Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force											Date: February 2015	
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 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
Total Program Element	-	41.388	39.059	60.256	-	60.256	37.240	37.490	22.287	22.714	Continuing	Continuing
655050: *TDL System Integration*	-	13.545	18.713	33.055	-	33.055	37.240	37.490	22.287	22.714	Continuing	Continuing
655262: *Family of Gateways*	-	8.328	20.346	27.201	-	27.201	-	-	-	-	Continuing	Continuing
657003: *Airborne Networking Enterprise*	-	19.515	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Tactical Data Networks Enterprise (TDNE) contributes to the development, delivery and deployment of the next generation aerial layer network through a portfolio of legacy and advanced waveforms and airborne network management/development efforts that advance interoperability and connectivity. This will be accomplished via fielded and future ground and gateway investments while addressing warfighter urgent demands through the establishment of Quick Reaction Capabilities (QRC). The TDNE conceptualizes, acquires and fields aerial layer networking capabilities supporting legacy, current, in-development, future and proposed systems across all domains of information exchange enabling strike, mobility, special operations, command and control (C2), intelligence, surveillance and reconnaissance (ISR), air, surface, subsurface and space operations. These capabilities ensure a robust and agile extension of the global information domain out to the tactical edge in support of increasing air domain awareness.

Funding 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 operating 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, 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) and Multifunction Advanced Data Link (MADL). TDLs typically include both a waveform specification as well as the standards for exchanging messages.

Funding also supports Family of Gateways study (acquisitions current and proposed), analysis, enhancement, development, integration, demonstration, test, and evaluation efforts that will allow multi-national 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 (i.e. Battlefield Airborne Communication Node). Gateway functions include enabling interoperability between data formats, protocols, and communication mediums. Additionally, gateway functions extend connectivity range, consolidate data from multiple networks into high capacity links for transmission to key C4ISR 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/network management. Funding will also support quick reaction response capability requests by the warfighter and support activities (including ramp-up) associated with the Joint Aerial Layer Network (JALN) Enterprise Analysis of Alternatives and its follow-on activities as directed by the JALN Council, in line with applicability of existing TDL performance, upgrade plans, engineering analysis, cost analysis of system designs and TDN Performance Improvements. This includes studies and planning for gateway nodes with the JALN Enterprise. Funding will ensure continued enhanced interoperability of Air Force and joint 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. This includes North Atlantic Treaty Organization, Command and Control and Communications (NATO C3I) interoperability studies and analysis.

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.

The FY2016 funding request was reduced by $2.114 million to account for the availability of prior execution balances.

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	42.745	39.110	50.373	-	50.373
Current President's Budget	41.388	39.059	60.256	-	60.256
Total Adjustments	-1.357	-0.051	9.883	-	9.883
• Congressional General Reductions	-	-0.051			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.357	-			
• Other Adjustments	-	-	9.883	-	9.883

Change Summary Explanation

Total FY16 funding change is $9.883 and includes an FY16 funding increase of $12.427 for 5th to 4th Generation Gateway development. The FY16 funding request was reduced by $2.144M to account for the availability of prior execution balances. The FY16 funding request was further reduced by $.400M to adjust for inflation.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force			Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
655050: *TDL System Integration*	-	13.545	18.713	33.055	-	33.055	37.240	37.490	22.287	22.714	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding will provide for the study, analysis, enhancement, development, integration, demonstration, coalition interoperability exercises, costing, test, trials, and evaluation of Tactical Data Links (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 operating 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, or other (JALN analyzed platforms, 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, etc.), as well as to precision guided munitions. Utilization of TDLs in a joint and international environment requires the integration of terminals into host platforms and interoperability of TDL networks across all deployed joint, NATO, and coalition platforms. Mandates have dictated a required upgrade in Low Volume Terminal (LVT) and Multifunction Information Distribution System (MIDS) Joint Tactical Radio System (JTRS) terminals in order to meet new frequency and cryptological requirements. Integration and test costs will be associated with these mandates. TDLs have become the primary means of tactical battlefield communications.

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), Coalition Interoperability, Link 16 Enhancements, and development of a next generation waveform. Funding will provide training, logistics development, certification of individual TDL implementations to joint/allied standards, establishment of service-wide network management procedures/operations, and system wide enhancements/testing.

Integration:
Integration activities include, but are not limited to, Data Link Test Facility (DTF), Block Upgrade 2 (BU2) retrofit, Block Cycle 1 retrofit (BC1), Air Force Participating Test Unit (AFPTU), interoperable System Management and Requirements Transformation (iSMART), Joint Airborne Network Tactical Edge (JAN-TE), Network Centric Capability Assessment (NCCA), NATO interoperability, Coalition interoperability, Tactical Edge Network C2 (TEN C2), integration analysis of the Joint Warfighting Integrated NetOps (JWIN) Joint Concept Technology Demonstration (JCTD), Cursor on Target (CoT), Tactical Communications Suite (TCS), and analysis of integration on platforms of existing TDN systems, system-of-systems analysis. Funding will ensure continued enhanced interoperability of Air Force, Joint, NATO, and Coalition assets through efforts such as early systems engineering and use of the POET process for program requirements analysis and architectural design development/

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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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.

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

Activities will also include NATO/Coalition Interoperability that provides program office system engineering to support Foreign Military Sales (FMS) case development, FMS planning for tech refresh modifications, Crypto-Modernization and Tactical Edge Network (TENC2).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: Tactical Data Networks (TDN) Integration	6.186	11.133	12.204

Description: Tactical Data Networks (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), NATO/Coalition Interoperability, Joint Aerial Layer Network (JALN) Analysis of Alternatives (AoA) follow-on, JALN gateway planning, and Joint Warfighting Integrated NetOps (JWIN) Joint Concept Technology Demonstration (JCTD) Tactical Edge Network (TENC2).

FY 2014 Accomplishments:
Funding provided for development, certification, developmental training, and to develop logistics plans for individual TDL implementations to joint/allied standards. Funding also provided management with the necessary engineering, costing, technical, and administrative support needed to facilitate development.

FY 2015 Plans:
Funding provides for development, certification, developmental training, and to develop logistics plans for individual TDL implementations to joint/allied standards, and provides management with the necessary engineering, technical and administrative support needed to facilitate development. Funding also supports testing, integration and fielding of all MIDS LVT and MIDS JTRS current and upgrade configurations. Activities include support to TDL interoperability testing of development and fielded systems through the DTF; DoD mandated TDL MIL-STD conformance testing and interoperability assessments for all TDL capable Air Force platforms through the AFPTU; and aerial layer network focused studies and analysis that support data link enhancements, and assessment of tactical airborne network and network management gaps that are validated in existing requirements documents through the Network Centric Capability Assessments (NCCA). Activities also include studies and analysis that include but are not limited to supporting both current program planning and execution and future program planning efforts for Tactical Data Networks, including development of joint concepts for C2 and network management of the Joint Aerial Layer Network (JALN), and JALN gateway planning. Activities also include efforts identified in the AF Airborne Networking Roadmap to advance capability sets that contribute to the AF vision for airborne networking. Activities also include Coalition

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Interoperability that provides program office system engineering to support Foreign Military Sales (FMS) case development, FMS planning for tech refresh modifications, and Crypto-Modernization. ***FY 2016 Plans:*** Funding will provide for development, certification, developmental training, and to develop logistics plans for individual TDL implementations to joint/allied standards, and will provide management with the necessary engineering, technical and administrative support needed to facilitate development. Funding will also aide in the testing integration and fielding of all MIDS LVT and MIDS JTRS current and upgrade configurations. Activities include support to TDL interoperability testing of development and fielded systems through the DTF; DoD mandated TDL MIL-STD conformance testing and interoperability assessments for all TDL capable Air Force platforms through the AFPTU; and aerial layer network focused studies and analysis that support data link enhancements, and assessment of tactical airborne network and network management gaps that are validated in existing requirements documents through the Network Centric Capability Assessments (NCCA). Activities will also include studies and analysis that include but are not limited to supporting both current program planning and execution and future program planning efforts for Tactical Data Networks, including development of joint concepts for C2 and network management of the Joint Aerial Layer Network (JALN), and JALN gateway planning. Activities will also include Coalition Interoperability that provides program office system engineering to support NATO C3I, Foreign Military Sales (FMS) case development, FMS planning for tech refresh modifications, Crypto-Modernization and TENC2.			
Title: Joint Interoperability of Tactical Command and Control Systems (JINTACCS)	5.812	6.026	6.850
Description: Joint Interoperability of Tactical Command and Control Systems (JINTACCS) ensures interoperability of AF Tactical Data Link (TDL) systems with associated joint, allied, and coalition systems and includes development, interoperability certification, TDL message standard implementation utilizing interoperable System Management and Requirements Transformation (iSMART) (e.g., Links 11A/B, 16, 22, Variable Message Format (VMF), Integrated Broadcast Service (IBS), Multifunction Advanced Data Link (MADL), and configuration management of standards. ***FY 2014 Accomplishments:*** Funding ensured compatibility and interoperability of TDLs by conducting necessary joint compatiblity and interoperablity tests. ***FY 2015 Plans:*** Funding provides compatibility and interoperability of TDLs by conducting necessary joint compatibility and interoperability tests. Funding provides management with the necessary engineering, technical, and administrative support needed to facilitate development. ***FY 2016 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Funding will ensure compatibility and interoperability of TDLs and message standards by conducting necessary joint compatibility and interoperability tests. Funding will also provide management with the necessary engineering, technical, and administrative support needed to facilitate development.			
Title: Cursor on Target (CoT) ***Description:*** Cursor on Target (CoT) is an extensible, 'What, When, Where' (W3) XML message format for interconnecting Command, Control, Communication & Computer (C4), intelligence, surveillance & reconnaissance (ISR) systems. The Cursor on Target (CoT) suite consists of the W3 base schema, 14 tailored sub-schemas, and a set of 10 software plug-ins and translators that faciliate machine to machine (M2M) transmission of Command and Control (C2), intelligence, surveillance and reconnaissance (ISR), and situational awareness data at reduced cost compared with traditional integration methods. ***FY 2014 Accomplishments:*** Funding supported development, test, certification and accreditation of new Cursor on Target (CoT) apps/plug-ins/schema, development of the Cursor on Target(CoT) MIL-STD and transitioning of apps/plug-ins to sustainment. Funding also provided management with the necessary engineering, technical, and administrative support needed to facilitate development. ***FY 2015 Plans:*** Funding supports development, test, certification and accreditation of new Cursor on Target (CoT) apps/plug-ins, development of the Cursor on Target (CoT) commercial standard and transitioning of apps/plug-ins to sustainment. Funding also provides management with the necessary engineering, technical, and administrative support needed to facilitate development. ***FY 2016 Plans:*** Funding will support development, test, certification and accreditation of new Cursor on Target (CoT) apps/plug-ins/debugger, development of the Cursor on Target (CoT) commercial standard and transitioning of apps/plug-insto sustainment. Funding will also provide management with the necessary engineering, technical, and administrative support needed to facilitate development.	1.547	1.554	1.574
Title: 5th to 4th ***Description:*** 5th to 4th Generation gateway facilitates sharing track and sensor data between 5th Generation and 4th Generation aircraft as well as Command and Control (C2) nodes. Gateway functions include enabling interoperability between data formats, protocols, and communication mediums. Additionally, gateway functions 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, and fuse/correlate data from multiple sources to improve accuracy. ***FY 2016 Plans:***	-	-	12.427

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Funding will support development of the 5th to 4th Generation Gateway, to include support for source selection and award of a 5th to 4th development and production contract. This activity was previously bound to Project 655262 Family of Gateways. This is not a New Start.			
Accomplishments/Planned Programs Subtotals	13.545	18.713	33.055

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE: BA07: PE 0207448F: *C2ISR TDL*	1.373	1.744	1.681	-	1.681	1.748	1.766	1.767	1.798	Continuing	Continuing
• APAF: BA05: Line Item #F01500: *F-15*	-	0.002	2.837	-	2.837	42.694	43.027	57.283	46.618	Continuing	Continuing
• APAF: BA05: Line Item #F01600: *F-16*	-	-	3.200	-	3.200	6.504	6.166	6.810	8.435	Continuing	Continuing
• APAF: BA05: Line Item #B00200: *B-2A*	-	0.049	0.474	-	0.474	0.419	0.297	0.249	0.203	Continuing	Continuing
• APAF: BA05: Line Item #B01B00: *B-1B*	-	1.261	1.011	-	1.011	1.392	0.539	0.800	-	Continuing	Continuing
• APAF: BA05: Line Item #OTHACF: *Other Aircraft*	-	0.037	2.494	-	2.494	1.593	1.501	1.502	1.528	Continuing	Continuing
• OPAF: BA03: Line Item #834010: *General Information Technology*	0.153	0.168	1.602	-	1.602	1.857	0.311	0.176	0.179	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.

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 2016 Air Force			Date: February 2015
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TDN Integration - Tactical Edge Network C2	MIPR	Various : Various,	-	-		1.609	Jun 2015	2.793	Jan 2016	-		2.793	Continuing	Continuing	TBD
Gateways Integration - JETPack JCTD	C/FFP	Northrop Grumman : Redondo Beach, CA	-	-		-		-		-		-	-	-	TBD
5th to 4th Generation Gateway	MIPR	Various : Various,	-	-		-		12.427	Jun 2016	-		12.427	Continuing	Continuing	-
		Subtotal	-	-		1.609		15.220		-		15.220	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TDN Integration - NCCA	C/T&M	MITRE : Bedford, MA	-	0.415	Nov 2013	1.622	Nov 2014	2.230	Nov 2015	-		2.230	Continuing	Continuing	TBD
TDN Integration - Coalition Interoperability	RO	NATO Support Agency in Luxembourg : ,	-	0.067	Jan 2014	0.070	Dec 2014	0.067	Dec 2015	-		0.067	Continuing	Continuing	TBD
Cursor on Target	C/T&M	MITRE : Bedford, MA	-	0.951	Nov 2013	1.231	Oct 2014	1.209	Oct 2015	-		1.209	Continuing	Continuing	TBD
		Subtotal	-	1.433		2.923		3.506		-		3.506	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TDN Integration - DTF	PO	46th Test Squadron : Eglin AFB, FL	-	0.999	Dec 2013	1.338	Jan 2015	1.358	Feb 2016	-		1.358	Continuing	Continuing	TBD
JINTACCS	C/FFP	Spectrum Comm Inc : Newport News, VA	-	2.451	Feb 2014	3.684	Feb 2015	2.376	Feb 2016	-		2.376	Continuing	Continuing	TBD
TDN Integration - AFPTU	MIPR	Various : Various,	-	1.561	May 2014	2.131	May 2015	2.312	May 2016	-		2.312	Continuing	Continuing	TBD
TDN Integration - JALN AoA	MIPR	Various : Various,	-	3.173	Mar 2014	4.153	Mar 2015	3.993	Mar 2016	-		3.993	Continuing	Continuing	TBD

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force			Date: February 2015
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TDN Integration - JWIN JCTD	PO	Rome Labs : Rome, NY	-	0.219	Jul 2014	-		-		-		-	-	0.219	TBD
Cursor on Target	PO	46th Test Squadron : Eglin AFB, FL	-	-		-		-		-		-	Continuing	Continuing	-
		Subtotal	-	8.403		11.306		10.039		-		10.039	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 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,	-	0.784	Jan 2014	0.682	Jan 2015	0.515	Jan 2016	-		0.515	Continuing	Continuing	-
Cursor on Target PMA - A&AS support	C/CPAF	Various : Various,	-	0.197	Apr 2014	0.328	Dec 2014	0.221	Dec 2015	-		0.221	Continuing	Continuing	-
Gateways Integration PMA - A&AS support - JETPack JCTD	C/CPAF	Various : Various,	-	-		-		-		-		-	-	-	TBD
TDN Integration PMA - FFRDC support - NCCA	C/T&M	MITRE : Bedford, MA	-	1.162	May 2014	0.271	Jan 2015	1.708	Oct 2015	-		1.708	Continuing	Continuing	TBD
TDN Integration PMA - FFRDC support - Coalition Interoperability, JALN AoA	C/T&M	MITRE : Bedford, MA	-	1.295	Nov 2013	1.236	Nov 2014	1.470	Oct 2015	-		1.470	Continuing	Continuing	-
TDN Integration PMA - Travel, Government Purchase Cards, etc...DTF, NCCA, Coalition Interoperability, AFPTU, JALN AoA	Various	Various : Various,	-	0.161	Dec 2013	0.223	Jan 2015	0.158	Jan 2016	-		0.158	Continuing	Continuing	-
JINTACCS PMA - Travel, Government Purchase Cards, etc...	Various	Various : Various,	-	0.098	Dec 2013	0.120	Jan 2015	0.045	Jan 2016	-		0.045	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force			Date: February 2015
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Cursor on Target PMA - Travel, Government Purchase Cards, etc...	Various	Various : Various,	-	0.012	Dec 2013	0.015	Oct 2014	0.173	Dec 2015	-		0.173	Continuing	Continuing	-
		Subtotal	-	3.709		2.875		4.290		-		4.290	-	-	-

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	13.545		18.713		33.055		-		33.055	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655050 / *TDL System Integration*

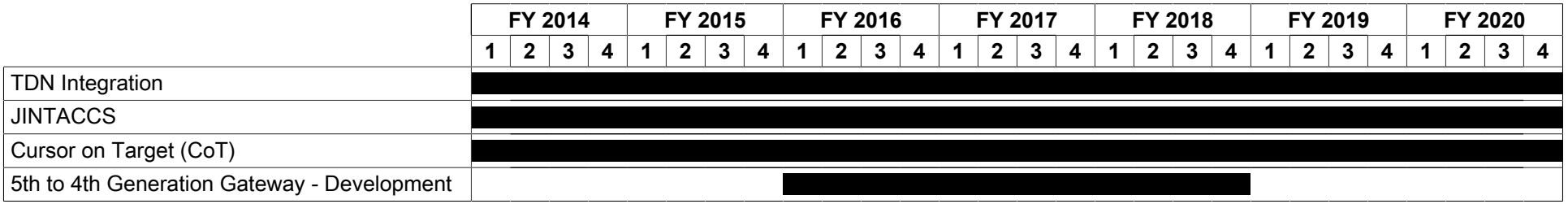

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655050 / *TDL System Integration*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
TDN Integration	1	2014	4	2020
JINTACCS	1	2014	4	2020
Cursor on Target (CoT)	1	2014	4	2020
5th to 4th Generation Gateway - Development	1	2016	4	2018

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force			Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
655262: *Family of Gateways*	-	8.328	20.346	27.201	-	27.201	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding supports Family of Gateways 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/network management. Funding in this project will also support requests by the warfighter such as the Battlefield Airborne Communications Node (BACN), 5th to 4th and 5th to 5th Generation efforts, and the STRATCOM Distributed Nuclear Command and Control (DNC2) capabilities. Additionally, funding will support activities associated with the JALN Enterprise Analysis of Alternatives and follow-on recommendation, in line with applicability of existing TDL performance, upgrade plans and engineering analysis of system designs and TDN Performance Improvements.

Efforts in this project include waveform, ground, and quick reaction capability activities.

Waveforms:
Waveform activities include, but are not limited to Situational Awareness Data Link (SADL) and 5th to 4th Generation and 5th-5th Generation efforts. SADL integrates US Air Force close air support aircraft with the networked battlefield via the US Army's Enhanced Position Location Reporting System (EPLRS) or the Operational Tactical Interface for SADL (OTIS). The 5th to 4th Generation gateway facilitates sharing of 5th Generation aircraft track data with 4th Generation aircraft as well as C2 nodes.

Ground:
Ground activities include, but are not limited to the TEN C2. Funding will support enhancements to the interoperability and capabilities of fielded gateways through processing capability upgrades, operating system updates, display/graphical user interface upgrades, incorporation of additional messaging standards and protocols, and completion of gateway architecture fielding.

Quick Reaction Capability:
Quick reaction capability activities include, but are not limited to BACN. Funding will support AF rapid acquisition requirements for communications bridging of waveforms through gateway technology.

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

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
Title: STRATCOM Distributed Nuclear Command and Control (DNC2) ***Description:*** STRATCOM Distributed Nuclear Command and Control (DNC2) efforts provide for the distribution of data from airborne assets to ground components for analysis, decision-making and re-tasking of critical assets. ***FY 2014 Accomplishments:*** Funding supported development, test and fielding of operational-hardened, wideband Ground Entry Points (GEPs) and testing with up to three aircraft to ensure functionality of the system in an operational environment. ***FY 2015 Plans:*** N/A ***FY 2016 Plans:*** N/A	5.512	-	-
Title: 5th to 4th Generation Gateway ***Description:*** 5th to 4th Generation gateway facilitates sharing track and sensor data between 5th Generation and 4th Generation aircraft as well as Command and Control (C2) nodes. Gateway functions include enabling interoperability between data formats, protocols, and communication mediums. Additionally, gateway functions 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, and fuse/correlate data from multiple sources to improve accuracy. ***FY 2014 Accomplishments:*** Funding supported projects including 5th to 4th Generation gateway with engineering, technical, and administrative support. ***FY 2015 Plans:*** Funding is supporting 5th to 4th Generation gateway including risk reduction projects and engineering, technical, and administrative support required for Request For Proposal (RFP) development. ***FY 2016 Plans:*** Funding will support development of the 5th-4th Generation Gateway, to include support for source selection and award of a 5th-4th development and production contract.	2.816	20.346	27.201
Accomplishments/Planned Programs Subtotals	8.328	20.346	27.201

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655262 / *Family of Gateways*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE:BA07:PE 0207448F: *C2ISR TDL*	1.373	1.744	1.681	-	1.681	1.748	1.766	1.767	1.798	Continuing	Continuing
• APAF:BA05:Line Item #F01500: *F-15*	-	0.002	2.837	-	2.837	42.694	43.027	57.283	46.618	Continuing	Continuing
• APAF:BA05:Line Item #F01600: *F-16*	-	-	3.200	-	3.200	6.504	6.166	6.810	8.435	Continuing	Continuing
• APAF:BA05:Line Item #B00200: *B-2A*	-	0.049	0.474	-	0.474	0.419	0.297	0.249	0.203	Continuing	Continuing
• APAF:BA05:Line Item #B01B00: *B-1B*	-	1.261	1.011	-	1.011	1.392	0.539	0.800	-	Continuing	Continuing
• APAF:BA05:Line Item #OTHACF: *Other Aircraft*	-	0.037	2.494	-	2.494	1.593	1.501	1.502	1.528	Continuing	Continuing
• OPAF:BA03:Line Item #834010: *General Information Technology*	0.153	0.168	1.602	-	1.602	1.857	0.311	0.176	0.179	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.

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 2016 Air Force			Date: February 2015
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 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
5th To 4th Generation Gateway development	MIPR	Various : Various,	-	1.934	Sep 2014	14.960	Jun 2015	21.600	May 2016	-		21.600	Continuing	Continuing	TBD
STRATCOM DNC PAGCN development	MIPR	DMEA : McClellan, CA	-	3.100	Jan 2014	-		-		-		-	Continuing	Continuing	-
		Subtotal	-	5.034		14.960		21.600		-		21.600	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
5th-4th Generation Gateway Engineering services	C/CPAF	MITRE : Bedford, MA	-	0.774	Oct 2013	2.121	Oct 2014	0.800	Oct 2015	-		0.800	Continuing	Continuing	-
STRATCOM DNC engineering services	C/CPFF	Northrop Grumman : Redondo Beach, CA	-	-		-		-		-		-	-	-	TBD
		Subtotal	-	0.774		2.121		0.800		-		0.800	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
5th To 4th Generation Gateway PMA - A&AS support	C/Various	Various : Various,	-	1.204	Jan 2014	1.065	Jan 2015	1.995	Jan 2016	-		1.995	Continuing	Continuing	TBD

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655262 / *Family of Gateways*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
5th To 4th Generation Gateway PMA - FFRDC support	C/Various	MITRE : Bedford, MA	-	0.477	Oct 2013	0.640	Oct 2014	1.300	Oct 2015	-		1.300	Continuing	Continuing	TBD
5th To 4th Generation Gateway PMA - Travel, Government Purchase Cards, etc.	Various	Various : Various,	-	0.839	Jan 2014	1.560	Jan 2015	1.506	Jan 2016	-		1.506	-	3.905	TBD
		Subtotal	-	2.520		3.265		4.801		-		4.801	-	-	-

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	8.328		20.346		27.201		-		27.201	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655262 / *Family of Gateways*

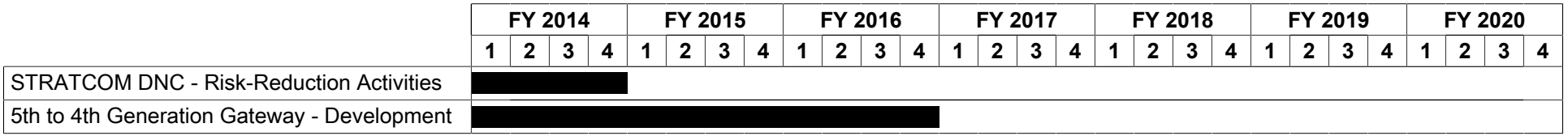

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0604281F / *Tactical Data Networks Enterprise*	**Project (Number/Name)** 655262 / *Family of Gateways*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
STRATCOM DNC - Risk-Reduction Activities	1	2014	4	2014
5th to 4th Generation Gateway - Development	1	2014	4	2016

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force											Date: February 2015	
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604281F / *Tactical Data Networks Enterprise*				Project (Number/Name) 657003 / *Airborne Networking Enterprise*			
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
657003: *Airborne Networking Enterprise*	-	19.515	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This is a classified effort. Details provided upon request.