Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
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 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	929.114	138.549	124.785	89.852	-	89.852	111.709	114.399	87.183	57.269	Continuing	Continuing
2126: *ATDLS Integration*	714.997	44.137	37.995	23.338	-	23.338	25.049	25.752	26.318	26.832	Continuing	Continuing
3020: *MIDS/JTRS*	182.944	68.048	57.406	50.285	-	50.285	62.691	34.588	27.370	24.044	Continuing	Continuing
3341: *Network Tactical Common Data Link*	31.173	26.364	29.384	16.229	-	16.229	23.969	54.059	33.495	6.393	Continuing	Continuing

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

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.

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 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, Unmanned Carrier-Launched Airborne Surveillance and Strike (UCLASS) vehicle, small tactical unmanned aircraft systems (STUAS), and Fire Scout).

Joint Aerial Layer Network-Maritime (JALN-M) is the Navy implementation of the JALN architecture which provides assured communications in any environment, especially Anti-Access Area Denial (A2AD). With disruption or loss of Space tier communications, JALN-M establishes and/or restores connectivity with the High Capacity Backbone (HCB) tier, the Distribution Access Range Extension (DARE) tier, and the Transition tier in accordance with the JALN-M initial capabilities document (ICD) and the JALN-M analysis of alternatives (AoA) final report. JALN-M is a robust, assured communications capability providing joint connectivity via the HCB and Navy platform connectivity via a pseudo satellite DARE capability. JALN-M will use the extended data rate (XDR) waveform Navy Multiband Terminal (NMT) for intra-battle group DARE communications, a common data link (CDL) waveform for the HCB cross-link capability, and will leverage enhanced ultra high frequency/ high frequency (UHF/HF) waveforms for coalition connectivity. Furthermore, positioning, navigation, and timing (PNT) efforts related to the JALN-M pod will develop a prototype PNT subsystem that will be integrated into the JALN-M Pod, and will provide position and timing data to other Pod subsystems, both with and without Global

Positioning System (GPS) connectivity. The pod is being designed to operate in an A2AD environment, therefore, the pod HCB and XDR (NMT) subsystems need to be provided with PNT data in the absence of GPS, and the assured PNT subsystem will provide that data. The objective is to provide an alternative communication path in a denied environment, to support key information exchange requirement via Automated Digital Network System (ADNS). ADNS is the method by which Tactical Navy units transfer Internet Protocol (IP) data to Navy and Department of Defense communities on the Global Information Grid (GIG).

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).

The Multifunctional Information Distribution System (MIDS) program consists of two (2) products, MIDS Low Volume Terminal (LVT) and MIDS Joint Tactical Radio System (JTRS). MIDS-LVT provides Link 16 capability to platforms that were unable to employ Joint Tactical Information Distribution System (JTIDS) due to space and weight constraints. The MIDS-LVT effort is multinational (U.S., France, Germany, Italy, and Spain) with joint service participation (Navy, Army, and Air Force). 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 provides interoperability with North Atlantic Treaty Organization (NATO) users, significantly increasing force effectiveness and minimizing hostile actions and friend-on-friend engagements. The terminal design is smaller, lighter, highly reliable, interoperable with JTIDS class 2 terminal, compatible with all the participants' designated platforms, affordable, and re-configurable to individual user needs and budgets.

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). With CMN-4, MIDS JTRS also utilizes tactical targeting network technology for MIDS JTRS Naval Integrated Fire Control Counter Air and From the Air Advanced Tactical Data Links. These capabilities provide Joint Airborne Network-Tactical Edge functionality to run advanced mission applications in a cross-platform/cross-domain tactical network enterprise and the ability to simultaneously participate in four Link 16 nets.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
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*			
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	142.361	124.785	60.197	-	60.197
Current President's Budget	138.549	124.785	89.852	-	89.852
Total Adjustments	-3.812	0.000	29.655	-	29.655
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.813	0.000			
• Program Adjustments	0.001	0.000	29.000	-	29.000
• Rate/Misc Adjustments	0.000	0.000	0.655	-	0.655

Change Summary Explanation

ATDLS (2126):
Advanced Tactical Data Link Systems (ATDLS) RDT&E budget requirement decreases from FY 17 to FY 18 as the JTIDS CM/FR, MOS CM/FR and MOS Modernization efforts transition from development to test and as the C2P Technology Refresh effort transitions from development to production. Continued RDT&E budget will be required beyond FY 18 to complete Link 22 development and test, continue LMMT Capability drop 2-4 development and test and to commence C2P Modernization efforts.

Link 16 Network Increment II Cryptographic Modernization (CM)/Frequency Remapping (FR) (2126): MOS TRR added for additional schedule visibility.

Link 16 Network Increment II MOS Modernization (2126): As a result of delays to correct deficiencies found in the government furnished equipment, MOS MOD Test Readiness Review, Production Readiness Review, Developmental Test, Operational Test and Fielding Decision Review has been delayed.

Link 16 Network Increment II AS-4775 Antenna (2126): Deficiencies identified during qualification testing delayed the Fielding Decision Review.

Command and Control Processor (C2P) (2126): On 25 Aug 2015, the Milestone Decision Authority (MDA) issued an Acquisition Decision Memorandum (ADM) that eliminated Command and Control Processor (C2P) Increment 3, and directed execution of C2P Technology Refresh (TR) and Link 22 under the existing Increment 2 Program and the resultant schedule changes to remove Link 22 Milestone C, Link 22 Operational Assessment, Link 22 Full Deployment Decision Review.

Link Monitoring and Management Tool (LMMT) (2126): LMMT CD 3 Design and Development schedule delayed by two years to allow for stability and refinement of Link 22 requirements.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
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MIDS (3020):
MIDS RDTE from FY17 to FY18 decreases due to MIDS-LVT Block Upgrade 2 (BU2), MIDS JTRS testing events and the development of MIDS Modernization Increment 1 completing in FY17 and winding down in the beginning of FY18. In FY18, the MIDS Modernization Increment 2 (MMI2) full development begins after the risk reduction work is complete, and the MIDS JTRS CSS upgrade and TTNT development efforts continue into FY18.

MMI2 risk reduction work will complete in 2Q18 with the full development to begin in 3Q18. MMI2 PDR (1Q19), CDR (4Q19), and TRR (4Q19) were added to the schedule. MMI2 DT/Flight Testing (2Q21-1Q22), Verification and Validation (1Q22-3Q22) and the Engineering Release for fixes found in the DT testing (2Q22) were also added to the schedule.

Network Tactical Common Data Link (NTCDL) and High Capacity Backbone (HCB)(3341): FY18 request is for NTCDL product development, to include the development of two (2) the NTCDL Engineering Development Models (EDMs) and associated software. In addition the FY18 request includes airborne terminal research and development of High Capacity Backbone (HCB) and air-to-air relay activities in an Anti- Access/Area Denial (A2/AD) environment.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2126: *ATDLS Integration*	714.997	44.137	37.995	23.338	-	23.338	25.049	25.752	26.318	26.832	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 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.

FY 2018 Justification: Conduct government testing of the JTIDS CM/FR Low Rate Initial Production units and deficiency correction. Initiate government developmental and operational testing. Prepare for JTIDS CM/FR fielding decision review. The E-2C Program Office (PMA-231) will complete software modifications to the E-2C host processing required to implement the CM/FR capability. PMA 231 will complete E-2C government testing of JTIDS CM/FR. Funding will also provide for MOS CM/FR to complete integrated testing and deficiency correction of the MOS CM/FR with the High-Power Amplifier (HPA) Switch necessary for integration of the MIDS LVT Block Updated 2 configuration. MOS will initiate developmental testing to support follow on operational testing. To address continued production capability, fielding of CM/FR capability and extensibility to new Tactical Data Link capabilities, funding will provide for deficiency correction of MOS Mod and associated MIDS JTRS terminals, continued contractor integration and certification, and conduct of developmental and operational testing. JTIDS, and 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. Space and Naval Warfare (SPAWAR) Systems Centers will continue government testing and deficiency correction of the new Link 16 antenna, which will replace the obsolete AS-4127A.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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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 hopping techniques in the high frequency (HF) (3-30 Megahertz (MHz)) and/or the ultra high frequency (UHF) (225-400 MHz) bands.

C2P Modernization funds the transition of the C2P's legacy CMS-2Y software code to a modern software language. Transition to a modern software language is required to sustain the system software and to enable more affordable transition to new hardware processing components as a result of commercial off the shelf processor obsolescence.

FY 2018 Justification: Continue C2P Technology Refresh development and Link 22 software builds. Continue C2P Modernization engineering assessment.

Link Monitoring and Management Tool (LMMT) is a new 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.

FY 2018 Justification: Conduct CD 2 developmental testing / operational testing (DT/OT) and CD 2 fielding technical review (FTR).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Link 16 Network Increment II - Dynamic Network Management (DNM)	0.121	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Corrected JTIDS and MOS DNM test deficiencies.					
FY 2017 Plans: N/A					
FY 2018 Base Plans: N/A					
FY 2018 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Title: Link 16 Network Increment II - Cryptographic Modernization (CM) / Frequency Remapping (FR)	17.922	13.300	10.030	0.000	10.030
Articles:	5	6	11	-	11

FY 2016 Accomplishments:
Completed design and development work for JTIDS Air Integration of CM/FR for E-2C. Continued contractor qualification and certification of JTIDS CM/FR on engineering manufacturing development (EMD) unit. Initiated government testing of JTIDS CM/FR including shipboard integration. Developed HPA switch necessary for integration of MIDS LVT Block Update 2 (BU2) into MOS terminal. Initiated logistics documentation and conducted testing on HPA switch for MOS CM/FR. Initiated government testing on MOS Modernization terminal. Continued vendor development, qualification and certification of MOS Mod EMD units. Continued Link 16 Network integration logistics support.

FY 2017 Plans:
Complete contractor qualification and certification of JTIDS CM/FR on engineering manufacturing development (EMD) unit. Continue government testing and correct identified deficiencies in JTIDS CM/FR LRIP units including shipboard integration. Test the integration of JTIDS CM/FR with the E-2C. Develop MOS CM/FR software modifications necessary for shipboard integration in support of MIDS LVT BU2 changes being performed by the MIDS Program Office. Initiate integration and government testing of MOS CM/FR terminal with HPA switch. Continue logistics documentation on HPA switch for MOS CM/FR. Conduct vendor development, qualification and certification of MOS Mod EMD units. Conduct government testing on MOS Modernization terminal. Integrate and test MIDS JTRS common baseline terminal into MOS Modernization terminal. Continue Link 16 Network integration logistics support. Initiate at sea testing for Link 16 antenna. Correct deficiencies identified in MOS Mod and MIDS JTRS terminal.

FY 2018 Base Plans:
Continue government testing and correct identified deficiencies in JTIDS CM/FR LRIP units including shipboard integration. Conduct JTIDS CM/FR shipboard developmental testing. Initiate preparations for JTIDS CM/FR Fielding Decision Review (FDR). Continue to test the integration of JTIDS CM/FR with the E-2C. Conduct MOS CM/FR integration testing and deficiency testing of MOS unit using MIDS LVT CM/FR updated terminals and HPA switch. Continue logistics documentation on HPA switch for MOS CM/FR. Correct identified deficiencies in MOS CM/FR and MIDS LVT CM/FR terminal. Initiate MOS CM/FR developmental testing. Continue vendor testing of MOS Mod EMD units. Continue government testing and initiate at sea developmental and operational testing of MOS Mod. Correct identified deficiencies in MOS Mod and MIDS JTRS terminals. Initiate preparations for MOS Mod FDR fielding decision review. Continue to integrate and test MIDS JTRS common baseline

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
terminal into MOS Modernization terminal. Correct MIDS JTRS common baseline terminal deficiencies as identified. Continue Link 16 Network integration logistics support. Continue at sea testing for Link 16 antenna. ***FY 2018 OCO Plans:*** N/A					
Title: Command and Control Processor (C2P) ***Articles:*** ***FY 2016 Accomplishments:*** Continued C2P TR development. Conducted C2P Tech Refresh test readiness review (TRR) event and commenced independent verification and validation (IV&V) testing. Continued Link 22 development and integration and completed Link 22 Software Build 1. ***FY 2017 Plans:*** Continue C2P TR and Link 22 development. Complete C2P TR independent verification and validation (IV&V) testing. Conduct C2P Link 22 test readiness review (TRR) event and commence Link 22 IV&V testing. Complete Link 22 Software Build 2. Transform C2P legacy software to modern C2P software language for Build 1. ***FY 2018 Base Plans:*** Continue C2P Link 22 development. Perform C2P Link 22 Baseline TR host integration and at-sea testing with platform combat systems. Initiate and complete Link 22 Software Build 3. Conduct Link 22 IV&V testing. Commence Link 22 baseline integration testing with platform combat systems. Commence C2P Modernization hardware/software engineering. ***FY 2018 OCO Plans:*** N/A	19.783 -	19.357 -	11.318 -	0.000 -	11.318 -
Title: Link Monitoring and Management Tool (LMMT) ***Articles:*** ***FY 2016 Accomplishments:*** Began limited fielding for non-operational shore sites. Conducted CD 1 joint interoperability certifications. Conducted combined DT/OT for ashore and afloat CD 1. Conducted CD 2 build decision (BD) and commenced CD 2 development and testing efforts. ***FY 2017 Plans:***	6.311 -	5.338 -	1.990 -	0.000 -	1.990 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Conduct fielding decision review (FDR) / initial operating capability (IOC) for CD 1. Continue CD 2 build and initiate CD 2 DT/OT planning. ***FY 2018 Base Plans:*** Complete CD 2 DT/OT. Complete CD 2 fielding technical review (FTR). ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	44.137	37.995	23.338	0.000	23.338

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2614: *Adv Tact Data Link Sys (ATDLS)*	22.169	30.105	38.516	-	38.516	34.696	37.983	40.912	46.829	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. MOS CM/FR integration will require development of a High-Power Amplifier (HPA) bypass switch and an update to the MOS Terminal Controller software. HPA bypass switch development is being conducted by SSC Pacific. The MOS Terminal Controller software was contracted in FY16 with DLS. A follow-on MOS production and sustainment contract will be awarded for the production of MOS HPA switches. 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.

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 C2P production contract planned for future procurements in FY 18 and beyond.

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

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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and Naval Warfare (SPAWAR) System Center (SSC). Afloat fielding decision will be accomplished after capability drop (CD) developmental test/operational test (DT/OT).

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: FY 2018 Navy			Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ATDLS Product Development and Integration	Various	Various : Various	363.158	0.000		0.000		0.000		-		0.000	0.000	363.158	363.158
Link 16 Network Development (JTIDS)	C/CPIF	DLS (BAE/ Rockwell) : Wayne, NJ	61.010	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Link 16 Network Development (MOS)	C/FFP	DLS (BAE/ Rockwell) : Wayne, NJ	0.034	0.000		0.000		0.000		-		0.000	0.000	0.034	Continuing
Link 16 Network Development (MIDS LVT/ MIDS J)	WR	MIDS IPO : San Diego, CA	6.614	0.300	Jun 2016	0.000		0.000		-		0.000	0.000	6.914	Continuing
Link 16 Network E-2C Integration	WR	PMA 231 : Pax River, MD	5.896	2.774	Jan 2016	2.614	Oct 2016	2.464	Oct 2017	-		2.464	Continuing	Continuing	Continuing
Link 16 Network Development (MOS MOD)	C/FPIF	DLS (BAE/ Rockwell) : Wayne, NJ	14.287	2.194	Feb 2016	0.448	Oct 2016	1.183	Oct 2017	-		1.183	Continuing	Continuing	Continuing
Link 16 Network Software	WR	SPAWARSYSCEN PAC : San Diego, CA	3.375	0.408	Oct 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Link 16 Network Integrated Logistics Support	C/CPFF	SeaPort-E : San Diego, CA	2.552	0.220	Oct 2015	0.103	Nov 2016	0.102	Oct 2017	-		0.102	Continuing	Continuing	Continuing
Link 16 Network JTIDS Depot Repair Bench Update	WR	Warner Robins Air Logistics Center : Warner Robins, GA	0.000	4.596	Oct 2015	4.849	Dec 2016	0.000		-		0.000	0.000	9.445	-
Link 16 Network Technical Design Agents	C/CPFF	SeaPort-E : San Diego, CA	2.643	2.195	Oct 2015	1.456	Nov 2016	0.948	Oct 2017	-		0.948	0.000	7.242	-
Link 16 Network Systems Engineering	WR	SPAWARSYSCEN PAC : San Diego, CA	51.014	2.322	Oct 2015	1.530	Oct 2016	1.487	Oct 2017	-		1.487	Continuing	Continuing	Continuing
Link 16 Network IV&V	WR	SPAWARSYSCEN PAC : San Diego, CA	3.071	1.196	Oct 2015	0.380	Oct 2016	0.000		-		0.000	Continuing	Continuing	Continuing
C2P Development (Tech Refresh)	C/IDIQ	Northrop Grumman : San Diego, CA	19.944	1.500	Jun 2016	0.872	May 2017	0.000		-		0.000	Continuing	Continuing	Continuing
C2P Development (Link 22)	C/IDIQ	Northrop Grumman : San Diego, CA	2.736	1.500	Jul 2016	0.872	May 2017	2.224	Nov 2017	-		2.224	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
C2P Development Data Terminal Set	C/IDIQ	TBD : TBD	1.227	4.390	Jan 2016	1.647	Dec 2016	0.000		-		0.000	0.000	7.264	-
C2P Development (Interoperability)	WR	SPAWARSYSCEN PAC : San Diego, CA	6.599	0.000		0.000		0.000		-		0.000	0.000	6.599	Continuing
C2P Systems Engineering	WR	SPAWARSYSCEN PAC : San Diego, CA	18.074	0.690	Oct 2015	4.037	Oct 2016	1.029	Oct 2017	-		1.029	Continuing	Continuing	Continuing
C2P IV&V	WR	SPAWARSYSCEN PAC : San Diego, CA	5.186	3.691	Oct 2015	3.842	Oct 2016	3.424	Oct 2017	-		3.424	Continuing	Continuing	Continuing
C2P Development & Integration	WR	SPAWARSYSCEN PAC : San Diego, CA	4.043	6.151	Oct 2015	5.706	Oct 2016	1.211	Oct 2017	-		1.211	0.000	17.111	-
C2P Integrated Logistics Support	C/CPFF	SeaPort-E : San Diego, CA	4.259	0.250	Oct 2015	0.254	Nov 2016	0.000		-		0.000	Continuing	Continuing	Continuing
LMMT Integrated Logistics Support	C/CPFF	SeaPort-E : San Diego, CA	0.683	0.350	Oct 2015	0.350	Nov 2016	0.000		-		0.000	Continuing	Continuing	Continuing
LMMT Development	WR	SPAWARSYSCEN PAC : San Diego, CA	4.598	2.670	Oct 2015	1.938	Oct 2016	0.000		-		0.000	Continuing	Continuing	Continuing
LMMT Systems Engineering	WR	SPAWARSYSCEN PAC : San Diego, CA	2.797	1.000	Oct 2015	1.000	Oct 2016	0.650	Oct 2017	-		0.650	Continuing	Continuing	Continuing
LMMT IV&V	WR	SPAWARSYSCEN PAC : San Diego, CA	0.312	0.667	Oct 2015	0.800	Oct 2016	0.310	Oct 2017	-		0.310	Continuing	Continuing	Continuing
JALN Development	WR	AFRL : W. Patterson AFB, OH	6.600	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	590.712	39.064		32.698		15.032		-		15.032	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 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	9.589	1.264	Oct 2015	1.586	Oct 2016	3.684	Mar 2018	-		3.684	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
C2P T&E	WR	SPAWARSYSCEN PAC : San Diego, CA	1.951	0.150	Jan 2016	0.150	Oct 2016	1.994	Nov 2017	-		1.994	0.000	4.245	Continuing
LMMT T&E	WR	SPAWARSYSCEN PAC : San Diego, CA	1.150	1.250	Oct 2015	0.800	Oct 2016	0.515	Oct 2017	-		0.515	Continuing	Continuing	Continuing
		Subtotal	77.861	2.664		2.536		6.193		-		6.193	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ATDLS System Engineering Support	Various	Various : Various	20.177	0.000		0.000		0.000		-		0.000	0.000	20.177	20.177
Link 16 Network Contractor Engineering Support	C/CPFF	SeaPort-E : San Diego, CA	9.533	0.000		0.000		0.000		-		0.000	0.000	9.533	Continuing
Link 16 Network Government Engineering Support	WR	SPAWARSYSCEN PAC : San Diego, CA	6.278	0.000		0.000		0.000		-		0.000	0.000	6.278	Continuing
Link 16 Network Program Management Support	C/CPFF	SeaPort-E : San Diego, CA	4.529	0.573	Oct 2015	0.335	Nov 2016	0.161	Oct 2017	-		0.161	Continuing	Continuing	Continuing
C2P Program Management Support	C/CPFF	SeaPort-E : San Diego, CA	5.211	1.461	Oct 2015	0.800	Nov 2016	0.716	Nov 2017	-		0.716	Continuing	Continuing	Continuing
C2P Systems Engineering Support	C/CPFF	SeaPort-E : San Diego, CA	0.000	0.000		1.176	Nov 2016	0.720	Nov 2017	-		0.720	0.000	1.896	-
LMMT Program Management Support	C/CPFF	SeaPort-E : San Diego, CA	0.696	0.375	Oct 2015	0.450	Nov 2016	0.516	Oct 2017	-		0.516	Continuing	Continuing	Continuing
		Subtotal	46.424	2.409		2.761		2.113		-		2.113	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	714.997	44.137		37.995		23.338		-		23.338	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 2126 / *ATDLS Integration*

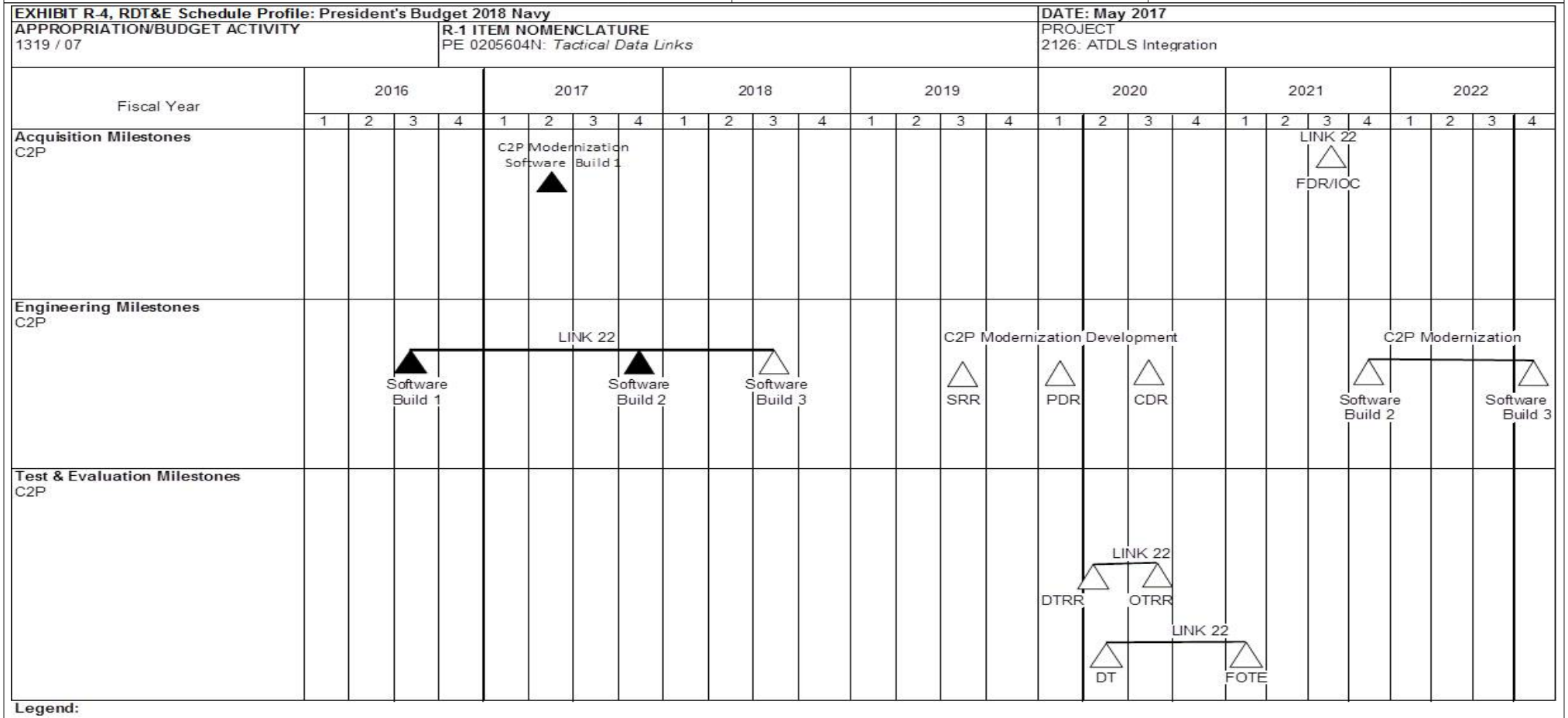


Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 2126 / *ATDLS Integration*

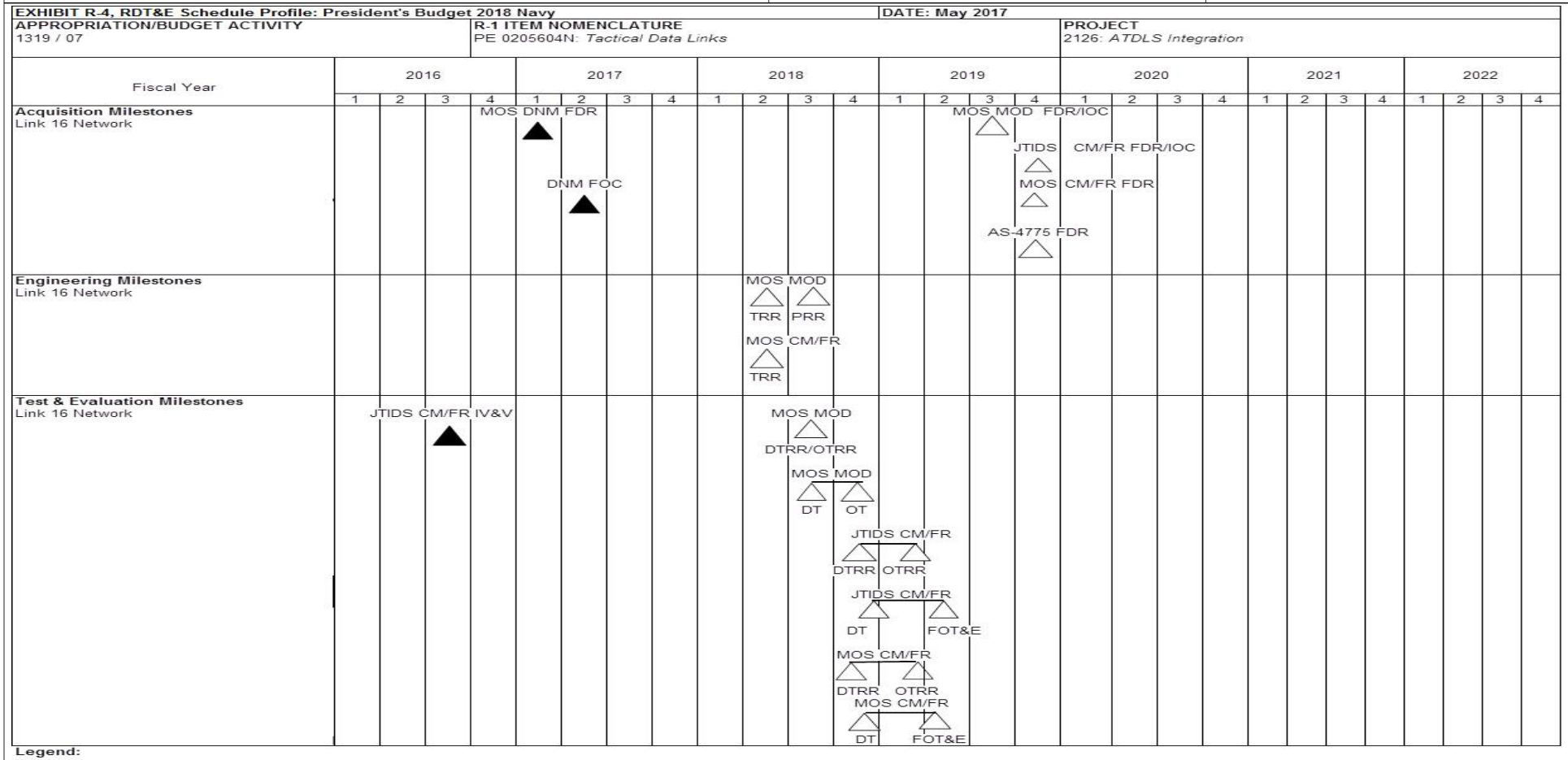
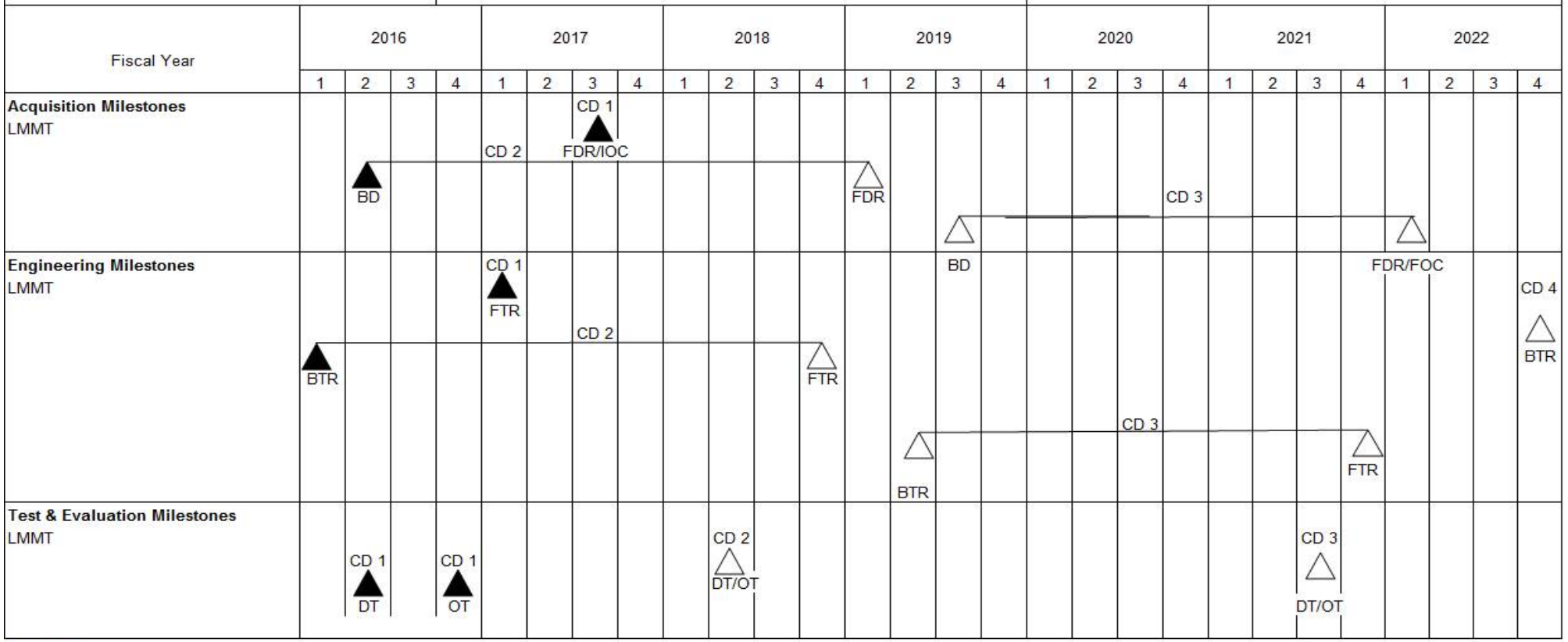


Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 2126 / *ATDLS Integration*

EXHIBIT R-4, RDT&E Schedule Profile: President's Budget 2018 Navy		DATE: May 2017
APPROPRIATION/BUDGET ACTIVITY 1319 / 07	**R-1 ITEM NOMENCLATURE** PE 0205604N: Tactical Data Links	PROJECT 2126: ATDLS Integration



Legend:

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

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2126				
LMMT CD 2 Build Technical Review	1	2016	1	2016
LMMT CD 2 Build Decision	2	2016	2	2016
LMMT CD 1 Developmental Test	2	2016	2	2016
C2P Link 22 Software Build 1	3	2016	3	2016
Link 16 Network JTIDS CM/FR IV&V	3	2016	3	2016
LMMT CD 1 Operational Test	4	2016	4	2016
Link 16 Network MOS Modernization Test Readiness Review	2	2018	2	2018
Link 16 Network MOS Modernization Production Readiness Review	3	2018	3	2018
LMMT CD 1 Fielding Technical Review	1	2017	1	2017
Link 16 Network MOS DNM Fielding Decision Review	1	2017	1	2017
C2P Modernization Software Build 1	2	2017	2	2017
Link 16 Network DNM Full Operating Capability	2	2017	2	2017
Link 16 Network MOS MOD Developmental Test Readiness Review	2	2018	2	2018
LMMT CD 1 Fielding Decision Review/Initial Operating Capability	3	2017	3	2017
Link 16 Network MOS MOD Developmental Test	3	2018	3	2018
LMMT CD 3 Build Technical Review	2	2019	2	2019
Link 16 Network MOS MOD Operational Test Readiness Review	3	2018	3	2018
Link 16 Network MOS MOD Operational Test	4	2018	4	2018
LMMT CD 3 Build Decision	3	2019	3	2019
C2P Link 22 Software Build 2	4	2017	4	2017
LMMT CD 2 Developmental/Operational Test	2	2018	2	2018
Link 16 Network MOS MOD Fielding Decision Review/Initial Operating Capability	3	2019	3	2019

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Link 16 Network AS-4775 Fielding Decision Review	4	2019	4	2019
C2P Link 22 Software Build 3	3	2018	3	2018
Link 16 Network JTIDS CM/FR (Ship/Air) Developmental Test Readiness Review	4	2018	4	2018
Link 16 Network JTIDS CM/FR (Ship/Air) Developmental Test	4	2018	4	2018
LMMT CD 2 Fielding Technical Review	4	2018	4	2018
Link 16 Network MOS CM/FR Developmental Test Readiness Review	4	2018	4	2018
Link 16 Network MOS CM/FR Developmental Test	4	2018	4	2018
LMMT CD 2 Fielding Decision Review	1	2019	1	2019
Link 16 Network JTIDS CM/FR Operational Test Readiness Review	1	2019	1	2019
Link 16 Network MOS CM/FR Operational Test Readiness Review	1	2019	1	2019
C2P Link 22 Developmental Test Readiness Review	2	2020	2	2020
LMMT CD 4 Build Technical Review	4	2022	4	2022
Link 16 Network JTIDS CM/FR Follow-On Operational Test & Evaluation	2	2019	2	2019
Link 16 Network MOS CM/FR Follow-On Operational Test and Evaluation	2	2019	2	2019
LMMT CD 4 Build Decision	4	2019	4	2019
C2P Modernization Development System Requirement Review	3	2019	3	2019
LMMT CD 3 Developmental/Operational Test	3	2021	3	2021
C2P Link 22 Developmental Test	2	2020	2	2020
Link 16 Network JTIDS CM/FR Fielding Decision Review/Initial Operating Capability	4	2019	4	2019
Link 16 Network MOS CM/FR Fielding Decision Review	4	2019	4	2019
C2P Modernization Development Preliminary Design Review	1	2020	1	2020
C2P Link 22 Operational Test Readiness Review	2	2020	2	2020
LMMT CD 3 Fielding Technical Review	4	2021	4	2021
LMMT CD 3 Fielding Decision Review	1	2022	1	2022
C2P Link 22 Follow on Test and Evaluation	1	2021	1	2021
C2P Modernization Development Critical Design Review	3	2020	3	2020

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
C2P Link 22 Fielding Decision Review/Initial Operating Capability	3	2021	3	2021
LMMT CD 3 Full Operational Capability	1	2022	1	2022
C2P Modernization Software Build 2	4	2021	4	2021
C2P Modernization Software Build 3	4	2022	4	2022
Link 16 Network MOS CM/FR Test Readiness Review	2	2018	2	2018

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3020: *MIDS/JTRS*	182.944	68.048	57.406	50.285	-	50.285	62.691	34.588	27.370	24.044	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 554

Note

In accordance with the Acquisition Decision Memorandum dated 11 July 2012, the Joint Tactical Radio Systems Programs of Record (JTRS PORs) transitioned to a Military Department-managed program. MIDS transitioned to the Navy under PE 0205604N but was formerly in PE 0604280N.

A. Mission Description and Budget Item Justification

The Multifunctional Information Distribution System (MIDS) program consists of two (2) products, MIDS Low Volume Terminal (LVT) and MIDS Joint Tactical Radio System (JTRS). MIDS-LVT provides Link 16 capability to platforms that were unable to employ Joint Tactical Information Distribution System due to space and weight constraints. The MIDS-LVT effort is multinational (U.S., France, Germany, Italy, and Spain) with joint Service participation (Navy, Army, and Air Force). 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 provides interoperability with North Atlantic Treaty Organization (NATO) users, significantly increasing force effectiveness and minimizing hostile actions and friend-on-friend engagements. The terminal design is smaller, lighter, highly reliable, interoperable with Joint Tactical Information Distribution System (JTIDS) Class 2 terminal, compatible with all the participants' designated platforms, affordable, and re-configurable to individual user needs and budgets.

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). With CMN-4, MIDS JTRS also utilizes Tactical Targeting Network Technology for MIDS JTRS Naval Integrated Fire Control Counter Air and From the Air Advanced Tactical Data Links. These capabilities provide Joint Airborne Network-Tactical Edge functionality to run advanced mission applications in a cross-platform/cross-domain tactical network enterprise and the ability to simultaneously participate in four Link 16 Nets.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: MIDS	68.048	57.406	50.285	0.000	50.285
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Commenced Full Operational Test and Evaluation. Completed BC2 (MIDS on Ship Modernization). Awarded Lot 5 for Multifunctional Information Distribution System Joint Tactical Radio System (MIDS JTRS) Production. Merged the Block Cycle 2 (BC2) baseline with Four Net Concurrent Multi-Netting with Concurrent Contention Receive (CMN-4) baseline (Block Cycle 3) and began the upgrade of the Crypto Sub System (CSS) for incorporation into MIDS JTRS and Tactical Targeting Network Technology (TTNT) terminals. Continued full development effort of TTNT for MIDS JTRS Naval Integrated Fire Control Counter Air and From the Air Advanced Tactical Data Links (NIFC-CA FTA ATDL) for the L band. Began S band technology development (contract) to incorporate the existing TTNT L band terminal development into the TTNT S band frequency (no SRF funding will be used on the L band requirement, but there are L band requirements in the S band contract-cost sharing). The L band requirements (Navy RDTE) are delineated tasks and tracked separately from the S band requirements (SRF funded). Conducted Delta Preliminary Design Review for the TTNT L band and S band terminals. Awarded full development contract for TTNT S band terminal to include test and integration of the L Band terminal. Continued the qualification and certification efforts and first article qualification testing for MIDS-LVT BU2. Continued the software bind to incorporate Block Cycle 9 as the baseline for BU2 terminals. Continued MIDS Modernization Increment 1 efforts to include specification development to define the Functional and Allocated baseline requirements. Continued to incorporate new waveforms such as Multi-Function Advanced Data Link (MADL), Common Data Link (CDL), and others into the MIDS JTRS terminal. Continued MIDS systems engineering, communication security, Information Assurance (IA) and program management support. Began work on MIDS Modernization Increment 2 for Air Dominance Assured Communications to include the design. Begin Link 16 waveform development fixes/updates for incorporation into the new MIDS JTRS hardware (CMN-4 and TTNT) terminals.					
FY 2017 Plans: Complete Full Operational Test and Evaluation and collecting Operational Assessment data of Concurrent Multi-Netting with Concurrent Contention Receive (CMN-4) for MIDS JTRS. Receive Operational Testing Report and achieve Initial Operational Capability for MIDS JTRS CMN-4. Continue the CSS upgrade for incorporation into MIDS JTRS and Tactical Targeting Network Technology (TTNT) terminals.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Complete the efforts of Tactical Targeting Network Technology (TTNT), for MIDS JTRS Naval Integrated Fire Control Counter Air and From the Air Advanced Tactical Data Links (NIFC-CA FTA ATDL), L band with the Engineering Design Model delivery. Continue TTNT development to migrate from the L band to the S band. This includes detailed design through Delta Critical Design Review (CDR) and Build Pass 1 for the Transceivers, TTNT External Power Amplifiers (TEPA) and High Powered Amplifiers (HPA). Conduct Delta CDR between TTNT L and S band terminals' designs. Award the Production Representative Terminal (PRT) contract for TTNT. Commence and complete Block Upgrade (BU) 2 qualification and certification efforts and First Article Qualification Test (FAQT). Begin the developmental and service platform/operational delta testing required for the BU2 upgrades to the MIDS-LVT terminals. Begin Platform test and integration of BU2. Award BU2 retrofit contracts. Continue to incorporate new waveforms such as Multi-Function Advanced Data Link (MADL), Common Data Link (CDL), and others into the MIDS JTRS terminal. Continue MIDS systems engineering, communication security, IA and program management support. Complete MIDS Modernization Increment 1 effort. Continue the Link 16 Waveform Development to incorporate into CMN-4 and TTNT Terminals. Continue the development MIDS Modernization Increment 2 risk reduction effort (for Air Dominance Assured Communications) for the Link 16 waveform.					
FY 2018 Base Plans: Complete the MIDS Joint Tactical Radio System (JTRS) Crypto Sub System (CSS) upgrade to be integrated into both MIDS JTRS and TTNT terminals. Begin Engineering Releases 3A and 3B (Block Cycle 3+) to be incorporated into Block Cycle 3 baseline software merge. This enables the wide body aircraft software build and MIDS on Ship software build to be in alignment with the main platform software build. Award the MIDS JTRS CMN-4 Retrofit Delivery Order. Continue development of TTNT including Build Pass 2 for the Transceivers, TEPAs and HPAs (SRF funding will not be used on the L band requirements; L band delineated tasks will be tracked separately). Continue to update the operating environment for TTNT. Begin TTNT PRTs delivery. Commence Technology Readiness Review. Begin Contractor and Government First Article Qualification Testing.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Complete the Multifunctional Information Distribution System Low Volume Terminal (MIDS-LVT) Block Upgrade 2 (BU2) test and integration. Continue the retrofit of BU2 MIDS-LVT Terminals. Continue to incorporate new waveforms such as MADL, CDL, and others into the MIDS JTRS terminal. Continue MIDS systems engineering, communication security, IA and program management support. Continue the Link 16 Waveform Development and begin the TTNT Waveform development fixes and updates. Complete the design and development MIDS Modernization Increment 2 (MMI2) risk reduction effort (for Air Dominance Assured Communications) for the Link 16 waveform. Begin the full development for MMI2 based on the design efforts from the risk reduction work to include the hardware and software development. Begin risk reduction work for MIDS Modernization Increments 3 and 4. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	68.048	57.406	50.285	0.000	50.285

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. Development efforts included the Phase 2B Core terminal. The U.S. prime contractors from the MIDS-LVT program, Data Link Solutions (DLS) and ViaSat Inc., cooperatively designed and developed the Core terminal. Each prime contractor built and qualified Production Verification Terminals. The U.S. implemented a continuous competition strategy between DLS and ViaSat that will be maintained throughout the MIDS JTRS production phase. This strategy was successfully used on MIDS-LVT production. The FY18 budget supports the continuation of the Tactical Targeting Networking Technology (TTNT) terminal testing and integration as well as the updates to the TTNT waveform. It supports the Test Readiness Review for TTNT and the commencement of Contractor and Government First Article Qualification Testing. It supports the continuation of the MIDS Modernization Increment 2 efforts and conducting future Link 16 Waveform development.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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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: L16 Waveform Compatibility, L16 Message Standards, L16 IER; Interoperability, L16 Coded Error Message Probability, Weight/Volume, L16 JAM Resistance, L16 Voice Channels, L16 Communication Range Data, L16 Communications Range Voice, L16 Relay.
MIDS JTRS: The 15 performance measures are: L16 Waveform Compatibility, L16 Waveform Standards, L16 Coded Error Message Probability, L16 Jamming Resistance, L16 Communication Range-Data, L16 Communications Range-Voice, L16 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: FY 2018 Navy			Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development Prior Years	Various	Various : Various	14.705	0.000		0.000		0.000		-		0.000	0.000	14.705	14.705
MIDS JTRS NIFCA TTNT Full Development	C/CPFF	DLS : Cedar Rapids, IA	48.210	10.658	Mar 2016	7.885	Oct 2016	0.000		-		0.000	0.000	66.753	-
MIDS JTRS NIFCA TTNT Full Development	C/CPFF	ViaSat : San Diego, CA	22.609	11.689	Nov 2015	0.872	Dec 2016	0.000		-		0.000	0.000	35.170	-
MIDS JTRS NIFCA TTNT Waveform Development	C/CPFF	Rockwell Collins : Wayne, NJ	7.713	0.014	Mar 2016	0.000		0.000		-		0.000	0.000	7.727	7.727
MIDS-LVT BU2 Full Development	C/CPIF	DLS : Cedar Rapids, IA	18.859	9.994	Oct 2015	3.554	Dec 2016	0.000		-		0.000	0.000	32.407	29.874
MIDS-LVT BU2 Full Development	C/CPIF	ViaSat : San Diego, CA	23.335	10.401	Nov 2015	3.821	Dec 2016	0.000		-		0.000	0.000	37.557	33.715
MIDS-LVT BU2 Software Full Development	C/CPIF	BAE : Wayne, NJ	19.450	4.276	Dec 2015	0.245	Feb 2017	0.000		-		0.000	0.000	23.971	24.946
BU2 Interation	TBD	Lockheed Martin : Bethesda, MD	0.000	0.000		0.500	Aug 2017	1.500	Dec 2017	-		1.500	0.000	2.000	-
MIDS-LVT LCM	C/FFP	ViaSat : San Diego, CA	2.189	0.014	Nov 2015	0.000		0.000		-		0.000	0.000	2.203	2.204
MIDS JTRS CMN-4 Production Representative Terminals (PRT)	C/FFP	DLS : Cedar Rapids, IA	2.010	0.335	Apr 2016	0.000		0.000		-		0.000	0.000	2.345	2.345
MIDS JTRS CMN-4 Production Representative Terminals (PRT)	C/FFP	ViaSat : San Diego, CA	2.020	0.281	Apr 2016	0.483	Nov 2016	0.000		-		0.000	0.000	2.784	2.301
TTNT Development Contract (L Band)	C/CPFF	DLS : Cedar Rapids, IA	0.064	0.000		13.226	Mar 2017	6.387	Mar 2018	-		6.387	Continuing	Continuing	Continuing
TTNT Development Contract (L Band)	C/CPFF	ViaSat : San Diego, Ca	0.020	0.000		8.722	Mar 2017	3.348	Mar 2018	-		3.348	Continuing	Continuing	Continuing
MIDS JTRS Software Merge BC3	C/CPIF	ViaSat : San Diego, CA	0.000	4.112	Mar 2016	1.288	Mar 2017	0.000		-		0.000	0.000	5.400	5.112
MIDS Modernization	C/CPFF	DLS : Cedar Rapids, IA	2.624	1.257	Oct 2015	0.000		0.000		-		0.000	0.000	3.881	3.880
MIDS Modernization	C/CPFF	ViaSat : San Diego, CA	1.843	0.523	Oct 2015	0.000		0.000		-		0.000	0.000	2.366	2.859

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Link 16 Waveform Development	WR	SSC PAC : San Diego, CA	0.000	1.876	Jun 2016	1.217	Dec 2016	1.700	Nov 2017	-		1.700	Continuing	Continuing	Continuing
Air Dominance Assured Communications L16 WF (MIDS Mod Incr 2)	C/BA	NAVAIR : China Lake, CA	0.000	1.112	Jan 2016	0.020	Feb 2017	0.000		-		0.000	0.000	1.132	1.112
MIDS Mod Inc 2 Risk Reduction	C/CPFF	DLS : Cedar Rapids, IA	0.000	0.360	Mar 2016	2.813	Jan 2017	4.510	Dec 2017	-		4.510	Continuing	Continuing	Continuing
MIDS Mod Inc 2 Risk Reduction	C/CPFF	ViaSat : San Diego, CA	0.000	0.300	Mar 2016	2.960	Jan 2017	1.390	Dec 2017	-		1.390	Continuing	Continuing	Continuing
MIDS JTRS CSS/PCP Respin	C/CPFF	DLS : Cedar Rapids, IA	0.000	1.247	Aug 2016	2.014	Jan 2017	0.000		-		0.000	0.000	3.261	3.052
MIDS JTRS CSS/PCP Respin	C/CPFF	ViaSat : San Diego, CA	0.000	0.639	Aug 2016	1.552	Jan 2017	0.000		-		0.000	0.000	2.191	-
ER3A&3B (MIDS JTRS BC3+)	C/CPFF	TBD : TBD	0.000	0.000		0.000		3.000	Dec 2017	-		3.000	0.000	3.000	-
MIDS Mod Inc 2 Full Development	C/CPFF	DLS : Cedar Rapids, IA	0.000	0.000		0.000		15.060	Apr 2018	-		15.060	Continuing	Continuing	Continuing
MIDS Mod Inc 2 Full Development	C/CPFF	ViaSat : San Diego, CA	0.000	0.000		0.000		10.040	Apr 2018	-		10.040	Continuing	Continuing	Continuing
		Subtotal	165.651	59.088		51.172		46.935		-		46.935	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Eval Prior Years	Various	Various : Various	3.529	0.000		0.000		0.000		-		0.000	0.000	3.529	3.529
Modeling and Simulation	WR	NAVAIR : China Lake, CA	2.440	0.670	Nov 2015	0.464	Feb 2017	0.395	Jan 2018	-		0.395	0.000	3.969	5.210
MIDS JTRS CMN-4/MIDS Mod GFAQT and LAB	WR	SSC : San Diego, CA	0.984	0.120	Mar 2016	0.132	Dec 2016	0.205	Dec 2017	-		0.205	0.000	1.441	1.267
TTNT Link 16 Mod/ Simulation	MIPR	Lincoln Labs : Hanscom AFB, MA	0.700	0.276	Nov 2015	0.113	Dec 2016	0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / *Tactical Data Links*	Project (Number/Name) 3020 / *MIDS/JTRS*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DT/OT CMN-4/MIDS Mod	WR	NAVAIR : China Lake, CA	0.000	0.000	Apr 2016	0.994	Feb 2017	0.000		-		0.000	0.000	0.994	2.992
Vlidation/Verificatoin and DT/OT	WR	NAVAIR : China Lake, CA	0.000	2.240	Feb 2016	0.000	Jan 2017	0.000		-		0.000	Continuing	Continuing	Continuing
MIDS Mod Inc 2 Ref Test Environment	WR	SSC : San Diego, CA	0.000	0.611	Apr 2016	0.000	Jan 2017	0.000		-		0.000	Continuing	Continuing	Continuing
JTEL Testing Support	C/CPFF	G-2 : San Diego, CA	0.000	0.000		0.095	Mar 2017	0.095	Mar 2018	-		0.095	0.000	0.190	-
MIDS Mod OT Support	C/CPFF	Engility : Chantilly, VA	0.000	0.000		0.042	Apr 2017	0.000		-		0.000	0.000	0.042	-
MIDS Mod OT Flight Test	MIPR	Department of Interior : Lakewood, CO	0.000	0.000		0.467	Apr 2017	0.000		-		0.000	0.000	0.467	-
		Subtotal	7.653	3.917		2.307		0.695		-		0.695	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 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	4.717	0.515	Dec 2015	0.905	Nov 2016	0.638	Dec 2017	-		0.638	Continuing	Continuing	Continuing
Government Engineering Support TTNT	WR	SSC : San Diego, CA	2.295	4.355	Dec 2015	1.506	Jan 2017	1.050	Nov 2017	-		1.050	Continuing	Continuing	Continuing
Govt Program Support NIFC-CA	WR	NAVAIR : Pax River, MD	0.939	0.000		0.000		0.000	Nov 2017	-		0.000	Continuing	Continuing	Continuing
Systems/Software Engineering Suppt	C/CPFF	G2 : San Diego, CA	0.488	0.173	Feb 2016	0.000		0.000	Apr 2018	-		0.000	Continuing	Continuing	Continuing
COR and Logistics Support	WR	SSC : Charleston, SC	0.000	0.000		0.076	Jan 2017	0.080	Nov 2017	-		0.080	0.000	0.156	-
Information Assurance	MIPR	NSA : Fort Meade, MD	0.000	0.000		0.036	Dec 2016	0.030	Dec 2017	-		0.030	0.000	0.066	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering/ Programmatic Support	C/CPFF	Sentek : San Diego, Ca	0.000	0.000		0.604	Nov 2016	0.425	Dec 2017	-		0.425	0.000	1.029	-
ARL SIPRNET Connection	MIPR	ARL : Adelphi, MD	0.000	0.000		0.096	Dec 2016	0.099	Dec 2017	-		0.099	0.000	0.195	-
Contractor Program Management and Financial Support	C/CPFF	TBD : TBD	0.000	0.000		0.704	Jun 2017	0.333	Jan 2018	-		0.333	0.000	1.037	-
		Subtotal	9.640	5.043		3.927		2.655		-		2.655	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	182.944	68.048		57.406		50.285		-		50.285	-	-	-

Remarks

In accordance with the ADM dated 11 July 2012, the Joint Tactical Radio Systems Programs of Record (JTRS PORs) transitioned to a Military Department-managed program.
MIDS transitioned to the Navy under PE 0205604N but was formerly in PE 0604280N.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3020 / *MIDS/JTRS*

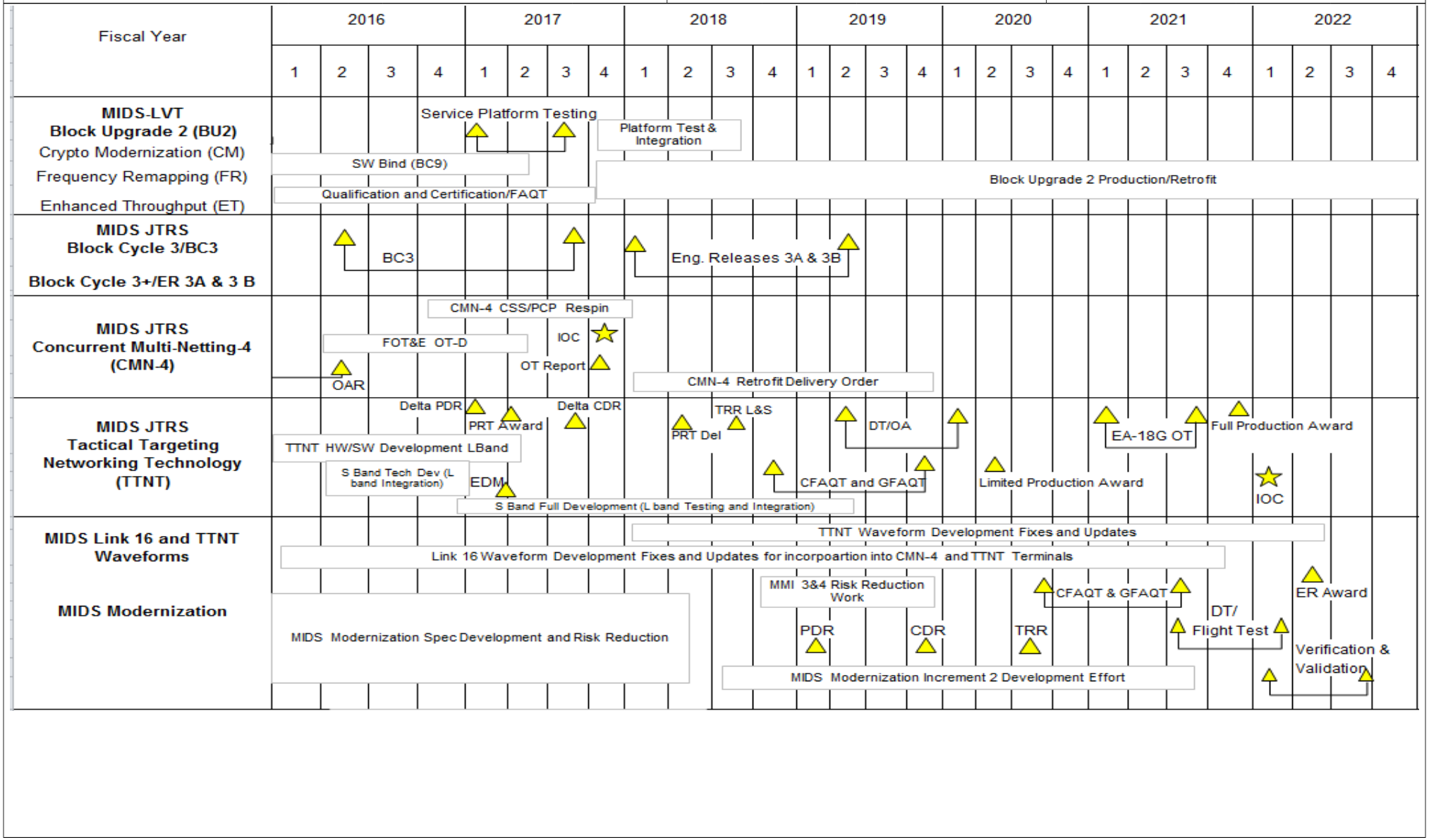

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3020 / *MIDS/JTRS*

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	2016	4	2017
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Software Bind (SW)	1	2016	2	2017
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Service Platform Testing	1	2017	3	2017
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Block Upgrade 2 Production/Retrofit	4	2017	4	2022
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Platform Test and Integration	4	2017	3	2018
MIDS JTRS Block Cycle 3 (BC3): BC3	2	2016	3	2017
MIDS JTRS Block Cycle 3 (BC3): Block Cycle 3+ (ER 3A & 3B)	1	2018	2	2019
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): OA Data and T&E/OAR	1	2016	2	2016
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): Full Operational Test and Eval OT-D	2	2016	2	2017
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): OT Report	4	2017	4	2017
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): IOC (Initial Operational Capability)	4	2017	4	2017
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): CMN-4 Retrofit Delivery Order	1	2018	4	2019
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): CMN-4 CSS/PCP Respin	4	2016	1	2018
MIDS JTRS Tactical Targeting Networking Technology (TTNT): TTNT Hardware/ Software Development (L Band)	1	2016	2	2017
MIDS JTRS Tactical Targeting Networking Technology (TTNT): S Band Technology Development (L Band Integration)	2	2016	1	2017
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Delta Preliminary Design Review	1	2017	1	2017
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Engineering Design Model	1	2017	1	2017
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Delta Critical Design Review	3	2017	3	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3020 / *MIDS/JTRS*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MIDS JTRS Tactical Targeting Networking Technology (TTNT): S Band Full Development (L Band Testing and Integration)	4	2016	2	2019
MIDS JTRS Tactical Targeting Networking Technology (TTNT): PRT Award	2	2017	2	2017
MIDS JTRS Tactical Targeting Networking Technology (TTNT): PRT Deliveries	2	2018	2	2018
MIDS JTRS Tactical Targeting Networking Technology (TTNT): CFAQT and GFAQT	4	2018	4	2019
MIDS JTRS Tactical Targeting Networking Technology (TTNT): TTNT Technolgy Readiness Review (TRR)	3	2018	3	2018
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Operational Assessment	2	2019	1	2020
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Limited Production	2	2020	2	2020
MIDS JTRS Tactical Targeting Networking Technology (TTNT): EA-18G Operational Testing (OT)	1	2021	3	2021
MIDS JTRS Tactical Targeting Networking Technology (TTNT): IOC (Initial Operational Capability)	1	2022	1	2022
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Full Production Award	4	2021	4	2021
MIDS Link 16 and TTNT Waveform: Link 16 Waveform Development Fixes and Updates	1	2016	4	2021
MIDS Link 16 and TTNT Waveform: TTNT Waveform Development Fixes and Updates	1	2018	2	2022
MIDS Modernization: MIDS Modernization Spec Development	1	2016	2	2018
MIDS Modernization: MIDS Modernization Inc 2 (Air Dominance Assured Communications)	2	2016	2	2018
MIDS Modernization: MIDS Modernization Inc 2 Full Development Effort	3	2018	3	2021
MIDS Modernization: MIDS Mod Inc 2 CFAQT & GFAQT	3	2020	3	2021
MIDS Modernization: MIDS Mod Inc 3 and Inc 4 Risk Reduction Work	4	2018	4	2019
MIDS Modernization: MIDS Mod PDR	1	2019	1	2019
MIDS Modernization: MIDS Mod CDR	4	2019	4	2019
MIDS Modernization: MIDS Mod TRR	3	2020	3	2020
MIDS Modernization: MIDS Mod DT/Flight test	3	2021	1	2022

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MIDS Modernization: MIDS Mod Verification and Validation	1	2022	3	2022
MIDS Modernization: MIDS Mod Engineering Release (Post DT)	2	2022	2	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3341: *Network Tactical Common Data Link*	31.173	26.364	29.384	16.229	-	16.229	23.969	54.059	33.495	6.393	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 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, UCLASS, and Fire Scout). NTCDL is a incremental capability (surface, airborne, sub-surface, man-portable) providing a modular, scalable, multiple-link networked communications. NTCDL benefits the fleet by providing horizon extension for line-of-sight sensor systems for use in time critical strike missions. NTCDL counters Anti-Access/Area Denial (A2/AD) through its relay capability, and supports Tasking Collection Processing Exploitation Dissemination (TCPED) through its ISR networking capability. Additionally, NTCDL supports Humanitarian Assistance/Disaster Relief (HA/DR) efforts through its ability to share ISR data across dissimilar Joint, Service, Coalition, and Civil organizations.

FY18 request is for NTCDL product development, to include the development of two (2) NTCDL Engineering Development Models (EDMs) and associated software.

Joint Aerial Layer Network-Maritime (JALN-M) is the Navy implementation of the JALN architecture which provides assured communications in any environment, especially Anti-Access Area Denial (A2AD). With disruption or loss of Space tier communications, JALN-M establishes and/or restores connectivity with the High Capacity Backbone (HCB) tier, the Distribution Access Range Extension (DARE) tier, and the Transition tier in accordance with the JALN-M Initial Capabilities Document (ICD) and the JALN-M Analysis of Alternatives (AoA) Final Report. JALN-M is a robust, assured communications capability providing joint connectivity via the HCB and Navy platform connectivity via a pseudo satellite DARE capability. JALN-M will use the Extended Data Rate (XDR) waveform (Navy Multiband Terminal (NMT)) for intra-battle group DARE communications, a Common Data Link (CDL) waveform for the HCB cross-link capability, and will leverage enhanced Ultra High Frequency/High Frequency (UHF/HF) waveforms for coalition connectivity. Furthermore, Positioning, Navigation, and Timing (PNT) efforts related to the JALN-M Pod will develop a prototype PNT subsystem that will be integrated into the JALN-M Pod, and will provide position and timing data to other Pod subsystems, both with and without Global Positioning System (GPS) connectivity. Because the Pod is being designed to operate in an A2AD environment, the Pod HCB and XDR (NMT) subsystems need to be provided with PNT data in the absence of GPS, and the assured PNT subsystem will provide that data. The objective is to provide an alternative communication path in a denied environment, to support key information exchange requirement via ADNS. ADNS is the method by which Tactical Navy units transfer Internet Protocol (IP) data to Navy and Department of Defense communities on the Global Information Grid (GIG).

FY18 efforts will focus on execution of the JALN-M demonstration flight tests.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Network Tactical Common Data Link (NTCDL)	13.213	15.368	15.729	0.000	15.729
Articles:	-	2	-	-	-

Description: NTCDL is the only High Data Rate, Line of Sight solution delivering ISR, sensor control information and UAS command and control. NTCDL uses Joint DoD specifications for CDL waveforms and line of sight network 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.

FY 2016 Accomplishments:
Conducted Milestone B (MS B) and awarded the NTCDL Contract, to include procurement of long lead hardware in support of Engineering Development Models (EDM) software configuration items. Continued development of the Government Furnished Software (GFS), which includes the major software configuration items link management and user interface. Completed updating the CARD and PLCCE; and completed development of the initial Acquisition Program Baseline (APB). Conducted System Engineering Technical Review (SETR) events, including the In Process Review (IPR) for the initial GFS Build 1 (e.g., GFS IPR 1) required to support contract award. Completed the MS B Lifecycle Sustainment Plan (LCSP) and began development on the Navy Training Systems Plan (NTSP).

FY 2017 Plans:
Conduct post contract award activities, to include Post Award Conference (PAC). Conduct Initial Baseline Review (IBR) between vendor and system engineers to integrate the Government and Contractor master schedules, and finalize the developmental Integrated Master Schedule (IMS). Commence Earned Value Management (EVM) reporting. Continue system engineering, conduct a Preliminary Design Review (PDR) with the vendor to assess development progress and review and approve an initial engineering product baseline. Initiate development of the Engineering Development Models (EDMs), including 2 hardware systems and the contractor-developed software. Continue developing the link management and user interface Government Furnished Software (GFS); conduct an In Process Review (IPR) for delivery of GFS Build 2 required to support the PDR. Conduct system engineering efforts to support NTCDL development, integration and internal/external software interface management. Develop test plans to support future developmental tests and operational assessment (DT/OA).

FY 2018 Base Plans:
Conduct Critical Design Review (CDR) with the vendor to assess development progress and review and approve the final engineering product baseline. Continue development of the Engineering Development Models (EDMs), including 2 hardware systems and the contractor-developed software. Continue development of the link

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
management and user interface Government Furnished Software (GFS); and conduct a Test Readiness Review (TRR) for delivery of GFS Build 3 required to support commencement of formal testing. Complete the Test and Evaluation Master Plan (TEMP), continue development of test plans to support future developmental tests and operational assessment (DT/OA), and update to the Capabilities Production Document (CPD). ***FY 2018 OCO Plans:*** N/A					
Title: Network Tactical Common Data Link (NTCDL) High Capacity Backbone (HCB) ***Articles:*** ***Description:*** Network Tactical Common Data Link (NTCDL) High Capacity Backbone (HCB) efforts will support Joint Aerial Layer Network-Maritime (JALN-M) System of Systems development, integration, and testing. Efforts will include the development of capabilities to integrate shipboard NTCDL terminals with the HCB in an Anti-Access/Area Denial (A2/AD) environment. ***FY 2016 Accomplishments:*** Continued support of JALN-M System of Systems (SoS) development, Integration & and Testing, and FY18 demonstration flight test planning. Efforts included design, development, procurement, integration, and testing the High Capacity Backbone (HCB) distributed system of systems SoS and the HCB component functional capabilities, interfaces, and supporting elements. Efforts included planning and the execution of the JALN-M demonstration flight test scheduled in FY18. ***FY 2017 Plans:*** FY17 efforts include delivery of the HCB terminals, completing development of Pod, MGEP, ship terminal, and continuing subsystem integration and test. Continue efforts that will include development associated with Increment 2, to include, airborne terminal research and development of High Capacity Backbone (HCB) and air-to-air relay activities in an Anti- Access/Area Denial (A2/AD) environment. Participate in integration and testing of JALN-M Pod components or sub-systems. Support planning and execution of the JALN-M flight tests. ***FY 2018 Base Plans:*** FY18 efforts include HCB subject matter experts (SMEs) to support the JALN-M flight tests execution. ***FY 2018 OCO Plans:*** N/A	13.151 -	14.016 -	0.500 -	0.000 -	0.500 -
Accomplishments/Planned Programs Subtotals	26.364	29.384	16.229	0.000	16.229

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• 2950: *Network Tactical Common Data Link (CDL)*	0.000	0.000	0.000	-	0.000	0.000	0.000	0.057	21.699	0.000	21.756

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: FY 2018 Navy			Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Product Development	C/CPIF	BAE Systems, Int : Wayne, NJ	0.000	9.744	Sep 2016	6.289	Nov 2016	6.644	Nov 2017	-		6.644	Continuing	Continuing	Continuing
NTCDL HCB Development	C/CPFF	SPAWARSYSCTR : San Diego, CA	1.200	2.003	Jul 2016	2.190	Nov 2016	0.500	Nov 2017	-		0.500	0.000	5.893	-
NTCDL HCB Development	C/CPFF	MIT/Lincoln Lab : Lexington, MA	4.000	5.556	Nov 2015	11.829	Nov 2016	0.000		-		0.000	0.000	21.385	-
NTCDL HCB Development	C/CPFF	DTIC : Fort Belvoir, VA	0.000	2.104	Nov 2015	0.000		0.000		-		0.000	0.000	2.104	-
NTCDL Software Development	WR	SPAWARSYS : San Diego, CA	0.000	1.415	Nov 2015	1.659	Nov 2016	1.740	Nov 2017	-		1.740	Continuing	Continuing	Continuing
		Subtotal	5.200	20.822		21.967		8.884		-		8.884	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Systems Engineering	WR	SPAWARSYSCTR : San Diego, CA	11.781	1.384	Apr 2016	1.240	Nov 2016	1.051	Oct 2017	-		1.051	Continuing	Continuing	Continuing
NTCDL Systems Engineering	C/IDIQ	SPAWARSYS : San Diego, CA	6.492	2.494	Nov 2015	2.604	Nov 2016	2.731	Nov 2017	-		2.731	Continuing	Continuing	Continuing
		Subtotal	18.273	3.878		3.844		3.782		-		3.782	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Test and Evaluation	WR	SPAWARSYSCTR : San Diego, CA	3.267	0.898	Feb 2016	1.729	Oct 2016	1.563	Oct 2017	-		1.563	Continuing	Continuing	Continuing
NTCDL Test and Review	MIPR	JITC : Fort Huachuca, AZ	0.200	0.299	Jan 2016	0.576	Dec 2016	0.604	Dec 2017	-		0.604	Continuing	Continuing	Continuing
NTCDL Waveform certification	MIPR	COMOPTEVFOR : Norfolk, VA	0.200	0.060	Jan 2016	0.115	Dec 2016	0.122	Dec 2017	-		0.122	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	3.667	1.257		2.420		2.289		-		2.289	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 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	3.033	0.407	Nov 2015	1.153	Nov 2016	1.274	Nov 2017	-		1.274	Continuing	Continuing	Continuing
		Subtotal	4.033	0.407		1.153		1.274		-		1.274	-	-	-

	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	31.173	26.364		29.384		16.229		-		16.229	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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 Schedule

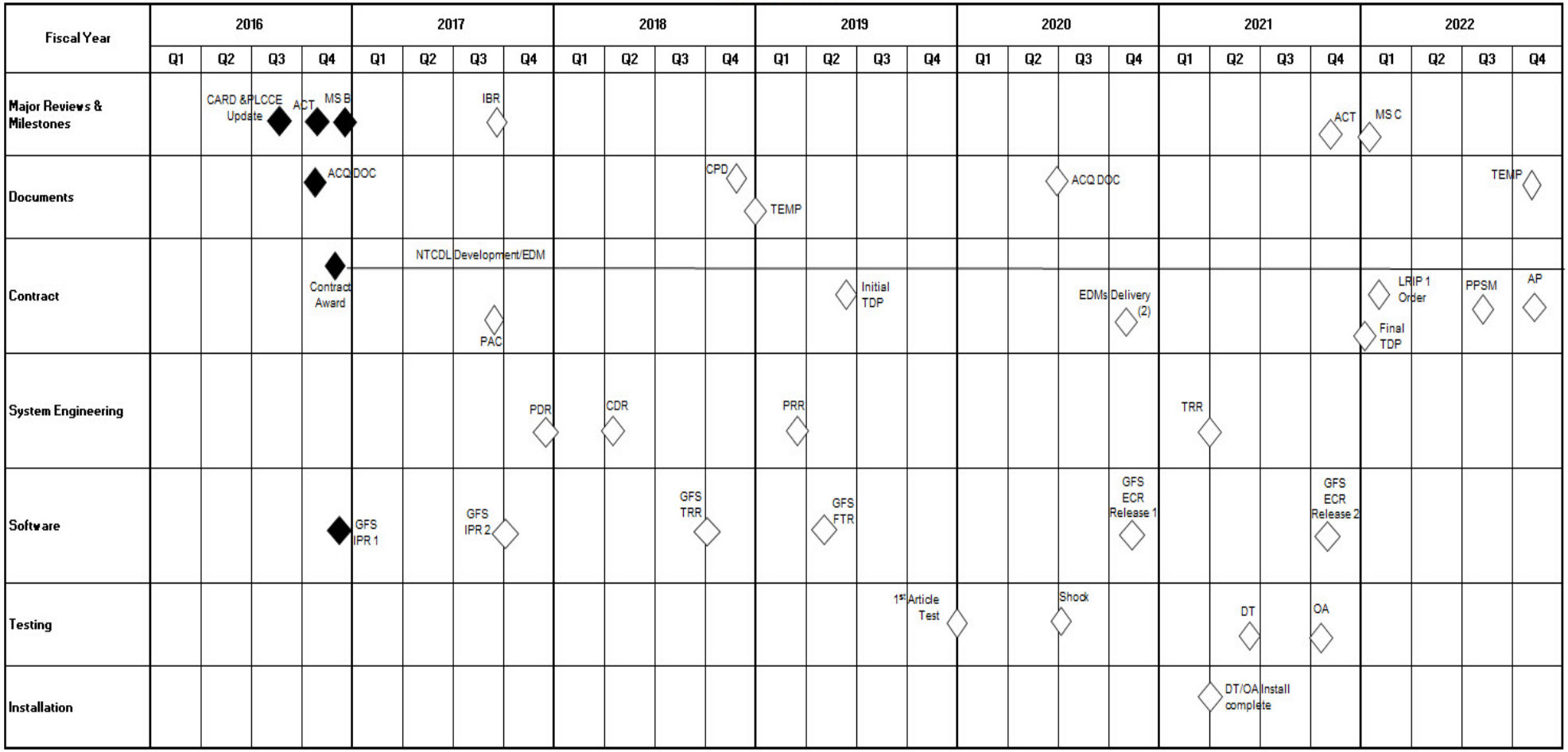

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3341 / *Network Tactical Common Data Link*

JALN-M Demonstration

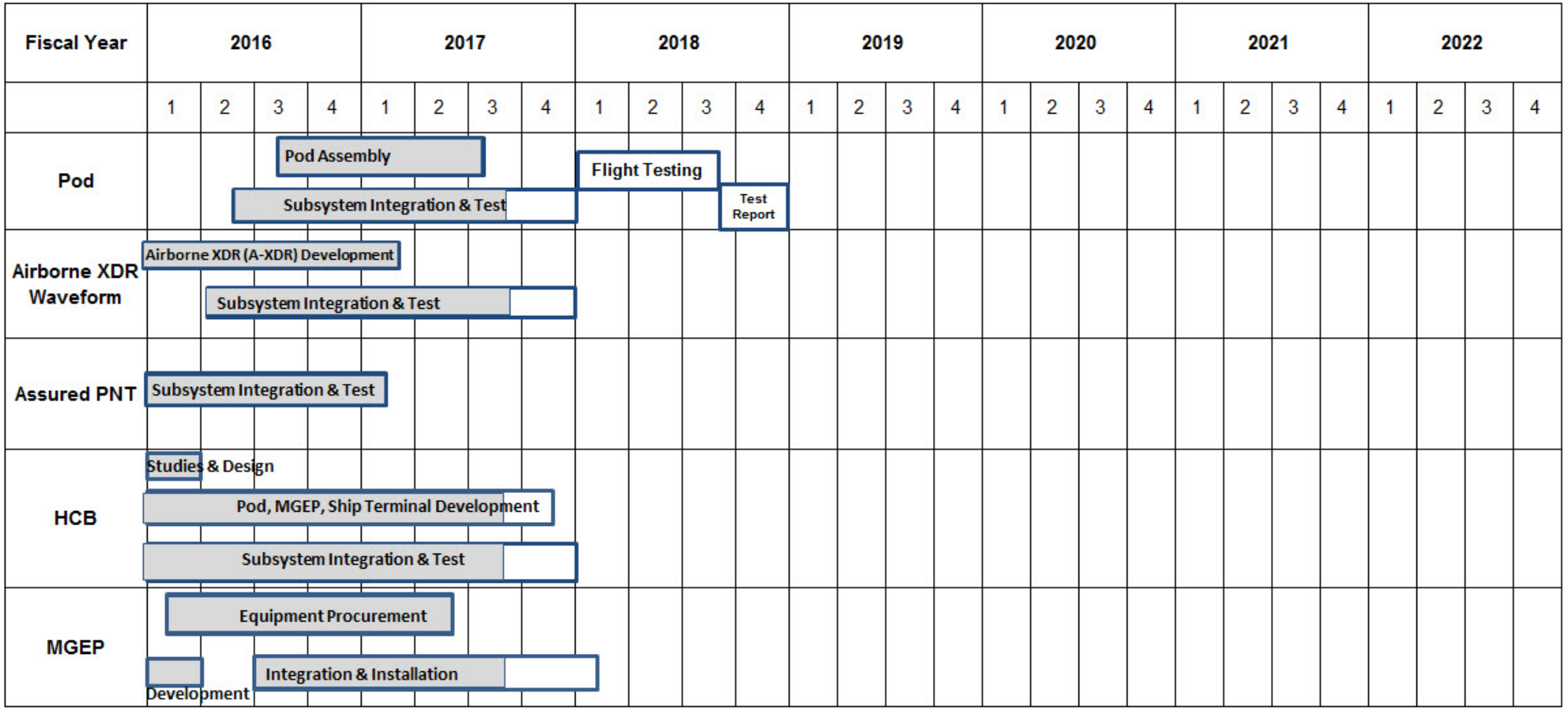

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3341 / *Network Tactical Common Data Link*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3341				
NTCDL - Milestone B	4	2016	4	2016
NTCDL - Contract Award	4	2016	4	2016
NTCDL - Development Contract	4	2016	4	2022
NTCDL - Preliminary Design Review (PDR)	4	2017	4	2017
NTCDL - Critical Design Review (CDR)	2	2018	2	2018
NTCDL - Capability Production Document (CPD)	4	2018	4	2018
NTCDL - First Article Test	1	2020	1	2020
NTCDL - Development Testing (DT)	2	2021	2	2021
NTCDL - Operational Assessment (OA)	4	2021	4	2021
NTCDL - Milestone C	1	2022	1	2022
NTCDL - Low Rate Initial Production (LRIP) Order	1	2022	1	2022
JALN HCB Studies and Design	1	2016	1	2016
JALN HCB Integrated Testing	1	2016	4	2017
JALN HCB Development	1	2016	4	2017
JALN HCB Flight Testing	1	2018	3	2018