cost Analysis Requirements Document (CARD) and start the development of the Capabilities Production Document (CPD). Completion of incremental capability of government developed software (implementation of software interface and security and configuration settings) and external networks application integration testing (i.e. Consolidated Afloat Networks and Enterprise Service (CANES) and Automated Digital Network System (ADNS)). Conduct an In-Process Review (IPR) for delivery of GFS incremental capability. Continue the Risk Management Framework (RMF) process in support of cybersecurity requirements. ***FY 2020 Base Plans:*** FY20 funding has been realigned to PE 0604280N Project 3341 as part of PE Consolidation. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program decrease is due to realigning funds as part of PE Consolidation. FY20 justification and change explanation is provided under PE 0604280N Project 3341.					
Title: Network Tactical Common Data Link (NTCDL) High Capacity Backbone (HCB)	0.500	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3341 / *Network Tactical Common Data Link*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Description: Network Tactical Common Data Link (NTCDL) High Capacity Backbone (HCB) efforts support Joint Aerial Layer Network-Maritime (JALN-M) System of Systems development, integration, and testing. Efforts include the development of capabilities to integrate shipboard NTCDL terminals with the HCB in an Anti-Access/ Area Denial (A2/AD) environment. ***FY 2019 Plans:*** N/A ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	17.035	13.886	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• OPN/2950: *NTCDL*	0.000	0.000	0.000	-	0.000	0.000	20.052	20.456	20.865	Continuing	Continuing
• RDTEN/0604280N/3341: *NTCDL*	0.000	0.000	32.432	-	32.432	35.837	7.861	6.156	6.279	Continuing	Continuing

Remarks

D. Acquisition Strategy

NTCDL will utilize the evolutionary acquisition approach for: surface, air, sub-surface, man-portable.

E. Performance Metrics

Conformance to meet Joint Interoperability Test Command (JITC) Certification requirements for CDL waveforms.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / *Tactical Data Links*	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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	Various	Various : Various	20.862	0.000		0.000		0.000		-		0.000	0.000	20.862	-
NTCDL Product Development	C/CPIF	BAE Systems, Int : Wayne, NJ	22.364	10.705	Dec 2017	6.848	Dec 2018	0.000		-		0.000	0.000	39.917	-
NTCDL HCB Development	WR	SPAWARSYSCTR : San Diego, CA	5.393	0.500	Nov 2017	0.000		0.000		-		0.000	0.000	5.893	-
NTCDL Software Development	WR	SPAWARSYS : San Diego, CA	3.074	1.868	Nov 2017	2.177	Nov 2018	0.000		-		0.000	0.000	7.119	-
NTCDL Software Development	C/IDIQ	Technology Unlimited Group : San Diego, CA	0.000	1.021	Jan 2018	0.814	Nov 2018	0.000		-		0.000	0.000	1.835	-
		Subtotal	51.693	14.094		9.839		0.000		-		0.000	0.000	75.626	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Systems Engineering	WR	SPAWARSYSCTR : San Diego, CA	14.072	0.925	Oct 2017	1.853	Oct 2018	0.000		-		0.000	0.000	16.850	-
NTCDL Systems Engineering	C/IDIQ	Technology Unlimited Group : San Diego, CA	9.546	0.000		0.554	Oct 2018	0.000		-		0.000	0.000	10.100	-
		Subtotal	23.618	0.925		2.407		0.000		-		0.000	0.000	26.950	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Test and Evaluation	WR	SPAWARSYSCTR : San Diego, CA	4.821	0.948	Oct 2017	0.680	Oct 2018	0.000		-		0.000	0.000	6.449	-
NTCDL Test and Review	MIPR	JITC : Fort Huachuca, AZ	0.514	0.015	Jan 2018	0.018	Feb 2019	0.000		-		0.000	0.000	0.547	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / *Tactical Data Links*	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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Waveform certification	MIPR	COMOPTEVFOR : Norfolk, VA	0.375	0.303	Aug 2018	0.085	Feb 2019	0.000		-		0.000	0.000	0.763	-
		Subtotal	5.710	1.266		0.783		0.000		-		0.000	0.000	7.759	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	WR	SPAWARSYSCTR : San Diego, CA	1.000	0.000		0.000		0.000		-		0.000	0.000	1.000	-
Program Management Support	C/CPFF	BAH : San Diego, CA	4.079	0.750	Feb 2018	0.857	Nov 2018	0.000		-		0.000	0.000	5.686	-
		Subtotal	5.079	0.750		0.857		0.000		-		0.000	0.000	6.686	N/A

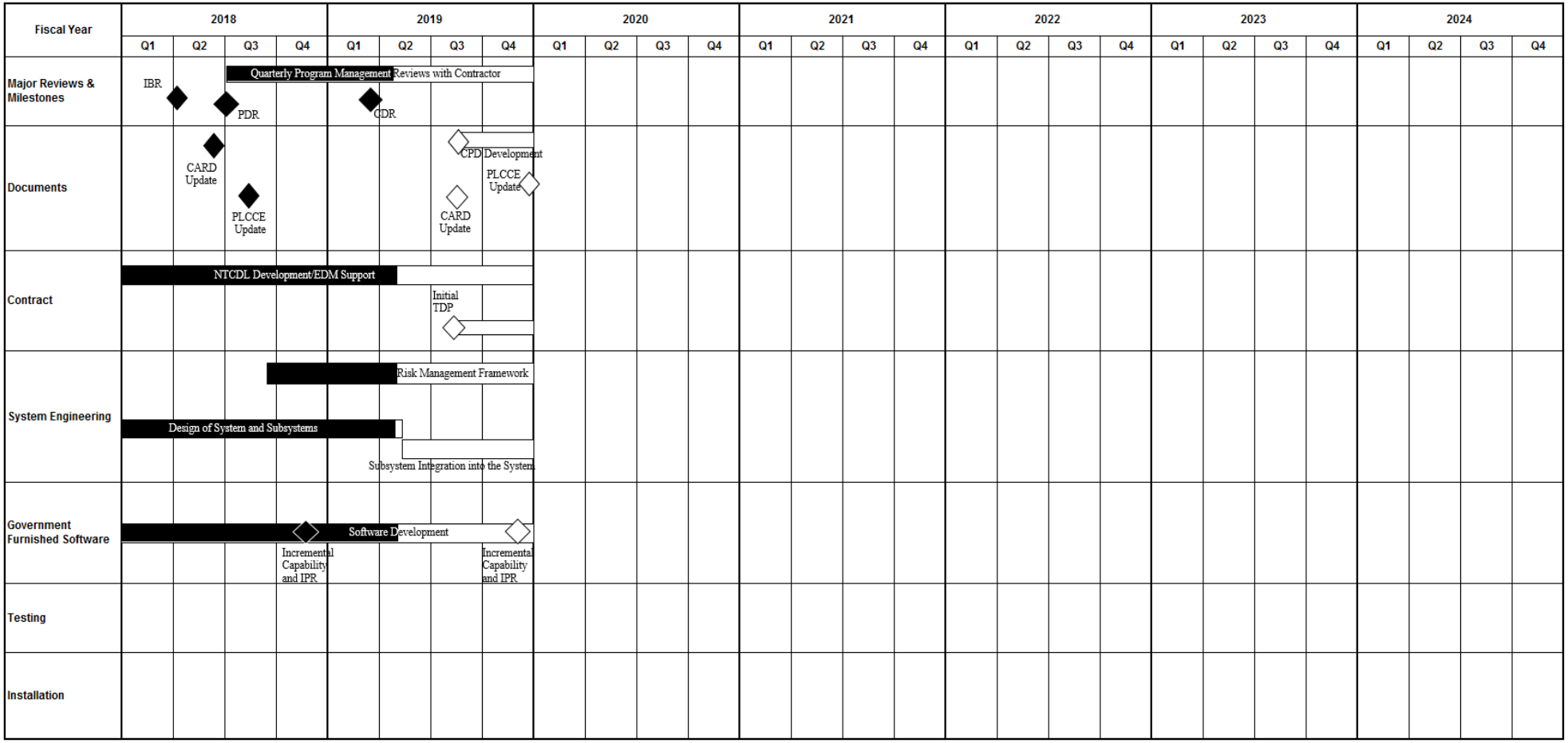
	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	86.100	17.035		13.886		0.000		-		0.000	0.000	117.021	N/A

Remarks

FY20 cost data is provided under PE 0604280N Project 3341.

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3341 / *Network Tactical Common Data Link*

NTCDL



• Note: Efforts in FY20 and out are funded under PE 0604280N Project 3341 (new PE/Project).

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3341 / *Network Tactical Common Data Link*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3341				
NTCDL - Design of System and Subsystems	1	2018	2	2019
NTCDL - Government Furnished Software (GFS) Development	1	2018	4	2019
NTCDL - Development Contract	1	2018	4	2019
NTCDL - Initial Baseline Review (IBR)	2	2018	2	2018
NTCDL - Cost Analysis Requirements Document (CARD) Update 1	2	2018	2	2018
NTCDL - Preliminary Design Review (PDR)	3	2018	3	2018
NTCDL - Program Life Cycle Cost Estimate (PLCCE) Update 1	3	2018	3	2018
NTCDL - Risk Management Framework (RMF)	3	2018	4	2019
NTCDL - Quarterly Program Management Reviews with Contractor	3	2018	4	2019
NTCDL - Incremental Capability and In-Process Review (IPR) 1	4	2018	4	2018
NTCDL - Critical Design Review (CDR)	1	2019	1	2019
NTCDL - Subsystem Integration into the System	2	2019	4	2019
NTCDL - Initial Technical Data Package (TDP)	3	2019	4	2019
NTCDL - CARD Update 2	3	2019	3	2019
NTCDL - Capability Production Document (CPD) Development	3	2019	4	2019
NTCDL - IPR 2	4	2019	4	2019
NTCDL - PLCCE Update 2	4	2019	4	2019