Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	42.128	270.015	229.631	0.000	229.631	202.397	202.505	192.550	70.647	Continuing	Continuing
655050: *TDL System Integration*	-	32.544	251.157	229.631	0.000	229.631	156.151	121.293	127.904	57.837	Continuing	Continuing
655262: *Family of Gateways*	-	9.584	18.858	0.000	0.000	0.000	46.246	81.212	64.646	12.810	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Tactical Data Networks Enterprise (TDNE) develops, enhances and fields Tactical Data Links (TDL), advanced waveforms, radios, network management tools, and associated hardware and software that comprise the Joint Aerial Layer Network (JALN). This will be accomplished by upgrading currently fielded communications and TDL systems and by developing and fielding more advanced future systems. TDNE also addresses warfighter urgent demands through the establishment of Quick Reaction Capabilities (QRC) and Enterprise activities as directed by the JALN council. TDNE supports the development, fielding and training of aerial layer networking capabilities across multiple core functions including air superiority, ground precision attack, command and control, intelligence, surveillance and reconnaissance (ISR), and personal recovery while integrating capabilities with space operations. These activities provide the Joint Forces Air Component Commander (JFACC) with networks to build a common operating picture of the battlespace. TDNE executes quick reaction response capability requests by the warfighter and support activities (including ramp-up) associated with the Joint Aerial Layer Network (JALN) Enterprise activities as directed by the JALN Council. This program ensures the continued enhanced interoperability of Air Force and joint/coalition/NATO assets through efforts such as early systems engineering and use of the Political, Operational, Economic and Technical (POET) process for program requirements analysis and architectural design development/coordination of all TDN standards and management capabilities, configuration management, platform/system interoperability assessments, development of government reference architectures, interoperability certification testing, and flight testing. Protected Tactical Waveform (PTW) is a waveform designed to mitigate the effects of advanced jamming in Anti-Access/Area Denial environments. PTW provides worldwide, beyond line of sight, Anti-Jam (AJ), Low Probability of Intercept communications, via military and commercial satellite systems for tactical users in all services. This effort funds PTW modem development and aperture development on suitable platforms like (but not limited to) RQ-4 and BACN. PTW provides communication path diversity by increasing SATCOM resilience through satellite, spectral, and waveform diversity. This effort continues work started in Protected Tactical Service Field Demonstration (PTSFD) to complete PTW maturity and modem development, leveraging TALON Tacet Avis aperture work to develop the PTW antenna and radome. It includes terminal certification efforts (Information Assurance (IA), NSA and MIL-STD). This effort funds continued development of PTW components, protected tactical terminal modems that will be capable of being fully integrated into existing wideband terminals and will ensure delivery of protected tactical SATCOM to the joint and coalition warfighters in contested and degraded environments. PTW development activities may also include technical and acquisition-related studies, analysis, early systems engineering and risk reduction activities, addressing all subsystems to support both current program planning/execution and future AF program planning.

TDL System Integration will provide for the study (acquisitions current and proposed), analysis, enhancement, development, integration, demonstration, test, and evaluation of Tactical Data Links (TDLs) as a subset of the broader aerial layer networks. TDLs are used in both peace time and combat environments to exchange information such as character-oriented and fixed-formatted messages, data, radar tracks, target information, platform status, imagery, free-text messaging and command assignments. TDLs provide interoperability, local and global connectivity, and situational awareness to the user when training or fighting under rapidly changing operational conditions. TDLs increase mission effectiveness by providing enhanced air domain situational awareness, positive combat identification of aircraft in the

network, fusion/correlation of on- and off-board sensor data, digital sharing of machine-to-machine target and threat information, thereby, enabling time critical targeting and other mission assignment tasking. TDLs are used by all service theater command and control (C2) elements, weapons platforms, and sensors. TDLs include, but are not limited to: Link 16, Link 11, Link 22, Situational Awareness Data Link (SADL), Variable Message Format (VMF), Intra-Flight Data Link (IFDL), and other Advanced TDL Link technologies, such as Tactical Targeting Network Technology (TTNT), Common Data Link (CDL), and Multifunction Advanced Data Link (MADL). TDLs typically include both a waveform specification as well as the standards for exchanging messages. Agile Communications include the capability to share tactically significant information within/to/from highly contested environments in support of the Air Superiority 2030 Flight Plan. Agile Communication efforts provide for pre-Analysis of Alternatives (AoA) and development activities. High Capacity Backbone (HCB), a subset of the overall JALN concept, will provide the warfighter with a robust communication infrastructure enhancing C2 capabilities. HCB connects users operating within disadvantaged conditions to space and terrestrial communications utilizing Deployed Ground Entry Points (DGEP) and aerial nodes. Link 16 Enhancements will develop and field a Link 16 Anti Jam (AJ) capability on 4th and 5th generation platform to address Link 16 jamming threats in the contested and highly contested environments. Link 16 Enhancements funding will be utilized for Non-recurring engineering and integration of AJ capabilities on airborne and ground platforms. To address future Advanced Tactical Datalinks, development of a Software Programmable OMS compliant (SPOC) radio terminal is being studied. SPOC will provide a next generation radio set capable of hosting a variety of advanced tactical datalinks.

Family of Gateway provides for the study (acquisitions current and proposed), analysis, enhancements, development, integration, costing, demonstration, test, and evaluation efforts that will allow joint combat forces to exchange information quickly and accurately by bridging discrete airborne, terrestrial, maritime, and space-based C4ISR networks producing operational effects not possible within individual networks. Gateway functions include enabling interoperability between data formats, protocols, and communication mediums. Additionally, gateway functions extend the connectivity range, consolidate data from multiple networks into high capacity links for transmission to key C2ISR nodes, route information between disadvantaged users, and fuse/correlate data from multiple sources to improve accuracy. Gateway functions also provide application hosting, shared data storage, on-demand information access, smart data forwarding, and system monitoring and network management. Further, this project supports 5th-to-4th Generation efforts and future TDL communications development. Additionally, Family of Gateways will support to enhance existing TDL performance, through upgrades and engineering analysis of system designs. Efforts in this project include waveform, ground, and rapid acquisition activities supporting Air Force requirements for communication bridging across multiple platforms, sources and communication domains. Moreover, the E-3G AWACS, 5th-to-4th Generation Gateway effort provides 4th Generation tactical edge assets with a common tactical operating picture for enhanced battlespace awareness via integration of 5th Generation sensor data. This effort integrates the core components (5th-to-4th Gateway, Correlation/fusion, and National sensor inputs) for use on the E-3G platform.

As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is $14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force					Date: February 2019
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604281F / *Tactical Data Networks Enterprise*		
B. Program Change Summary ($ in Millions)	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**
Previous President's Budget	38.250	207.746	261.742	0.000	261.742
Current President's Budget	42.128	270.015	229.631	0.000	229.631
Total Adjustments	3.878	62.269	-32.111	0.000	-32.111
• Congressional General Reductions	-1.743	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	50.000			
• Congressional Directed Transfers	0.000	14.888			
• Reprogrammings	7.021	0.000			
• SBIR/STTR Transfer	-1.400	0.000			
• Other Adjustments	0.000	-2.619	-32.111	0.000	-32.111

Change Summary Explanation

FY 2018:

- Project 655050, funding was increased by $7.0 million BTR to fund 5th-to-4th UON
- Project 655050, funding was decreased due to $1.4 million SBIR and 1.7 million for a congressional reduction.
- The total for FY18 project net change is $3.8 million

FY 2019:

- Project 655050, funding was increased by $50.0 million congressional add to accelerate ABMS
- Project 655050, funding was increased by $14.888 million as a technical adjustment for PTW
- Project 655050, funding was decreased by $2.619 million for an MDAP penalty
- The total for FY19 project net change is $62.269 million

Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force			Date: February 2019
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / *Tactical Data Networks Enterprise*	Project (Number/Name) 655050 / *TDL System Integration*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
655050: *TDL System Integration*	-	32.544	251.157	229.631	0.000	229.631	156.151	121.293	127.904	57.837	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2018, Project Cursor on Target (CoT) was terminated

A. Mission Description and Budget Item Justification

Tactical Data Links (TDL) System Integration provides for the study, analysis, enhancement, development, integration, demonstration, joint/coalition/NATO interoperability exercises, costing, test, trials, and evaluation of TDL as a subset of the broader aerial layer network. TDLs are used in both peacetime and combat environments to exchange information such as character-oriented and fixed-formatted messages, data, radar tracks, target information, platform status, imagery, free-text messaging and command assignments. TDLs provide interoperability, local and global connectivity, and situational awareness to the user when training or fighting under rapidly changing operational conditions. TDLs increase mission effectiveness by providing enhanced air domain situational awareness, positive combat identification of aircraft in the network, fusion/correlation of on- and off-board sensor data, digital sharing of machine to machine target and threat information and, thereby, enabling time critical targeting and other mission assignment tasking. TDLs are used by all service, NATO, and coalition theater C2 elements, weapons platforms, and sensors.

The number of Air Force platforms hosting TDLs has expanded from C2 aircraft (E-3, E-8, E-11A, EQ-4B, etc.) to the fighter, bomber, intelligence, surveillance and reconnaissance (ISR), tanker, airlift and other tactical fleets (F-15, F-16, F-22A, Rivet Joint, B-1, B-2, B-52, KC-46, etc.), as well as precision guided munitions. Utilization of TDLs in joint and international environments requires the integration of terminals into host platforms and interoperability of TDL networks across all deployed joint/Coalition/NATO platforms. Recent mandates require additional studies and analysis in order to meet frequency reprogramming and cryptographic requirements.

Efforts in this project include waveform and integration activities.

Waveform:
Waveform activities include, but are not limited to, enabling and supporting Joint Interoperability of Tactical Command and Control Systems (JINTACCS), joint/Coalition/ NATO Interoperability, Link 16 enhancements, and development of a next generation waveform and/or advanced tactical data link. Funding will provide training, logistics development, testing and certification of individual TDL implementations to joint/allied standards, establishment of service-wide network management procedures/ operations, and system wide enhancements/testing, demonstration and experimentation.

Integration:
Integration activities include but are not limited to, Data Link Test Facility (DTF), MIDS JTRS, Air Force Participating Test Unit (AFPTU), Interoperable System Management and Requirements Transformation (iSMART), Network Centric Capability Assessment (NCCA), NATO interoperability, Coalition interoperability, TDL

Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force		Date: February 2019
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Planning, Analysis, and Monitoring (TDL PAM), integration analysis of C2 of JALN, Combat Cloud, Protected Tactical Waveform (PTW)and analysis of integration on platforms of existing TDN systems, system-of-systems analysis. Funding will ensure continued enhanced interoperability of Air Force/joint/Coalition/NATO assets through efforts such as early systems engineering and use of the POET process for program requirements analysis and architectural design development/coordination of all TDN standards and management capabilities, configuration management, platform/system interoperability assessments, development of government reference architectures, integration of cyber technologies, interoperability certification testing, and flight testing, demonstration and experimentation.

Activities also include studies, prototypes and analysis (engineering and cost) to support both current program planning and execution and future program planning efforts for Tactical Data Networks (TDN), including development of joint concepts for C2 of JALN, JALN Analysis of Alternatives (AoA) follow-on analysis, and JALN gateway planning.

Activities will also include joint/Coalition/NATO Interoperability that provides program office system engineering to support Foreign Military Sales (FMS) case development, FMS planning for tech refresh modifications, Crypto-Modernization, and Net Management.

Agile Communications include the capability to share tactically significant information within/to/from highly contested environments in support of the Air Superiority 2030 Flight Plan. Agile Communication efforts provide for pre-Analysis of Alternatives (AoA) and development activities. Agile Communications supports the application of open standards & advanced apertures over an Enterprise-wide Aerial Network, enabling all platforms to share combat-relevant data/info to, from & within the Highly Contested Environment (HCE).

High Capacity Backbone (HCB) effort implements an incremental approach for deploying resilient reach back connectivity to DISN services and in-theater rear echelon organizations through dedicated aerial gateways and opportunistic airborne nodes. The HCB Transport supports a robust deployable ground infrastructure required, through reach back, range extension and payload control. It will use an open system approach composed of non-proprietary government and commercial interface standards.
Link 16 Enhancement will develop and field Link 16 Anti-Jam (AJ) capabilities on 4th and 5th generation platforms to address Link 16 jamming threats in the contested and highly contested environments. Focus will be directed toward non-recurring engineering and integration of AJ capabilities on airborne and ground platforms.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver TDL weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F and 0605898F.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Tactical Data Networks (TDN) Integration	13.943	66.814	19.388	0.000	19.388

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Description: TDN Integration activities include but are not limited to, Data Link Test Facility (DTF), Air Force Participating Test Unit (AFPTU), Network Centric Capability Assessment (NCCA), Joint/Coalition/NATO Interoperability, Joint Aerial Layer Network (JALN) Analysis of Alternatives (AoA) follow-on, JALN gateway planning. ***FY 2019 Plans:*** -Will continue to manage the development, certification, developmental training, and logistics plans for individual TDL implementations to joint/allied standards - Will continue to provide management with the necessary engineering, technical, and administrative support needed to facilitate development -Will continue to plan for testing, integration, and associated training for MIDS JTRS upgrade configurations -Will continue to provide support to TDL interoperability testing of development and fielded systems through the DTF -Will continue support to DoD-mandated TDL MIL-STD conformance testing and interoperability assessments for all TDL-capable Air Force platforms through the AFPTU -Will continue to conduct aerial layer network focused studies and analysis that support data link enhancements - Will continue to assess tactical airborne network and network management gaps that are validated in existing requirements documents through the Network Centric Capability Assessments (NCCA) -Studies and analysis will include, but will not be limited to, supporting both current program planning and execution and future program planning efforts for TDN (e.g. development of joint concepts for C2 and network management of the Joint Aerial Layer Network (JALN), Combat Cloud, and JALN gateway planning) -Will continue to provide support to Coalition interoperability and provide program office system engineering to support NATO C3I, Foreign Military Sales (FMS) case development, FMS planning for technology refresh modifications, Crypto-Modernization, and Net Management - Will provide support to the DTF and AFPTU with required hardware and software upgrades and license renewals, which provide development and interoperability support for new capabilities and technology growth. - Will provide support to Agile Communications efforts that include pre-Analysis of Alternatives (AoA) and development activities ***FY 2020 Base Plans:*** -Will continue to manage the development, certification, developmental training, and logistics plans for individual TDL implementations to joint/allied standards					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force		Date: February 2019
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- Will continue to provide management with the necessary engineering, technical, and administrative support needed to facilitate development -Will continue to plan for testing, integration, and associated training for MIDS JTRS upgrade configurations -Will continue to provide support to TDL interoperability testing of development and fielded systems through the DTF -Will continue support to DoD-mandated TDL MIL-STD conformance testing and interoperability assessments for all TDL-capable Air Force platforms through the AFPTU -Will continue to conduct aerial layer network focused studies and analysis that support data link enhancements - Will continue to assess tactical airborne network and network management gaps that are validated in existing requirements documents through the Network Centric Capability Assessments (NCCA) -Studies and analysis will include, but will not be limited to, supporting both current program planning and execution and future program planning efforts for TDN (e.g. development of joint concepts for C2 and network management of the Joint Aerial Layer Network (JALN), Combat Cloud, and JALN gateway planning) -Will continue to provide support to Coalition interoperability and provide program office system engineering to support NATO C3I, Foreign Military Sales (FMS) case development, FMS planning for technology refresh modifications, Crypto-Modernization, and Net Management - Will provide support to the DTF and AFPTU with required hardware and software upgrades and license renewals, which provide development and interoperability support for new capabilities and technology growth. - Will provide support to Agile Communications efforts that include pre-Analysis of Alternatives (AoA) and development activities ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A					
Title: Joint Interoperability of Tactical Command and Control Systems (JINTACCS)	2.665	9.414	6.555	0.000	6.555
Description: Joint Interoperability of Tactical Command and Control Systems (JINTACCS) ensures interoperability of TDL systems with associated joint, allied, and Coalition systems. It includes configuration management of TDL Military Standards (MIL-STDs), TDL message development, interoperability test/ certification, and TDL message standard implementation using interoperable System Management and Requirements Transformation (iSMART) for Link 11A/B, Link 16, Link 22, Variable Message Format (VMF),					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Integrated Broadcast Service (IBS), Intra-flight Data Link (IFDL), Multifunction Advanced Data Link (MADL), and others. ***FY 2019 Plans:*** -Will continue to provide the necessary engineering, technical, and administrative support required to add and/or update Air Force platform and system information exchange requirements -Will continue to ensure compatibility and interoperability of TDLs by funding required Air Force/joint MIL-STD compliance and interoperability tests -Will continue to ensure compatibility and interoperability of TDLs by developing TDL messaging capability to address new or updated operational requirements ***FY 2020 Base Plans:*** -Will continue to provide the necessary engineering, technical, and administrative support required to add and/or update Air Force platform and system information exchange requirements -Will continue to ensure compatibility and interoperability of TDLs by funding required Air Force/joint MIL-STD compliance and interoperability tests -Will continue to ensure compatibility and interoperability of TDLs by developing TDL messaging capability to address new or updated operational requirements ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A					
Title: Protected Tactical Waveform (PTW) ***Description:*** Protected Tactical Waveform (PTW) is a waveform designed to mitigate the effects of advanced jamming in Anti-Access/Area Denial environments. PTW provides worldwide, beyond line of sight, Anti-Jam (AJ), Low Probability of Intercept communications, via military and commercial satellite systems for tactical users in all Services. This effort funds PTW modem development and aperture development on suitable platforms like (but not limited to) RQ-4 Global Hawk and EQ-4B/E-11A Battlefield Airborne Communications Node (BACN). PTW provides communications path diversity by increasing SATCOM resilience through satellite, spectral, and waveform diversity. This effort continues work started in Protected Tactical Service Field Demonstration (PTSFD) to complete PTW maturity and modem development, leveraging TALON Tacet Avis aperture work to develop PTW antenna and radome. It includes terminal certification efforts (Information Assurance (IA), NSA and	0.000	12.000	14.888	0.000	14.888

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
MIL-STD). This effort funds continued development of PTW components, protected tactical terminal modems that will be capable of being fully integrated into existing wideband terminals and will ensure delivery of protected tactical SATCOM to the joint and coalition warfighters in contested, degraded environments. PTW development activities may also include technical and acquisition related studies, analysis, and early systems engineering and risk reduction activities addressing all subsystems to support both current program planning/execution and future AF program planning. ***FY 2019 Plans:*** -Protected Tactical Waveforms (PTW) development is a new start in FY19 under PE 0604281F -Continue PTW modem development and aperture development on suitable platforms like (but not limited to) RQ-4 Global Hawk and EQ-4B/E-11A Battlefield Airborne Communications Node (BACN). -Will submit an RFI regarding the BiFrost to develop and prototype of the PTWSAT radio terminal -Will prepare acquisition strategy and prepare RFP package and award ***FY 2020 Base Plans:*** - Will continue the development and test of the prototype of the PTWSAT radio terminal ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A					
Title: TDL Planning, Analysis, and Monitoring (TDL PAM) ***Description:*** The Air Force has a requirement for a TDL network planning, analysis and monitoring capability. TDL PAM's operational requirements are to support the Joint Interface Control Officer (JICO) in the Air and Space Operations Center (AOC); Regional Interface Control Officer (RICO) in the Control Reporting Center (CRC); and Interface Control Officers in the Defense Sectors during the execution and management of the Joint Multi-Tactical Data Link Network (MTN) architecture. Network complexity, large AORs, challenging terrain, and capacity issues within the MTN require a management tool that helps operators plan for the effective use of MTN capabilities. ***FY 2019 Plans:*** -Procure the Navy's Link Monitoring and Management Tool (LMMT) for test and evaluation at the Ryan Center -RDT&E funds for development of the Platform J capability	0.036	29.000	27.000	0.000	27.000

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
-RDT&E funds for development of OPTASK Link parsing capability ***FY 2020 Base Plans:*** -Procure LMMT for test and evaluation in the AOC, CRC, and the Defense Sectors weapon systems and continue funding LMMT incorporating AF requirements. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A					
Title: Agile Comms ***Description:*** Agile Comms supports the application of open standards and advanced apertures over an Enterprise-wide Aerial Network, enabling all platforms to share combat-relevant data/info to, from and within the Highly Contested Environment (HCE). ***FY 2019 Plans:*** - Will engage in post ICD and pre AoA activities including the development of the Architecture and Enterprise Approach to the Joint Aerial Network ***FY 2020 Base Plans:*** - Will continue post ICD and pre AoA activities including the development of the Architecture and Enterprise Approach to the Joint Aerial Network ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A	0.000	65.000	82.712	0.000	82.712
Title: High Capacity Backbone (HCB) ***Description:*** The Joint Aerial Layer Network High Capacity Backbone (JALN HCB) will provide a robust communication infrastructure to the warfighter enhancing command and control (C2) capabilities within any theater of operations. JALN HCB will enable range extension, enhance interoperability, increase situation	0.000	33.000	51.000	0.000	51.000

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
awareness by reducing the time it takes to gather intelligence data, deliver the intelligence for analysis and to deliver the information to the user. ***FY 2019 Plans:*** Will conduct risk reduction efforts/experiments to inform decision ahead of CDD ***FY 2020 Base Plans:*** Will continue risk reduction efforts/experiments based on submitted 1067s and draft CDD ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A					
Title: Link 16 Enhancements ***Description:*** Link 16 Enhancement will develop and field Link 16 Anti Jam (AJ) capabilities on 4th and 5th generation platforms to address Link 16 jamming threats in the contested and highly contested environments. ***FY 2019 Plans:*** - Will perform non recurring engineering and integration on airborne platforms ***FY 2020 Base Plans:*** Will conduct development and operational test on integrated solution on airborne platforms ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A	0.000	5.955	9.925	0.000	9.925
Title: SFF/DACAS Modernization and System-of-Systems (SoS) Enterprise Integration ***Description:*** This effort will support the development and demonstration of Small Form Factor (SFF) technologies that can support Digitally Assisted Close Air Support (DACAS) and other missions across the full spectrum of operating environments. This effort will consider System-of-Systems (SoS) engineering, technical analysis/performance, platform integration, and Tactics, Techniques, and Procedures (TTPs) to best utilize technologies and acquisition approaches for enterprise modernization.	7.000	11.910	12.903	0.000	12.903

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
FY 2019 Plans: - Release RFP package and award contract ***FY 2020 Base Plans:*** - Continue development and evaluation of prototype leading towards future testing ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A					
Title: Applique Technologies for TDLs ***Description:*** This effort will develop and test low Size, Weight, and Power (SWaP) applique production kits to support TDL communications; it will incorporate proven techniques related to RF components, system interfaces, and platform integration. This effort will identify appropriate platforms, apertures, and interfaces and evaluate using representative flight environments and conditions. ***FY 2019 Plans:*** - Will continue to complete lab test with current applique and developed test bed - Update and deliver applique and supporting documentation ***FY 2020 Base Plans:*** - Move FY 20 funds to Link 16 Evolution ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A	0.900	9.131	0.000	0.000	0.000
Title: Link 16 Evolution (changed from "Cognitive Enterprise Development and Baselining" on FY18 PB) ***Description:*** This effort will implement Link 16 technologies into TDL terminals and investigate the integration of additional emerging technologies to improve communications reliability. This effort will maintain a government-controlled technical baseline(s) to efficiently execute development and enhancements. Emerging technologies	8.000	8.933	5.260	0.000	5.260

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Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655050 / *TDL System Integration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
will be developed and evaluated for efficacy; recommendations will be identified for appropriate terminal fielding/ upgrades to platforms and will be considered when evaluating enterprise TDL capabilities/gaps. ***FY 2019 Plans:*** - Will complete integrating applique into the MIDS JTRS terminal and conduct various test activities proving out current analysis - Will coordinate with aircraft platforms for integrating and testing applique while utilizing the MIDS JTRS radio and current antennas ***FY 2020 Base Plans:*** - Will complete analysis to further improve Anti Jam capabilities ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A					
Accomplishments/Planned Programs Subtotals	32.544	251.157	229.631	0.000	229.631

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• RDTE 07 PE 0207448F: *C2ISR TDL*	2.875	1.505	1.531	-	1.531	1.559	1.587	1.616	-	Continuing	Continuing
• APAF 05 Line Item F01500: *F-15*	0.844	46.903	53.211	-	53.211	40.167	20.933	21.310	-	Continuing	Continuing
• APAF 05 Line Item F01600: *F-16*	-	6.755	8.371	-	8.371	8.525	8.695	8.851	-	Continuing	Continuing
• APAF 05 Line Item B00200: *B-2A*	1.718	2.315	0.201	-	0.201	0.206	0.210	0.213	-	Continuing	Continuing
• APAF 05 Line Item B01B00: *B-1B*	-	0.000	0.000	-	0.000	0.000	0.000	0.000	-	Continuing	Continuing
• OPAF 03 Line Item 834010: *General Information Technology*	0.312	0.177	0.180	-	0.180	1.698	1.701	1.731	-	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655050 / *TDL System Integration*

D. Acquisition Strategy

The Airborne Networking Directorate provides for common development, integration, and interoperability across the entire airborne network and ensures that data links are procured and maintained as a joint, end-to-end command and control system. Platform acquisition strategies vary by program, but the majority of development and integration is normally accomplished by the weapon system prime contractor.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force			Date: February 2019
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655050 / *TDL System Integration*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TDN Integration	Various	Various : Various	-	6.971	Jan 2018	61.353	Jan 2019	9.608	Jan 2020	-		9.608	Continuing	Continuing	-
TDN Integration - TDL PAM	MIPR	Various : Various	-	-		28.325	Feb 2019	27.000	Sep 2020	-		27.000	Continuing	Continuing	-
High Capacity Backbone (HCB)	C/TBD	Various : Various	-	-		33.000	Mar 2019	51.000	Mar 2020	-		51.000	Continuing	Continuing	-
Agile Comms	C/TBD	Various : Various	-	-		65.000	Mar 2019	83.000	Apr 2020	-		83.000	Continuing	Continuing	-
SFF/DACAS Modernization and SoS Enterprise	MIPR	Various : Various	-	7.000	Mar 2018	11.910	Mar 2019	12.903	Dec 2019	-		12.903	Continuing	Continuing	-
Applique Technologies for TDLs	MIPR	Various : Various	-	0.900	Mar 2018	9.131	Mar 2019	5.260	Mar 2019	-		5.260	Continuing	Continuing	-
Link 16 Evolution	MIPR	Various : Various	-	8.000	Mar 2018	8.933	Mar 2019	-		-		-	Continuing	Continuing	-
Link 16 Enhancements	C/CPAF	Not specified. : TBD	-	-		5.955	Apr 2019	9.925	Apr 2020	-		9.925	Continuing	Continuing	-
Protected Tactical Waveform (PTW)	C/CPAF	Not specified. : TBD	-	-		12.000	Jun 2019	14.888	Mar 2020	-		14.888	Continuing	Continuing	-
		Subtotal	-	22.871		235.607		213.584		-		213.584	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TDN Integration - NCCA	C/T&M	MITRE : Bedford, MA	-	3.202	Oct 2017	1.287	Oct 2018	1.547	Oct 2019	-		1.547	Continuing	Continuing	-
		Subtotal	-	3.202		1.287		1.547		-		1.547	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TDN Integration - DTF	PO	46th Test Squadron : Eglin AFB, FL	-	0.400	Feb 2018	1.222	Dec 2018	2.000	Nov 2019	-		2.000	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force			Date: February 2019
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655050 / *TDL System Integration*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JINTACCS	C/FFP	Spectrum Comm Inc : Newport News, VA	-	2.985	Feb 2018	6.414	Feb 2019	6.555	Jan 2020	-		6.555	Continuing	Continuing	-
TDN Integration - AFPTU	MIPR	Various : Various	-	0.570	Sep 2018	2.077	Sep 2019	2.500	Dec 2019	-		2.500	Continuing	Continuing	-
5th to 4th redirect efforts	MIPR	Various : Various	-	0.635		-		-		-		-	Continuing	Continuing	-
		Subtotal	-	4.590		9.713		11.055		-		11.055	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TDN Integration PMA - A&AS support - NCCA, Coalition Interoperability, JALN AoA	C/CPAF	Various : Various	-	1.200	Jan 2018	3.667	Jun 2019	2.000	Dec 2019	-		2.000	Continuing	Continuing	-
TDN Integration PMA - FFRDC support - Coalition Interoperability, JALN AoA	C/T&M	MITRE : Bedford, MA	-	0.360	Oct 2017	0.538	Oct 2018	0.600	Nov 2019	-		0.600	Continuing	Continuing	-
TDN Integration PMA - Travel, Government Purchase Cards, etc...DTF, NCCA, Coalition Interoperability, AFPTU, JALN AoA	Various	Various : Various	-	0.250	Sep 2018	0.285	Sep 2019	0.800	Oct 2019	-		0.800	Continuing	Continuing	-
JINTACCS PMA - Travel, Government Purchase Cards, etc...	Various	Various : Various	-	0.035	Jan 2018	0.060	Sep 2019	0.045	Oct 2019	-		0.045	Continuing	Continuing	-
Cursor on target - PMA A&AS support	C/Various	Various : .	-	0.036	Feb 2018	-		-		-		-	Continuing	Continuing	-
TDL PAM development program	C/CPAF	Various : Various	-	0.000	Jan 2018	-		-		-		-	Continuing	Continuing	-
		Subtotal	-	1.881		4.550		3.445		-		3.445	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force			Date: February 2019
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / *Tactical Data Networks Enterprise*	Project (Number/Name) 655050 / *TDL System Integration*	

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	32.544		251.157		229.631		-		229.631	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655050 / *TDL System Integration*

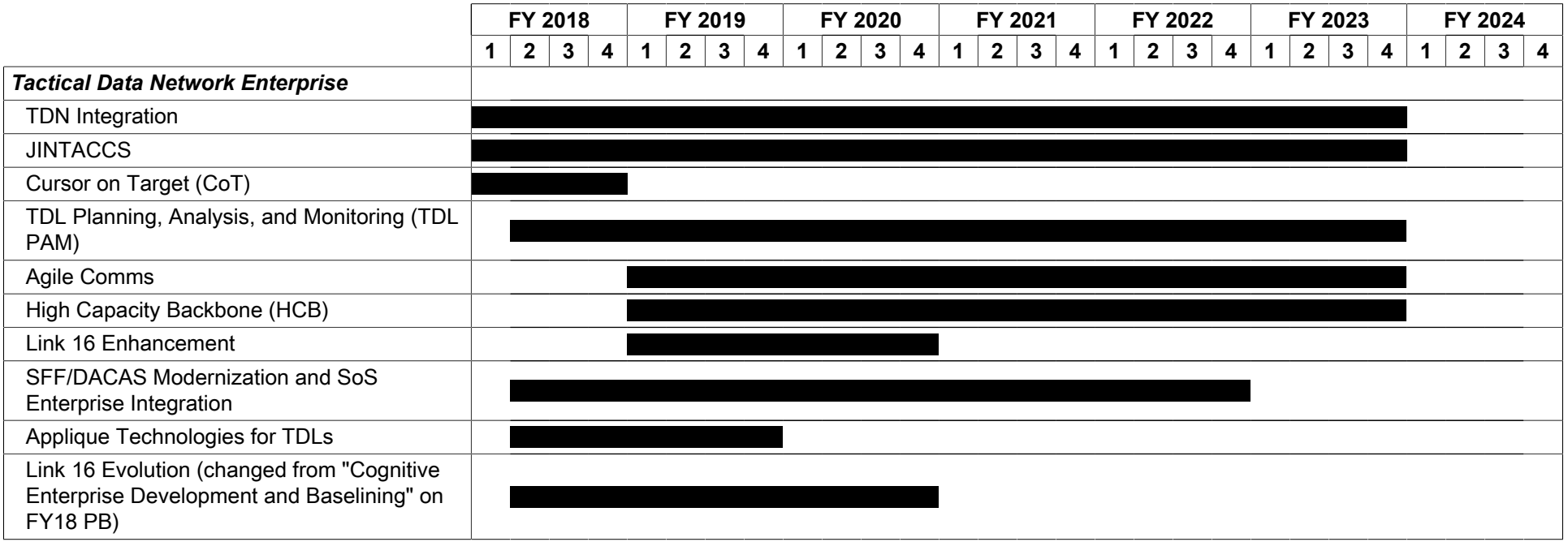

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655050 / *TDL System Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Tactical Data Network Enterprise				
TDN Integration	1	2018	4	2023
JINTACCS	1	2018	4	2023
Cursor on Target (CoT)	1	2018	4	2018
TDL Planning, Analysis, and Monitoring (TDL PAM)	2	2018	4	2023
Agile Comms	1	2019	4	2023
High Capacity Backbone (HCB)	1	2019	4	2023
Link 16 Enhancement	1	2019	4	2020
SFF/DACAS Modernization and SoS Enterprise Integration	2	2018	4	2022
Applique Technologies for TDLs	2	2018	4	2019
Link 16 Evolution (changed from "Cognitive Enterprise Development and Baselining" on FY18 PB)	2	2018	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force			Date: February 2019
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / *Tactical Data Networks Enterprise*	Project (Number/Name) 655262 / *Family of Gateways*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
655262: *Family of Gateways*	-	9.584	18.858	0.000	0.000	0.000	46.246	81.212	64.646	12.810	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Family of Gateways provides for the study (acquisitions current and proposed), analysis, enhancement, development, integration, costing, demonstration, test, and evaluation efforts that will allow joint combat forces to exchange information quickly and accurately by bridging discrete airborne, terrestrial, maritime, and space-based C4ISR networks producing operational effects not possible within individual networks. Gateway functions include enabling interoperability between data formats, protocols, and communication mediums. Additionally, gateway functions extend the connectivity range, consolidate data from multiple networks into high capacity links for transmission to key C2ISR nodes, route information between disadvantaged users, and fuse/correlate data from multiple sources to improve accuracy. Gateway functions also provide application hosting, shared data storage, on-demand information access, smart data forwarding, and system monitoring and network management. Funding in this project supports 5th-to-4th Generation Communications Capabilities, and 5th-to-5th Generation efforts and future TDL communications development. Additionally, Family of Gateways will support to enhance existing TDL performance, through upgrades and engineering analysis of system designs. Efforts in this project include waveform, ground, and rapid acquisition activities supporting Air Force requirements for communications bridging across multiple platforms, sources and communication domains.

Activities also include studies, analysis, demonstrations and experiments to support both current program planning/execution and future program planning efforts for Family of Gateways.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver TDL weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F and 0605898F.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: 5th-to-4th Generation Gateway - E-3 AWACS	9.584	4.963	0.000	0.000	0.000
Description: 5th-to-4th Generation Communications Capability facilitates sharing track and sensor data between 5th Generation and 4th Generation aircraft as well as Command and Control (C2) nodes. These capabilities enable interoperability between data formats, protocols, and communication mediums. Additionally, these capabilities extend the connectivity range, consolidate data from multiple networks, domains and sensors into high capacity links for transmission to key C2ISR nodes, route information between disadvantaged users,					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655262 / *Family of Gateways*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
and correlate data from multiple sources to facilitate early detection and tracking while enabling collaborative targeting. The addition of multi-domain capabilities as a future requirement of the 5th-to-4th Generation Communications Capability enables track sharing at the tactical edge for the timely execution of ground and airborne target sets. These additional capabilities are a combat force multiplier that enhance total force synergy for target prosecution and weapons employment. ***FY 2019 Plans:*** -Will begin to develop an acquisition strategy integrating 5th-to-4th Generation Communications Capabilities into the E-3 platforms - Will utilize data/analysis from 5th to 4th UON into the technical package for the RFP being developed for E-3 Program ***FY 2020 Base Plans:*** -Will finalize and release RFP for integrating 5th-to-4th Generation Communications Capabilities into the E-3 platforms ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Funding decreased due to slow down in development					
Title: BACN Program of Record ***Description:*** An Acquisition Decision Memorandum (ADM) was signed 30 March 2018 which establishes the BACN Joint Urgent Operational Need (JUON) as a PoR. This ADM defined the PEO as the Milestone Decision Authority (MDA) and approved entry into the Defense Acquisition System (DAS) as a ACAT III, Post-Milestone C program in the Operations and Support (O&S) phase. ***FY 2019 Plans:*** - Will support the development Payload Trainers for the E-11A platforms - Will fund studies to address new technologies and requirements emerge, as well as HMI software and hardware updates ***FY 2020 Base Plans:***	0.000	13.895	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655262 / *Family of Gateways*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Will continue to support the BACN Program of Record efforts. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A					
Accomplishments/Planned Programs Subtotals	9.584	18.858	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• RDTE 07 PE 0207448F: *C2ISR TDL*	2.875	1.505	1.531	-	1.531	1.559	1.587	1.616	-	Continuing	Continuing
• APAF 05 Line Item F01500: *F-15*	0.844	46.903	53.211	-	53.211	40.167	20.933	21.310	-	Continuing	Continuing
• APAF 05 Line Item F01600: *F-16*	-	6.755	8.371	-	8.371	8.525	8.695	8.851	-	Continuing	Continuing
• APAF 05 Line Item B00200: *B-2A*	1.718	2.315	0.201	-	0.201	0.206	0.210	0.213	-	Continuing	Continuing
• APAF 05 Line Item B01B00: *B-1B*	-	0.000	0.000	-	0.000	0.000	0.000	0.000	-	Continuing	Continuing
• OPAF 03 Line Item 834010: *General Information Technology*	0.312	0.177	0.180	-	0.180	1.698	1.701	1.731	-	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Airborne Networking Directorate provides for common development, integration and interoperability across the entire airborne network and ensures that data links are procured and maintained as a joint, end-to-end, command and control system. Platform acquisition strategies vary by program, but the majority of development and integration is normally accomplished by the weapon system prime contractor. Contract approaches vary by program.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655262 / *Family of Gateways*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
5th to 4th Risk Reduction (UON)	Various	Various : Various	-	9.584	Mar 2018	0.000	Mar 2019	-		-		-	Continuing	Continuing	-
5th to 4th Generation Communications Capabilities - E-3 AWACS	TBD	Not specified. : TBD	-	-		4.963	Mar 2019	0.000		-		0.000	Continuing	Continuing	-
BACN Program of Record	TBD	Not specified. : TBD	-	-		12.109		0.000		-		0.000	Continuing	Continuing	-
		Subtotal	-	9.584		17.072		0.000		-		0.000	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
5th To 4th Generation Gateway PMA - Travel, Government Purchase Cards, etc.	Various	Various : Various	-	0.000		-		-		-		-	Continuing	Continuing	-
BACN Program of Record	TBD	Not specified. : TBD	-	-		1.786		-		-		-	Continuing	Continuing	-
		Subtotal	-	0.000		1.786		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	9.584		18.858		0.000		-		0.000	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655262 / *Family of Gateways*

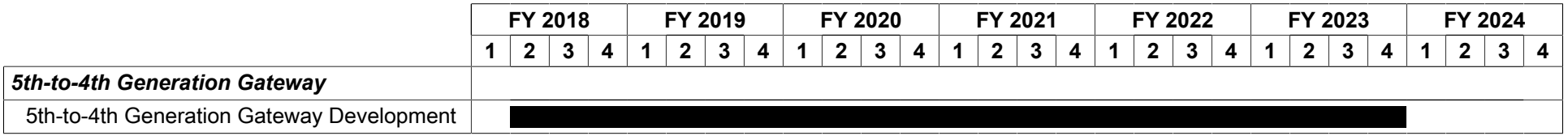

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655262 / *Family of Gateways*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
5th-to-4th Generation Gateway				
5th-to-4th Generation Gateway Development	2	2018	4	2023