Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy											Date: February 2018	
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*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	1,067.663	121.396	89.852	104.696	-	104.696	101.709	80.349	49.297	53.325	Continuing	Continuing
2126: *ATDLS Integration*	759.134	37.232	23.338	31.295	-	31.295	23.800	20.756	20.007	23.447	Continuing	Continuing
3020: *MIDS/JTRS*	250.992	55.601	50.285	59.515	-	59.515	28.765	23.304	23.080	23.535	Continuing	Continuing
3341: *Network Tactical Common Data Link*	57.537	28.563	16.229	13.886	-	13.886	49.144	36.289	6.210	6.343	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 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).

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.

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

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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 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 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 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 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. 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 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 2 is a specific and distinct effort that will transform the MIDS JTRS radio to a true software defined radio allowing rapid technology insertion, in the field, to outpace the threat including software updates for maintenance, reliability, security, cyber, interoperability and capacity. MIDS Modernization Increments 3 and follow on efforts have yet to be funded, but are currently in the design stages. MIDS Modernization Increment 1 will be fielded with all MIDS JTRS CMN4 terminals.

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 - Counter Air From-The-Air (NIFC-CA FTA) capability requirements. These capabilities

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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.

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	124.785	89.852	111.709	-	111.709
Current President's Budget	121.396	89.852	104.696	-	104.696
Total Adjustments	-3.389	0.000	-7.013	-	-7.013
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.121	0.000			
• Program Adjustments	0.000	0.000	-6.000	-	-6.000
• Rate/Misc Adjustments	0.000	0.000	-1.013	-	-1.013
• Congressional General Reductions Adjustments	-0.268	-	-	-	-

Change Summary Explanation

The FY 2019 funding request was reduced by ($0.607) million to reflect the Department of Navy's effort to support the Office of Management and Budget directed reforms for Efficiency and Effectiveness that include a lean, accountable, more efficient government.

The FY 2019 funding request was reduced by $14.9 million to account for the availability of prior year execution balances.

Advanced Tactical Data Link Systems ATDLS (2126): RDT&E budget requirement increased from FY18 to FY19 due to the acceleration of Link 16 MOS Modernization on AEGIS Ships.

Link 16 Network Increment II Cryptographic Modernization (CM)/Frequency Remapping (FR) (2126): As a result in delays in MIDS LVT BU2 development and qualification, the MOS CM/FR/TRR has been delayed. As a result of delays in completing JTIDS Electromagnetic Compatibility (EMC) Certification, JTIDS development delays and MIDS LVT development to support shipboard integration, JTIDS CM/FR and MOS CM/FR Operational Test and Fielding Decision Reviews FDR have been delayed. Developmental Test (DT) nomenclature has been replaced with Integrated Test (IT) due to revision in test strategy to include Commander Operation Test Force (COTF) participation prior to OT.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy	Date: February 2018
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Link 16 Network Increment II MOS Modernization (2126): As a result of delays to correct deficiencies found in the government furnished equipment and MOS Mod system, MOS MOD Integrated Test (formerly Developmental Test), Operational Test and Fielding Decision Review FDR has been delayed. MOS MOD FDR was additionally delayed to allow sufficient time to complete Operational Test (OT) report and prepare for FDR. Developmental Test (DT) nomenclature has been replaced with Integrated Test (IT) due to revision in test strategy to include Commander Operation Test Force (COTF) participation prior to OT. Added MOS Mod with MIDS JTRS CMN Terminal development test to validate the MIDS JTRS CMN terminal integration into shipboard environment. Added Concurrent Multi Netting (CMN) developmental test to validate the CMN function integration into shipboard environment.

Link Monitoring and Management Tool (LMMT) (2126): LMMT Capability Drop (CD) 2 Fielding Technical Review (FTR) and Fielding Decision Review (FDR) delayed by one quarter due to Developmental Testing/Operational Testing (DT/OT) availability. In addition, LMMT CD 3 Design and Development schedule delayed by one year to allow for stability and refinement of Link 22 requirements.

MIDS (3020):
MIDS RDTE increases from FY18 to FY19 due to the DoD directed rapid insertion of Link 16 technologies into the MIDS JTRS Four Net Concurrent Multi-Netting with Concurrent Contention Receive (CMN-4) Terminal (MIDS Modernization). Additional MIDS Modernization information is available at the Program Office in a Classified setting.

MIDS JTRS CMN-4 is now conducting an Operational Assessment (OA) in 3Q18. The ability to combine flight tests with other platform testing enabled MIDS JTRS CMN-4 IOC to be moved to 3Q18 after the OA. MIDS JTRS TTNT First Article Qualification Testing updated to complete in FY19.

NTCDL (3341):
Network Tactical Common Data Link (NTCDL): The FY 2019 funding request was reduced by $10 million to account for the availability of prior year execution balances.

FY19 request is for NTCDL product development, to include continued development of two (2) NTCDL Engineering Development Models (EDMs) and associated software. The FY 2019 funding decrease of $10M will delay Government Furnished Software (GFS) development, contractor-developed software, EDM development, and systems engineering efforts resulting in a fifteen month delay for EDM delivery from FY20 to FY22. Joint Strike Fighter (JSF) F-35B/C requires NTCDL for Common Data Link (CDL) interoperability as the legacy shipboard CDL system does not support the JSF CDL capability. The fifteen month delay in NTCDL development will significantly impact F-35's mission capability, as the aircraft will not be able to transmit Intelligence, Surveillance, and Reconnaissance (ISR) data to the ship.

The NTCDL Engineering Development Model (EDM) Contract was awarded Sep 2016 and subsequently protested. Contract was re-awarded June 2017.

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COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
2126: *ATDLS Integration*	759.134	37.232	23.338	31.295	-	31.295	23.800	20.756	20.007	23.447	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. 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.

FY 2019 Justification: Continue government testing of the JTIDS CM/FR Low Rate Initial Production units and deficiency correction. Continue government integrated and operational testing. Prepare for JTIDS CM/FR fielding decision review. PMA 231 will complete E-2C government testing of JTIDS CM/FR. Funding will also provide for MOS CM/FR to complete integration 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 continue integrated testing to support follow on operational testing. Prepare for MOS CM/FR fielding decision review. 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 integrated and operational testing. Prepare for MOS Mod Fielding Decision Review. Space and Naval Warfare (SPAWAR) Systems Centers will complete government testing and deficiency correction of the new Link 16 antenna, AS-4775, which will replace the obsolete AS-4127A, and prepare for a fielding decision.

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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 2019 Justification: Continue C2P Link 22 development and Aegis combat system testing. Prepare for Link 22 Follow-on Test and Evaluation (FOT&E) and continue C2P Modernization engineering assessment and design. Specifically, conduct C2P Modernization Development System Requirement Review (SRR), and prepare for Preliminary Design Review (PDR), and Critical Design Review (CDR).

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.

FY 2019 Justification: Conduct Capability Drop (CD) 2 fielding technical review (FTR) and fielding decision review (FDR).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Link 16 Network Increment II - Cryptographic Modernization (CM) / Frequency Remapping (FR)	13.119	10.030	10.937	0.000	10.937
Articles:	6	11	10	-	10
FY 2018 Plans: Continue government testing and correct identified deficiencies in JTIDS CM/FR LRIP units including shipboard integration. Conduct JTIDS CM/FR shipboard integrated testing. Initiate preparations for JTIDS CM/FR Fielding Decision Review (FDR). Continue to test the integration of JTIDS CM/FR with the E-2C.					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
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. Continue to identify and correct 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. Continue to identify deficiencies in MOS Mod and MIDS JTRS terminals. Initiate preparations for MOS Mod FDR fielding decision review. Continue to integrate and test MIDS JTRS CMN terminal into MOS Modernization terminal. Correct MIDS JTRS CMN terminal deficiencies as identified. Continue Link 16 Network integration logistics support. Continue at sea testing for Link 16 antenna.					
FY 2019 Base Plans: Continue government testing and correct identified deficiencies in JTIDS CM/FR LRIP units including shipboard integration. Continue 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. Continue MOS CM/FR integrated 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. Correct MIDS JTRS CMN terminal deficiencies as identified. Continue Link 16 Network integration logistics support. Conduct Fielding Decision for Link 16 Antenna.					
FY 2019 OCO Plans:					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Link 16 RDT&E budget requirement increased from FY18 to FY19 due to additional efforts for Link 16 MOS Modernization on AEGIS Ships.					
Title: Command and Control Processor (C2P)	18.775	11.318	18.707	0.000	18.707
Articles:	-	-	-	-	-
FY 2018 Plans: Continue C2P Link 22 development. Initiate and complete Link 22 Software Build 3. Initiate Link 22 IV&V testing. Commence C2P Modernization hardware/software engineering. ***FY 2019 Base Plans:*** Continue Link 22 development. Complete Link 22 IV&V testing and commence Aegis combat system testing. Commence Navy link certification. Continue C2P Modernization systems engineering and initiate software design activities. Commence C2P software Modernization Design and Development and document the Functional and Allocated baselines and define the Top Level and Detailed software designs. 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 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** C2P RDT&E budget increased from FY18 to FY19 as C2P Technology Refresh prepares for C2P Modernization Development System Requirement Review (SRR), Preliminary Design Review (PDR), and Critical Design Review (CDR).					
Title: Link Monitoring and Management Tool (LMMT)	5.338	1.990	1.651	0.000	1.651
Articles:	-	-	-	-	-
FY 2018 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Complete CD 2 DT/OT. ***FY 2019 Base Plans:*** Complete CD2 Fielding Technical Review (FTR) and the Fielding Decision Review (FDR). ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** LMMT RDT&E budget decreased from FY18 to FY19 due to the completion of CD2 Fielding Technical Review and Fielding Decision Review.					
Accomplishments/Planned Programs Subtotals	37.232	23.338	31.295	0.000	31.295

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPN/2614: *Adv Tact Data Link Sys (ATDLS)*	24.395	38.016	34.526	-	34.526	46.962	66.132	75.873	58.942	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.

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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 2019 Navy		Date: February 2018
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ATDLS Product Development and Integration	Various	Various : Various	387.088	0.000		0.000		0.000		-		0.000	0.000	387.088	387.088
Link 16 Network Development (JTIDS)	C/CPIF	DLS (BAE/ Rockwell) : Wayne, NJ	61.010	0.000		0.000		2.028	Oct 2018	-		2.028	Continuing	Continuing	Continuing
Link 16 Network E-2C Integration	WR	PMA 231 : Pax River, MD	8.670	2.614	Oct 2016	2.464	Oct 2017	1.043	Oct 2018	-		1.043	Continuing	Continuing	Continuing
Link 16 Network Development (MOS MOD)	C/FPIF	DLS (BAE/ Rockwell) : Wayne, NJ	16.481	0.448	Oct 2016	1.183	Oct 2017	1.628	Oct 2018	-		1.628	Continuing	Continuing	Continuing
Link 16 Network Integrated Logistics Support	C/CPFF	SeaPort-E : San Diego, CA	2.772	0.103	Nov 2016	0.102	Oct 2017	0.023	Oct 2018	-		0.023	Continuing	Continuing	Continuing
Link 16 Network JTIDS Depot Repair Bench Update	WR	Warner Robins Air Logistics Center : Warner Robins, GA	4.596	4.849	Dec 2016	0.000		0.000		-		0.000	0.000	9.445	9.445
Link 16 Network Technical Design Agents	C/CPFF	SeaPort-E : San Diego, CA	4.838	1.456	Nov 2016	0.948	Oct 2017	0.734	Oct 2018	-		0.734	Continuing	Continuing	Continuing
Link 16 Network Systems Engineering	WR	SPAWARSYSCEN PAC : San Diego, CA	53.336	1.530	Oct 2016	1.487	Oct 2017	1.270	Oct 2018	-		1.270	Continuing	Continuing	Continuing
Link 16 Network IV&V	WR	SPAWARSYSCEN PAC : San Diego, CA	4.267	0.380	Oct 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
C2P Development (Tech Refresh)	C/IDIQ	Northrop Grumman : San Diego, CA	21.444	0.872	May 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
C2P Development (Link 22)	C/IDIQ	Northrop Grumman : San Diego, CA	4.236	0.872	May 2017	2.224	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
C2P Development Data Terminal Set	C/IDIQ	DRS : Beavercreek, OH	5.617	1.647	Dec 2016	0.000		0.000		-		0.000	0.000	7.264	7.264
C2P Systems Engineering	WR	SPAWARSYSCEN PAC : San Diego, CA	18.764	3.274	Oct 2016	1.029	Oct 2017	2.927	Oct 2018	-		2.927	Continuing	Continuing	Continuing
C2P IV&V	WR	SPAWARSYSCEN PAC : San Diego, CA	8.877	3.842	Oct 2016	3.424	Oct 2017	3.290	Oct 2018	-		3.290	Continuing	Continuing	Continuing
C2P Development & Integration	WR	SPAWARSYSCEN PAC : San Diego, CA	10.194	5.706	Oct 2016	1.211	Oct 2017	8.645	Oct 2018	-		8.645	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
C2P Integrated Logistics Support	C/CPFF	SeaPort-E : San Diego, CA	4.509	0.254	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
LMMT Integrated Logistics Support	C/CPFF	SeaPort-E : San Diego, CA	1.033	0.350	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
LMMT Development	WR	SPAWARSYSCEN PAC : San Diego, CA	7.268	1.938	Oct 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
LMMT Systems Engineering	WR	SPAWARSYSCEN PAC : San Diego, CA	3.797	1.000	Oct 2016	0.650	Oct 2017	1.237	Oct 2018	-		1.237	Continuing	Continuing	Continuing
LMMT IV&V	WR	SPAWARSYSCEN PAC : San Diego, CA	0.979	0.800	Oct 2016	0.310	Oct 2017	0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	629.776	31.935		15.032		22.825		-		22.825	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 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	10.853	1.586	Oct 2016	3.684	Dec 2017	3.826	Dec 2018	-		3.826	Continuing	Continuing	Continuing
C2P T&E	WR	SPAWARSYSCEN PAC : San Diego, CA	2.101	0.150	Oct 2016	1.994	Nov 2017	2.251	Oct 2018	-		2.251	Continuing	Continuing	Continuing
LMMT T&E	WR	SPAWARSYSCEN PAC : San Diego, CA	2.400	0.800	Oct 2016	0.515	Oct 2017	0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	80.525	2.536		6.193		6.077		-		6.077	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
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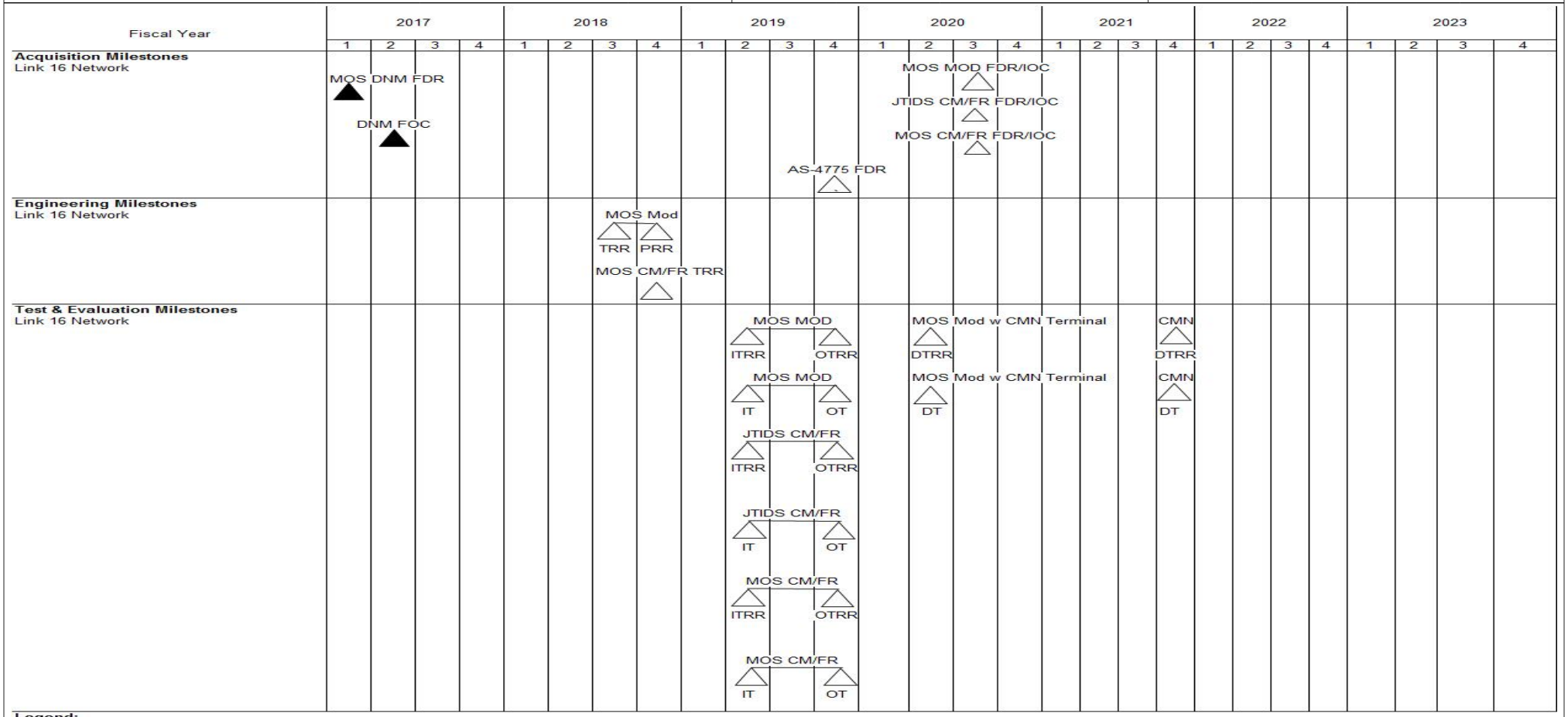
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Link 16 Network Program Management Support	C/CPFF	SeaPort-E : San Diego, CA	5.102	0.335	Nov 2016	0.161	Oct 2017	0.385	Oct 2018	-		0.385	Continuing	Continuing	Continuing
C2P Program Management Support	C/CPFF	SeaPort-E : San Diego, CA	6.672	0.800	Nov 2016	0.716	Nov 2017	0.777	Nov 2018	-		0.777	Continuing	Continuing	Continuing
C2P Systems Engineering Support	C/CPFF	SeaPort-E : San Diego, CA	0.000	1.176	Nov 2016	0.720	Nov 2017	0.817	Nov 2018	-		0.817	Continuing	Continuing	Continuing
LMMT Program Management Support	C/CPFF	SeaPort-E : San Diego, CA	1.071	0.450	Nov 2016	0.516	Oct 2017	0.414	Nov 2018	-		0.414	Continuing	Continuing	Continuing
		Subtotal	48.833	2.761		2.113		2.393		-		2.393	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	759.134	37.232		23.338		31.295		-		31.295	Continuing	Continuing	N/A

Remarks

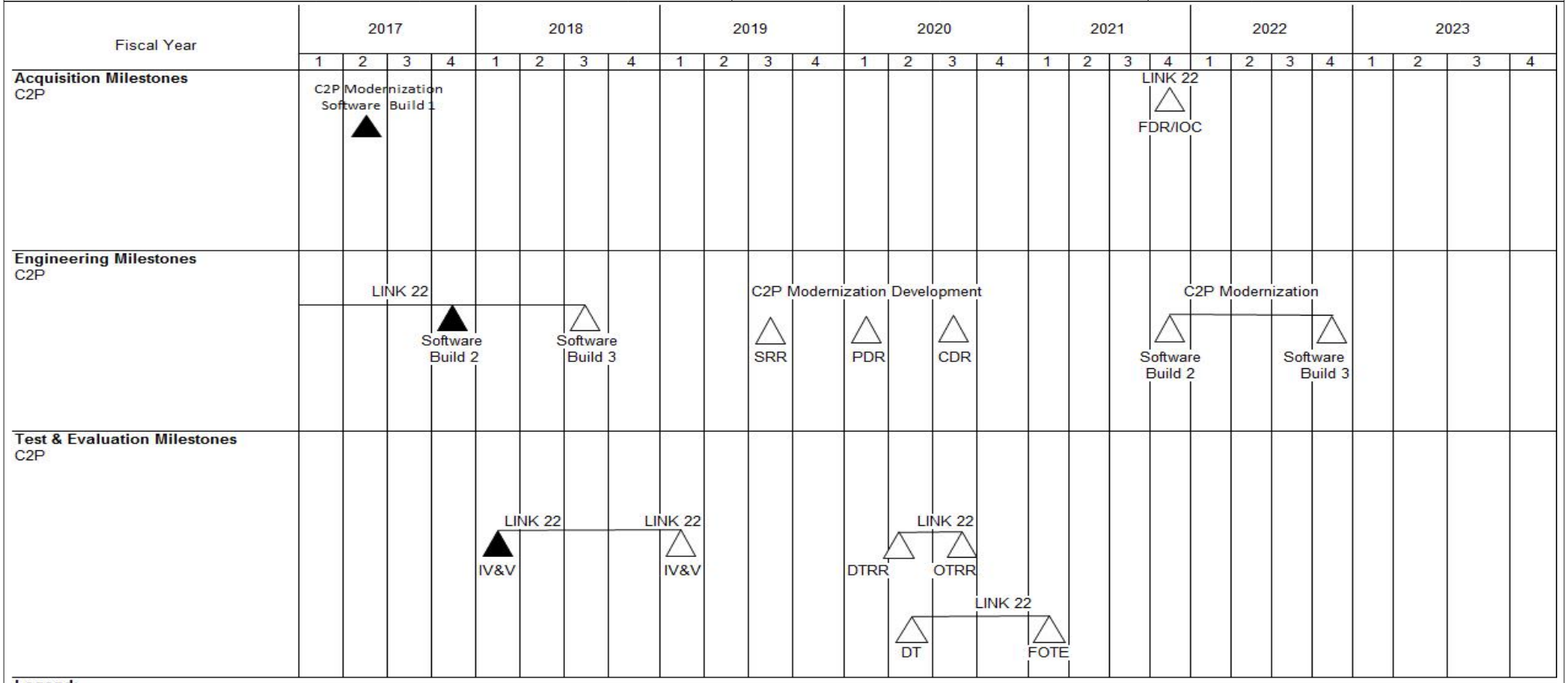
Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 2126 / *ATDLS Integration*



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

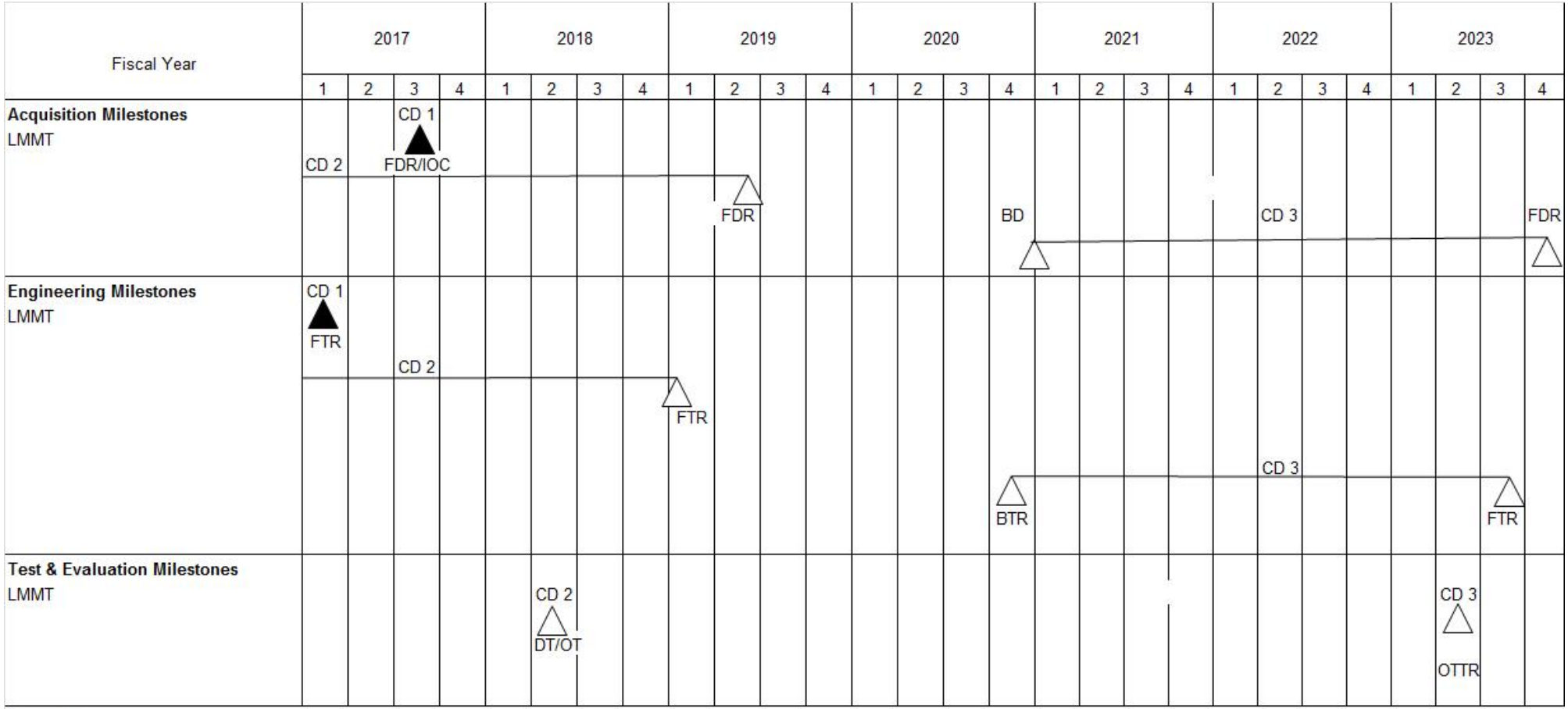
Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 2126 / *ATDLS Integration*



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

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 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

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
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Schedule Details

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

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Link 16 Network MOS MOD Operational Test	4	2019	4	2019
Link 16 Network AS-4775 Fielding Decision Review	4	2019	4	2019
Link 16 Network JTIDS CM/FR Operational Test Readiness Review	4	2019	4	2019
Link 16 Network MOS CM/FR Operational Test Readiness Review	4	2019	4	2019
Link 16 Network JTIDS CM/FR Operational Test	4	2019	4	2019
Link 16 Network MOS CM/FR Operational Test	4	2019	4	2019
C2P Modernization Development Preliminary Design Review	1	2020	1	2020
Link 16 Network MOS Mod with CMN Terminal DT	2	2020	2	2020
C2P Link 22 Developmental Test	2	2020	2	2020
Link 16 Network MOS Mod with CMN Terminal DTRR	2	2020	2	2020
Link 16 Network MOS MOD Fielding Decision Review/Initial Operating Capability	3	2020	3	2020
Link 16 Network JTIDS CM/FR Fielding Decision Review/Initial Operating Capability	3	2020	3	2020
Link 16 Network MOS CM/FR Fielding Decision Review/Initial Operating Capability	3	2020	3	2020
C2P Modernization Development Critical Design Review	3	2020	3	2020
LMMT CD 3 Build Technical Review	4	2020	4	2020
LMMT CD 3 Build Decision	4	2020	4	2020
C2P Link 22 Follow on Test and Evaluation	1	2021	1	2021
C2P Link 22 Fielding Decision Review/Initial Operating Capability	4	2021	4	2021
C2P Modernization Software Build 2	4	2021	4	2021
Link 16 Network CMN DTRR	4	2021	4	2021
Link 16 Network CMN DT	4	2021	4	2021
C2P Modernization Software Build 3	4	2022	4	2022
C2P Link 22 Operational Test Readiness Review	3	2020	3	2020
LMMT CD 3 Fielding Technical Review	3	2023	3	2023
LMMT CD 3 Fielding Decision Review	4	2023	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy											Date: February 2018	
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 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
3020: *MIDS/JTRS*	250.992	55.601	50.285	59.515	-	59.515	28.765	23.304	23.080	23.535	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 Tactical Data Links but was formerly in PE 0604280N JT Tact Radio Sys (JTRS).

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 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 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 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. 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 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 2 is a specific and distinct effort that will transform the MIDS JTRS radio to a true software defined radio allowing rapid technology insertion, in the field, to outpace the threat including software updates for maintenance, reliability, security, cyber, interoperability and capacity. MIDS Modernization Increments 3 and follow on efforts have yet to be funded, but are currently in the design stages. MIDS Modernization Increment 1 will be fielded with all MIDS JTRS CMN4 terminals.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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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 - Counter Air From-The-Air (NIFC-CA FTA) 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.

The FY19 Budget continues the development of MIDS Modernization Increment 2 (MMI2) that enhances Link 16 performance, provides rapid technology insertion to outpace the threat. MMI2 also improves fleet support for increased operational availability. In FY19, MMI2 will conduct Preliminary and Critical Design Reviews. The FY19 budget also 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 continuation of Contractor and Government First Article Qualification Testing.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: MIDS	55.601	50.285	59.515	0.000	59.515
Articles:	-	-	-	-	-
FY 2018 Plans: Complete MIDS JTRS Concurrent Multi-Netting with Concurrent Contention Receive (CMN-4) F/A-18 Developmental Test (DT), conduct an Operational Assessment (OA), and receive a MIDS JTRS CMN-4 F/A-18 fielding decision. Achieve MIDS JTRS CMN-4 Initial Operational Capability. Complete the Crypto Sub-System (CSS)/Protected Core Processer (PCP) upgrade for MIDS JTRS CMN-4 and Tactical Targeting Network Technology (TTNT) terminals. Execute a MIDS JTRS CMN-4 software development effort to support E-2D and MOS Modernization CMN-4 fielding. Complete the MIDS Modernization Increment 2 (MMI2- enhanced Link 16 performance, rapid technology insertion and increased operational availability) risk reduction efforts, including completion of the Functional Baseline (FBL) and the draft Allocated Baseline (ABL) specification development, upgraded Link 16 transceiver prototype, and conduct a joint industry/Government System Requirements Review-II (SRR-II). Award the MMI2 full development contract to continue systems engineering requirements analysis, a joint industry/Government System Functional Review (SFR), further Link 16 transceiver design efforts, and continue software/firmware updates to allow front-panel-loading in the field to enable rapid insertion of new capability. Continue development of TTNT including upgrades (Build Pass 2) for the Transceivers, TTNT External Power Amplifiers (TEPA) and High Powered Amplifiers (HPA). (SRF funding will not be used on the L band					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
requirements; L band delineated tasks will be tracked separately). Continue to update the operating environment for TTNT. Begin TTNT Production Representative Terminals delivery. Commence Technology Readiness Review. Begin Contractor First Article Qualification Testing (CFAQT). Deliver MIDS JTRS TTNT Production Representative Terminals (PRTs) for initial integration into the E-2D, EA-18G and F/A-18E/F. Complete the Multifunctional Information Distribution System Low Volume Terminal (MIDS-LVT) Block Upgrade 2 (BU2) test and integration. Award the MIDS-LVT BU2 Retrofit Contract in order to meet the Crypto Modernization and Frequency Remapping mandates established by NSA and Department of Transportation respectively. Continue MIDS systems engineering, communication security, IA and program management support. Continue Link 16 Waveform development and begin the Tactical Targeting Networking Technology (TTNT) Waveform development fixes and updates.					
FY 2019 Base Plans: Continue the full development of MIDS Modernization Increment 2 (MMI2) which includes a Preliminary Design Review (PDR) to approve the Allocated Baseline (ABL), continued development of the MIDS Mod Engineering Design Model (EDM) software, upgraded Link 16 transceiver hardware, systems integration, and continued software/firmware updates to allow front-panel-loading in the field to enable rapid insertion of new capability. MMI2 will also conduct a Critical Design Review post PDR and PDR updates. 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 begin 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 2019 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase of $9.23M from FY18 to FY19 due to the MIDS Modernization Increment 2 full development contract award in 3Q2018 (FY18 contract is for only 5 months whereas FY19 contract is for the full fiscal year). This results in the increase in budget from FY18 to FY19 of $9.23M.					
Accomplishments/Planned Programs Subtotals	55.601	50.285	59.515	0.000	59.515

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 FY19 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 continuation of Contractor and Government First Article Qualification Testing. The FY19 budget also supports the continuation of the development effort for rapid technology insertion into the MIDS JTRS terminal to outpace the threat (MIDS Modernization Increment 2) with Preliminary and Critical Design Reviews.

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: PB 2019 Navy		Date: February 2018
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development Prior Years	Various	Various : Various	30.882	0.000		0.000		0.000		-		0.000	0.000	30.882	30.882
MIDS JTRS NIFC-CA TTNT Full Development	C/CPFF	DLS : Cedar Rapids, IA	58.867	7.430	Oct 2016	0.000		0.000		-		0.000	0.000	66.297	66.297
MIDS JTRS NIFC-CA TTNT Full Development	C/CPFF	ViaSat : San Diego, CA	34.297	0.873	Dec 2016	0.000		0.000		-		0.000	0.000	35.170	35.170
MIDS-LVT BU2 Full Development	C/CPIF	DLS : Cedar Rapids, IA	28.853	9.320	Dec 2016	0.000		0.000		-		0.000	0.000	38.173	29.874
MIDS-LVT BU2 Full Development	C/CPIF	ViaSat : San Diego, CA	33.736	7.528	Dec 2016	0.000		0.000		-		0.000	0.000	41.264	33.715
MIDS-LVT BU2 Software Full Development	C/CPIF	BAE : Wayne, NJ	23.726	0.045	Feb 2017	0.000		0.000		-		0.000	0.000	23.771	24.946
BU2 Integration	C/CPFF	Lockheed Martin : Bethesda, MD	0.000	0.500	Aug 2017	1.500	Nov 2017	0.000		-		0.000	0.000	2.000	2.000
MIDS JTRS CMN-4 Production Representative Terminals (PRT)	C/FFP	DLS : Cedar Rapids, IA	2.345	0.242	Sep 2017	0.000		0.000		-		0.000	0.000	2.587	2.587
MIDS JTRS CMN-4 Production Representative Terminals (PRT)	C/FFP	ViaSat : San Diego, CA	2.301	0.483	Nov 2016	0.000		0.000		-		0.000	0.000	2.784	2.784
TTNT Development Contract (L Band)	C/CPFF	DLS : Cedar Rapids, IA	0.064	10.767	Mar 2017	5.736	Nov 2017	6.081	Mar 2019	-		6.081	Continuing	Continuing	Continuing
TTNT Development Contract (L Band)	C/CPFF	ViaSat : San Diego, Ca	0.020	1.000	Mar 2017	2.206	Mar 2018	3.274	Mar 2019	-		3.274	Continuing	Continuing	Continuing
MIDS JTRS Software Merge BC3	C/CPIF	ViaSat : San Diego, CA	4.112	1.432	Mar 2017	0.000		0.000		-		0.000	0.000	5.544	5.544
Link 16 Waveform Development	WR	SSC PAC : San Diego, CA	1.876	1.217	Nov 2016	0.775	Oct 2017	1.700	Nov 2018	-		1.700	Continuing	Continuing	Continuing
Air Dominance Assured Communications L16 WF (MIDS Mod Incr 2)	C/BA	NAVAIR : China Lake, CA	1.112	0.020	Feb 2017	0.000		0.000		-		0.000	0.000	1.132	1.132
MIDS Mod Inc 2 Risk Reduction	C/CPFF	DLS : Cedar Rapids, IA	0.360	2.386	Jan 2017	1.500	Nov 2017	0.000		-		0.000	0.000	4.246	4.247

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MIDS Mod Inc 2 Risk Reduction	C/CPFF	ViaSat : San Diego, CA	0.300	1.479	Jan 2017	1.000	Dec 2017	0.000		-		0.000	0.000	2.779	2.779
MIDS JTRS CSS/PCP Respin	C/CPFF	DLS : Cedar Rapids, IA	1.247	1.742	Jan 2017	0.000		0.000		-		0.000	0.000	2.989	2.989
MIDS JTRS CSS/PCP Respin	C/CPFF	ViaSat : San Diego, CA	0.639	2.366	Jan 2017	0.000		0.000		-		0.000	0.000	3.005	3.005
ER3A&3B (MIDS JTRS BC3+)	C/CPFF	TBD : TBD	0.000	0.000		3.668	Feb 2018	0.000		-		0.000	0.000	3.668	3.668
MIDS Mod Inc 2 Full Development	C/CPFF	DLS : Cedar Rapids, IA	0.000	0.000		16.967	Apr 2018	26.452	Apr 2019	-		26.452	Continuing	Continuing	Continuing
MIDS Mod Inc 2 Full Development	C/CPFF	ViaSat : San Diego, CA	0.000	0.000		10.527	Apr 2018	17.635	Apr 2019	-		17.635	Continuing	Continuing	Continuing
ER0F	C/CPFF	DLS : Cedar Rapids, IA	0.000	0.764	May 2017	0.000		0.000		-		0.000	0.000	0.764	0.764
ER0F	C/CPFF	ViaSat : San Diego, CA	0.000	0.262	May 2017	0.000		0.000		-		0.000	0.000	0.262	0.262
MIDS Mod Investigation Reports	C/CPFF	DLS : Cedar Rapids, IA	0.000	0.381	May 2017	0.000		0.000		-		0.000	0.000	0.381	0.381
MIDS Mod Investigation Reports	C/CPFF	ViaSat : San Diego, CA	0.000	0.067	May 2017	0.000		0.000		-		0.000	0.000	0.067	0.067
		Subtotal	224.737	50.304		43.879		55.142		-		55.142	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Multi-level security analysis	WR	NAVAIR : China Lake, Ca	0.000	0.000		0.393	Nov 2017	0.000		-		0.000	0.000	0.393	0.393
Modeling and Simulation	WR	NAVAIR : China Lake, Ca	3.110	0.764	Feb 2017	2.911	Jan 2018	1.696	Jan 2019	-		1.696	Continuing	Continuing	Continuing
		Subtotal	3.110	0.764		3.304		1.696		-		1.696	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Eval Prior Years	Various	Various : Various	6.380	0.000		0.000		0.000		-		0.000	0.000	6.380	6.380
MIDS JTRS CMN-4/MIDS Mod GFAQT and JTEL LAB	WR	SSC : San Diego, CA	1.105	0.132	Dec 2016	0.248	Dec 2017	0.205	Dec 2018	-		0.205	0.000	1.690	1.690
TTNT Link 16 Mod/ Simulation	MIPR	Lincoln Labs : Hanscom AFB, MA	0.976	0.113	Dec 2016	0.000		0.000		-		0.000	0.000	1.089	1.089
MIDS JTRS Flight Test	WR	NAVAIR : China Lake, CA	0.000	0.065	Feb 2017	0.000		0.000		-		0.000	0.000	0.065	0.065
JTEL Testing Support	C/CPFF	G-2 : San Diego, CA	0.000	0.095	Mar 2017	0.052	Nov 2017	0.095	Mar 2019	-		0.095	Continuing	Continuing	Continuing
MIDS Mod 1 OT Support	C/CPFF	Engility : Chantilly, VA	0.000	0.010	Apr 2017	0.000		0.000		-		0.000	0.000	0.010	0.010
MIDS Mod 1 OT Flight Test	MIPR	Department of Interior : Lakewood, CO	0.000	0.599	Apr 2017	0.000		0.000		-		0.000	0.000	0.599	0.599
		Subtotal	8.461	1.014		0.300		0.300		-		0.300	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 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	5.233	0.977	Nov 2016	1.446	Nov 2017	1.013	Dec 2018	-		1.013	Continuing	Continuing	Continuing
Government Engineering Support TTNT	WR	SSC : San Diego, CA	6.650	1.505	Jan 2017	0.742	Oct 2017	0.764	Nov 2018	-		0.764	Continuing	Continuing	Continuing
Govt Program Support NIFC-CA	WR	NAVAIR : Pax River, MD	0.939	0.000		0.030	Nov 2017	0.000		-		0.000	0.000	0.969	0.969
COR and Logistics Support	WR	SSC : Charleston, SC	0.000	0.076	Jan 2017	0.080	Nov 2017	0.082	Nov 2018	-		0.082	Continuing	Continuing	Continuing
Information Assurance	MIPR	NSA : Fort Meade, MD	0.000	0.051	Dec 2016	0.055	Dec 2017	0.057	Dec 2018	-		0.057	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering/ Programmatic Support	C/CPFF	Sentek : San Diego, Ca	0.661	0.518	Nov 2016	0.250	Dec 2017	0.258	Dec 2018	-		0.258	Continuing	Continuing	Continuing
ARL SIPRNET Connection	MIPR	ARL : Adelphi, MD	0.000	0.096	Dec 2016	0.099	Dec 2017	0.100	Dec 2018	-		0.100	Continuing	Continuing	Continuing
Contractor Program Management and Financial Support	C/CPFF	G2 : San Diego, CA	0.000	0.296	Jun 2017	0.100	Jan 2018	0.103	Jan 2019	-		0.103	Continuing	Continuing	Continuing
		Subtotal	14.684	3.519		2.802		2.377		-		2.377	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	250.992	55.601		50.285		59.515		-		59.515	Continuing	Continuing	N/A

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 Tactical Data Links but was formerly in PE 0604280N JT Tact Radio Sys (JTRS).
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
CFAQT - Contractor First Article Qualification Test GFAQT - Gov't First Article Qualification Test

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
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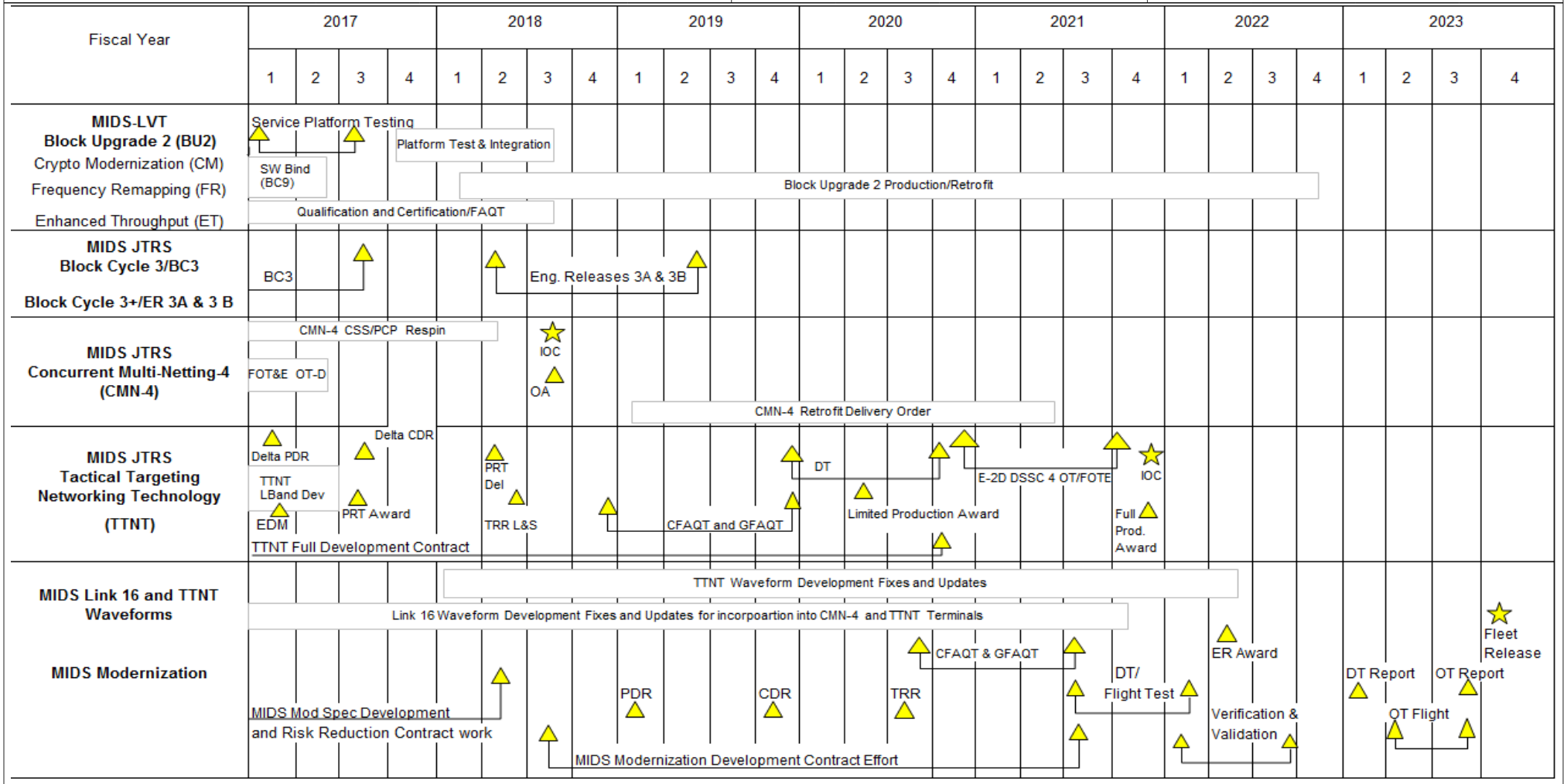

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
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Schedule Details

	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	2017	3	2018
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Software Bind (SW)	1	2017	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	1	2018	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	1	2017	3	2017
MIDS JTRS Block Cycle 3 (BC3): Block Cycle 3+ (ER 3A & 3B)	2	2018	2	2019
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): Full Operational Test and Eval OT-D	1	2017	2	2017
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): Operational Assessment	3	2018	3	2018
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): IOC (Initial Operational Capability)	3	2018	3	2018
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): CMN-4 Retrofit Delivery Order	1	2019	2	2021
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): CMN-4 CSS/PCP Respin	1	2017	2	2018
MIDS JTRS Tactical Targeting Networking Technology (TTNT): TTNT Hardware/ Software Development (L Band)	1	2017	2	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
MIDS JTRS Tactical Targeting Networking Technology (TTNT): TTNT Full Development Contract	1	2017	4	2020
MIDS JTRS Tactical Targeting Networking Technology (TTNT): PRT Award	3	2017	3	2017

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
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): 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)	2	2018	2	2018
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Developmental Test/ Operational Assessment	4	2019	4	2020
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Limited Production	2	2020	2	2020
MIDS JTRS Tactical Targeting Networking Technology (TTNT): E-2D DSSC 4 OT/ FOTE	4	2020	4	2021
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Full Production Award	4	2021	4	2021
MIDS JTRS Tactical Targeting Networking Technology (TTNT): IOC	4	2021	4	2021
MIDS Link 16 and TTNT Waveform: Link 16 Waveform Development Fixes and Updates	1	2017	4	2021
MIDS Link 16 and TTNT Waveform: TTNT Waveform Development Fixes and Updates	1	2018	2	2022
MIDS Modernization: MIDS Modernization Spec Development/Risk Reduction	1	2017	2	2018
MIDS Modernization: MIDS Modernization Increment 2 Full Development Effort	3	2018	3	2021
MIDS Modernization: MIDS Mod CFAQT & GFAQT	3	2020	3	2021
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
MIDS Modernization: MIDS Mod Verification and Validation	1	2022	3	2022
MIDS Modernization: MIDS Mod Engineering Release (Post DT)	2	2022	2	2022
MIDS Modernization: MIDS Mod DT Report	1	2023	1	2023
MIDS Modernization: MIDS Mod Operational Test Flight	2	2023	3	2023
MIDS Modernization: MIDS Mod Operational Test Report	3	2023	3	2023
MIDS Modernization: MIDS Mod Fleet Release	4	2023	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
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COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
3341: *Network Tactical Common Data Link*	57.537	28.563	16.229	13.886	-	13.886	49.144	36.289	6.210	6.343	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, MQ-25 (Stingray), 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. 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.

FY19 request is for NTCDL product development, to include continued development of two (2) NTCDL Engineering Development Models (EDMs) and associated software.

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 architecture which provides assured communications in any 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. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Network Tactical Common Data Link (NTCDL)	14.547	15.729	13.886	0.000	13.886
Articles:	2	-	-	-	-
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					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
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 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)). ***FY 2018 Plans:*** Conduct Initial Baseline Review (IBR), Preliminary Design Review (PDR), and Critical Design Review (CDR) with the vendor to assess development progress and review and approve the final engineering product baseline. Complete updating the Program Life Cycle Cost Estimate (PLCCE). Continue development of the 2 Engineering Development Models (EDMs) and the contractor-developed link controller subsystem (LCS) software. EDM development is a multi-year effort with delivery planned in FY22. Continue incremental development of the external data user interface (EDUI) and the graphical user interface (GUI) Government Furnished Software (GFS) for the link management system; conduct an In-Process Review (IPR) for delivery of GFS Incremental Capability. Conduct system engineering efforts to support NTCDL development, integration and internal/external software interface management. Continue development of the Navy Training Systems Plan (NTSP). Update the Cost Analysis Requirements Document (CARD), Commence the Test and Evaluation Master Plan (TEMP) update and the Capabilities Production Document (CPD), and continue development of test plans to support future developmental tests and operational assessment (DT/OA). ***FY 2019 Base Plans:*** Continue incremental development of GFS to include the EDUI and GUI for the link management system; conduct an IPR for delivery of GFS Incremental Capability. Continue development of the 2 EDMs and the contractor-developed LCS software. EDM development is a multi-year effort with delivery planned in FY22. Initiate system engineering efforts to support NTCDL development, integration and internal/external software interface management and make necessary updates to the CARD. Continue development of the NTSP and test plans to support future DT/OA. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** The FY 2019 funding request was reduced by $10 million to account for the availability of prior year execution balances.					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
The $1.8M funding decrease from FY 2018 to FY 2019 (which includes the $10M FY 2019 under execution reductions) will delay the Government Furnished Software (GFS) development, contractor-developed software, EDM development, and systems engineering efforts resulting in a fifteen month delay for EDM delivery.					
Title: Network Tactical Common Data Link (NTCDL) High Capacity Backbone (HCB) ***Articles:*** ***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 2018 Plans:*** FY18 efforts include HCB subject matter experts (SMEs) to support the JALN-M flight tests execution. Flight test demonstration completed in FY18. ***FY 2019 Base Plans:*** N/A ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding decrease from FY 2018 to FY 2019 is due to the completion of the HCB project.	14.016 -	0.500 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	28.563	16.229	13.886	0.000	13.886

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPN/2950: *NTCDL OPN, PE: 0205604N*	0.000	0.000	0.000	-	0.000	0.000	0.000	20.048	20.458	Continuing	Continuing

Remarks

D. Acquisition Strategy

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

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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 2019 Navy			Date: February 2018
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Product Development	C/CPIF	BAE Systems, Int : Wayne, NJ	9.744	9.993	Jun 2017	8.510	Dec 2017	10.114	Jun 2019	-		10.114	Continuing	Continuing	Continuing
NTCDL HCB Development	WR	SPAWARSYSCTR : San Diego, CA	3.203	2.190	Nov 2016	0.500	Nov 2017	0.000		-		0.000	0.000	5.893	5.893
NTCDL HCB Development	C/CPFF	MIT/Lincoln Lab : Lexington, MA	9.556	11.829	Nov 2016	0.000		0.000		-		0.000	0.000	21.385	21.385
NTCDL HCB Development	C/CPFF	DTIC : Fort Belvoir, VA	2.104	0.000		0.000		0.000		-		0.000	0.000	2.104	2.104
NTCDL Software Development	WR	SPAWARSYS : San Diego, CA	1.415	1.659	Nov 2016	1.700	Nov 2017	0.955	Nov 2018	-		0.955	Continuing	Continuing	Continuing
NTCDL Software Development	C/IDIQ	Technology Unlimited Group : San Diego, CA	0.000	0.000		1.743	Jan 2018	0.470	Nov 2018	-		0.470	Continuing	Continuing	Continuing
		Subtotal	26.022	25.671		12.453		11.539		-		11.539	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Systems Engineering	WR	SPAWARSYSCTR : San Diego, CA	13.165	0.907	Nov 2016	0.935	Oct 2017	0.554	Oct 2018	-		0.554	Continuing	Continuing	Continuing
NTCDL Systems Engineering	C/IDIQ	Technology Unlimited Group : San Diego, CA	8.986	0.560	Nov 2016	0.000		0.000		-		0.000	0.000	9.546	9.546
		Subtotal	22.151	1.467		0.935		0.554		-		0.554	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Test and Evaluation	WR	SPAWARSYSCTR : San Diego, CA	4.165	0.656	Oct 2016	1.563	Oct 2017	0.471	Oct 2018	-		0.471	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
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 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTCDL Test and Review	MIPR	JITC : Fort Huachuca, AZ	0.499	0.015	Dec 2016	0.015	Jan 2018	0.260	Dec 2018	-		0.260	Continuing	Continuing	Continuing
NTCDL Waveform certification	MIPR	COMOPTEVFOR : Norfolk, VA	0.260	0.115	Dec 2016	0.122	Jun 2018	0.205	Dec 2018	-		0.205	Continuing	Continuing	Continuing
		Subtotal	4.924	0.786		1.700		0.936		-		0.936	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 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	1.000
Program Management Support	C/CPFF	BAH : San Diego, CA	3.440	0.639	Nov 2016	1.141	Feb 2018	0.857	Nov 2018	-		0.857	Continuing	Continuing	Continuing
		Subtotal	4.440	0.639		1.141		0.857		-		0.857	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	57.537	28.563		16.229		13.886		-		13.886	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
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

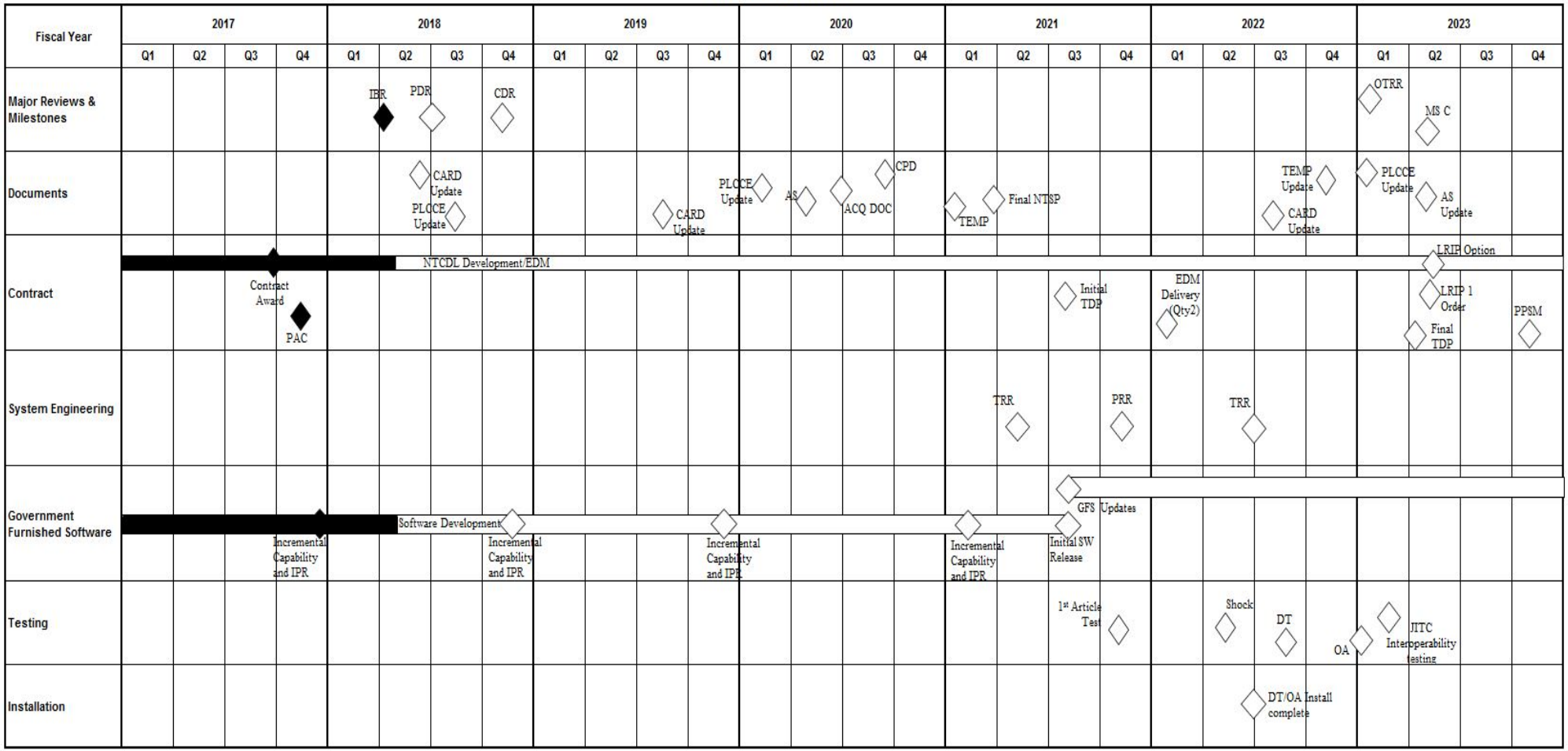

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3341 / *Network Tactical Common Data Link*

JALN-M Demonstration

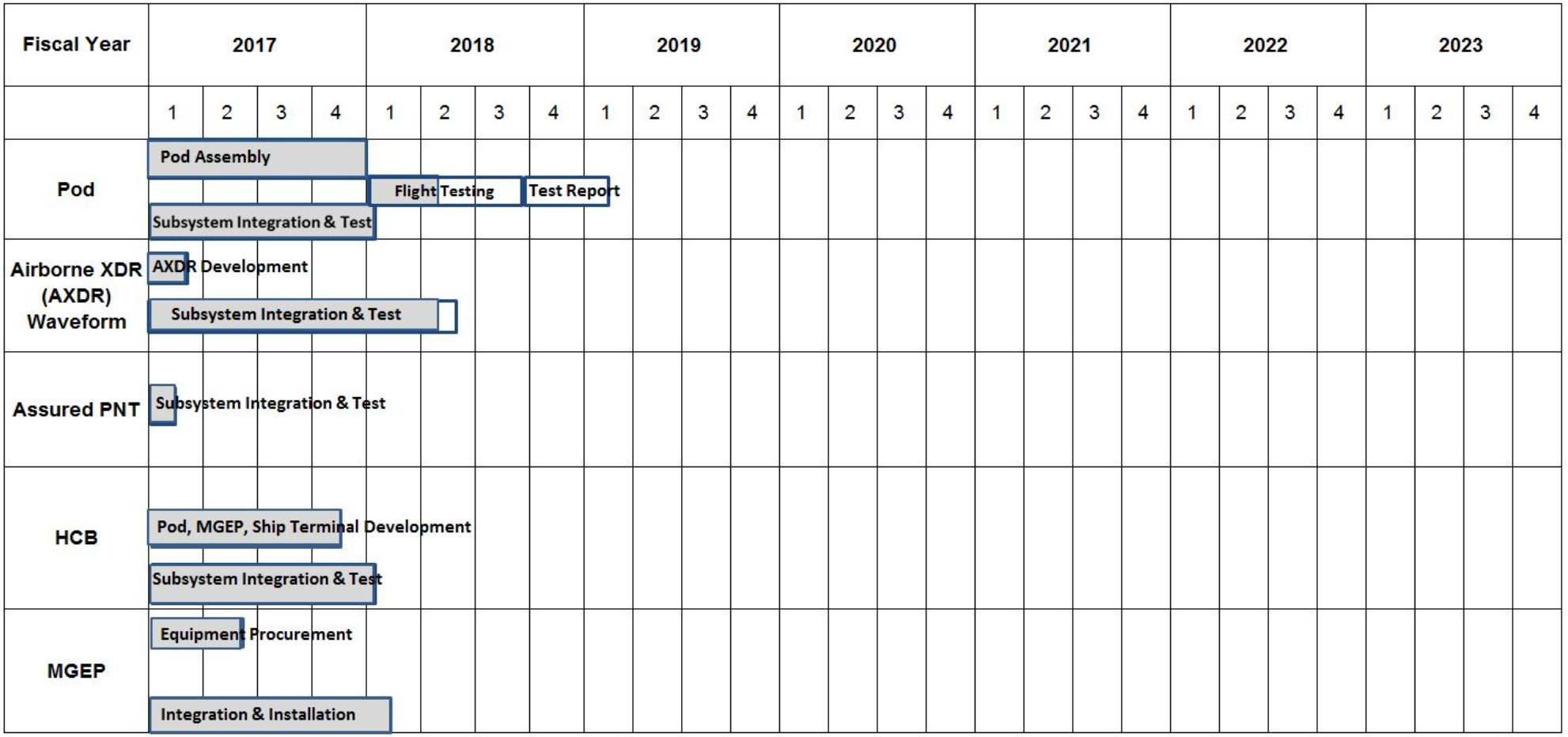

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205604N / *Tactical Data Links*	**Project (Number/Name)** 3341 / *Network Tactical Common Data Link*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3341				
NTCDL - Contract Award	3	2017	3	2017
NTCDL - Development Contract	3	2017	2	2023
NTCDL - Post Award Conference (PAC)	4	2017	4	2017
NTCDL - Government Furnished Software (GFS) Development	1	2017	3	2021
NTCDL - Initial Baseline Review (IBR)	2	2018	2	2018
NTCDL - Preliminary Design Review (PDR)	3	2018	3	2018
NTCDL - Cost Analysis Requirements Document (CARD) Update	2	2018	2	2018
NTCDL - Program Life Cycle Cost Estimate (PLCCE) Update	3	2018	3	2018
NTCDL - Critical Design Review (CDR)	4	2018	4	2018
NTCDL - CARD Update	3	2019	3	2019
NTCDL - PLCCE Update	1	2020	1	2020
NTCDL - Capability Production Document (CPD)	3	2020	3	2020
NTCDL - Test and Evaluation Master Plan (TEMP)	1	2021	1	2021
NTCDL - Final Navy Training Systems Plan (NTSP)	1	2021	1	2021
NTCDL - Test Readiness Review (TRR) 1	2	2021	2	2021
NTCDL - GFS Update	3	2021	4	2023
NTCDL - Production Readiness Review (PRR)	4	2021	4	2021
NTCDL - First Article Test	4	2021	4	2021
NTCDL - Engineering Development Models (EDMs) Delivery	1	2022	1	2022
NTCDL - Development Testing (DT)	3	2022	3	2022
NTCDL - TRR 2	3	2022	3	2022
NTCDL - Operational Test Readiness Reviw (OTRR)	1	2023	1	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
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*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
NTCDL - Operational Assessment (OA)	1	2023	1	2023
NTCDL - Milestone C	2	2023	2	2023
NTCDL - Low Rate Initial Production (LRIP) Order 1	2	2023	2	2023
JALN HCB Integrated Testing	1	2017	1	2018
JALN HCB Development	1	2017	4	2017
JALN HCB Flight Testing	1	2018	3	2018