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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force **Date:** March 2014

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0207449F <i>I Command and Control (C2) Constellation</i>							
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	13.938	7.160	-	-	-	-	-	-	-	-	21.098
675078: <i>Horizontal Integration</i>	-	5.452	7.160	-	-	-	-	-	-	-	-	12.612
675140: <i>Joint Expeditionary Force Experiments</i>	-	8.486	-	-	-	-	-	-	-	-	-	8.486

The FY 2015 OCO Request will be submitted at a later date.

Note

In FY 2015, Project 675078, Horizontal Integration (HI), was terminated.

In FY 2014, Project 675140, Joint Expeditionary Force Experiments (JEFX), was terminated.

A. Mission Description and Budget Item Justification

The Command and Control Constellation (C2C) is the sole Air Force program for defining, developing, and assessing integrated effects of global, theater and tactical level Air Force air, space, and cyber command and control (C2) capabilities in support of the joint warfighter. The Air Force faces a complex future where conflict will range across a broad spectrum of operations and lethality. The Air Force requires capabilities with the maximum possible flexibility to deal with the widest possible range of conflict. The C2C is the enabling program element for C2 Integration/Modernization. The Air Force is working to establish a C2 framework and architecture to be used as a unifying vision of command and control for each of the services core functions. C2C will support the defense strategy through: integration of air, space cyber and intelligence, surveillance, and reconnaissance (ISR) C2, through architectural analysis, prototyping, experimentation and innovation to develop cross-cutting solutions, and enable an improved "sense-to-kill" cycle time. C2C innovations and experimentation provide strategic, operational, and tactical direction for Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF) solutions to facilitate an integrated mission environment that supports C2 planning and execution for air, space, and cyberspace. In-depth development and analyses of C2 operational, systems, and technical architectures are geared towards identifying capability gaps, identifying required "to be" information services, and evaluating C2 program planned improvements. Through prototyping and experimentation, C2C integrates rapidly developing technologies to promote common standards, data sharing, and information services across Air Force and joint warfighting applications to support joint enterprise solutions.

Project 675078, Horizontal Integration (HI) conducts DOTMLPF analyses and assessments to guide cross-cutting, C2 sub-enterprise and cyberspace investment decisions that integrate USAF capabilities into joint and coalition operations. HI identifies, prioritizes, and develops requirements and horizontally integrated solution recommendations to ensure the latest technologies and information services are integrated into a cross cutting C2 system that enables integrated effects in all warfighter domains. The HI strategy will be validated by Headquarters, Air Force (HAF) to ensure that initiatives are harmonized with the most urgent warfighter needs described by the C2 Capability Assessment Team (CAT) and C2 Core Function Master Plan (CFMP) and supporting the 2012 Air Force, Joint and Defense Strategies and Operational Concepts. Once validated, HI funds are applied toward identifying the most critical warfighter capabilities and ensuring they are horizontally integrated into both Air Force and joint C2 programs of record.

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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development		R-1 Program Element (Number/Name) PE 0207449F I Command and Control (C2) Constellation				
Project 675140, Joint Expeditionary Force Experiments (JEFX) are agile and frequent innovation-focused experiments which lead to pre-fielded operational and technical assessments. Constructive, live and virtual, operationally representative warfighter environments are created to support integration challenges which focus on critical C2 areas of interest that support the joint warfighter; including, C2 of ISR innovation that supports the air, space, and cyberspace domains. JEFX provides the infrastructure and integration initiatives for experimentation with emerging operational concepts and attendant new technologies that fill operational gaps in Air Force capabilities to meet emerging and rapidly changing real world threats. The JEFX strategy is validated and supported by the Commander, Air Combat Command (COMACC) and coordinated with Headquarters, Air Force (HAF) ensuring initiatives are harmonized with the most urgent warfighter needs and validated requirements described in the AF Core Function Master Plans (CFMP) and supported through MAJCOM Core function Lead Integrator (CFLI). JEFX initiatives are based on emerging CONOPS and warfighter challenges, important enablers of innovation and transformation, which are designed to support the themes and demonstrate emerging Air Force capabilities to deploy and employ decisive air, space and cyberspace power in support of the Joint Force. This program is in Budget Activity 7, Operational System Development, these budget activities include development efforts to upgrade systems currently fielded or have approval for full rate production and anticipate production funding in the current or subsequent fiscal year.						
B. Program Change Summary (\$ in Millions)		FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget		18.086	7.329	-	-	-
Current President's Budget		13.938	7.160	-	-	-
Total Adjustments		-4.148	-0.169	-	-	-
• Congressional General Reductions		-0.021	-0.169			
• Congressional Directed Reductions		-2.300	-			
• Congressional Rescissions		-	-			
• Congressional Adds		-	-			
• Congressional Directed Transfers		-	-			
• Reprogrammings		-	-			
• SBIR/STTR Transfer		-0.437	-			
• Other Adjustments		-1.390	-	-	-	-
Change Summary Explanation						
In FY 2013: Congressional Directed Reductions row (-\$2.3M).						
In FY 2013: Other Adjustments row (-\$1.390M) due to sequestration.						

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force										Date: March 2014		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0207449F / Command and Control (C2) Constellation				Project (Number/Name) 675078 / Horizontal Integration			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
675078: Horizontal Integration	-	5.452	7.160	-	-	-	-	-	-	-	-	12.612
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note
In FY 2015, Project 675078, Horizontal Integration (HI), was terminated.

A. Mission Description and Budget Item Justification
Horizontal Integration (HI) develops an integrated mission environment that supports cross-cutting solutions across the air, space, and cyberspace command and control (C2) warfighter domain. HI activities include: requirements, architecture, systems engineering, technology development, risk reduction, prototyping, and transition. These activities are required to: identify, design, develop, experiment, and implement C2 solutions supporting operational requirements for warfighting integration and interoperability needs which are not the sole responsibility of a specific program of record.

The nature of integrated and interoperable C2 warfighting capabilities spans multiple platforms and domains. These capabilities are routinely being adjusted to meet the changing requirements from the warfighting communities. The HI project is uniquely designed to look across platforms and domains enabling the Air Force to respond to operator needs across the seams of individual systems. These horizontal integration initiatives will be prototyped, assessed, appropriately captured in requirements documents and then transitioned to programs of record for production, fielding and sustainment.

Systems Engineering and analysis is the 'glue' that holds command and control constellation (C2C) elements together and closes the seams in the C2 architectures. Capability analysis identifies areas where interoperability can be improved within the Air Force, as well as among joint services, and coalition partners. Once capability issues are identified, they are prioritized and pilot initiatives are developed to provide solutions to the warfighter challenges to resolve the capability gaps. The HI project also helps to competitively prototype integrated solutions against validated program requirements.

The benefits of these activities are two-fold: the operational community is able to weigh the cost, risk, and performance trade-offs between enterprise solutions versus program centric solutions, and it supports competitive prototyping of all acquisition programs. The synchronization of HI prototyping and program milestone requirements offers an effective environment for increasing interoperability while reducing the impact of this policy on multiple programs. An infrastructure environment manages a continuous distributed operational environment that supports air, space, and cyberspace C2 and rapid acquisition, prototyping, development, integration, and fielding. C2 initiatives may use this infrastructure to mature their development status prior to entry into operational and technical suitability assessment.

The HI prototype performances are assessed for operational utility, and the most promising initiatives/technologies will be matured and transitioned into weapon system configuration control baselines. Requirement documents will be published and revised, and a requirements database and implementation plan identifying the most significant C2C net-centric integration issues will be updated to catalog the activities necessary to accomplish this integration.

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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207449F / Command and Control (C2) Constellation	Project (Number/Name) 675078 / Horizontal Integration		
In addition, this project supports concept exploration, program definition/risk reduction efforts, and studies that support continuous improvements in C2. Guided by the MAJCOM-validated C2 capability gaps developed by the HI Capability Assessment Team annual process and the defense strategy to meet the evolving Anti-Access/Area Denial (A2/AD) threats to air, space and cyber C2 operations, these improvements include but are not limited to: integration of airspace and cross-domain synchronized operations, C2 of integrated air and missile defense, C2 of Air Force Forces and agile combat support, dynamic aerial network capabilities, and Non-Traditional ISR (NTISR), from 4th and 5th generation aircraft through processing and assessment, and interoperability with joint service, allied and coalition systems, C2 of personnel recovery, and air-sea battle. Activities also include studies and analysis to support current program planning and execution, as well as future program planning.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
Title: Reqmts/ CBP/ Integrated Ops/ C2 Framework Description: Requirements/Capabilities Based Planning (CBP) FY 2013 Accomplishments: Analyzed, developed, and documented emerging Air Force (AF) integrated Command and Control (C2) requirements. Continued future C2 integration/ modernization strategy in a series of concept and/or capability development and technology exploration activities designed to integrate C2 operations across air, space, and cyberspace domains. Continued refining IAMD C2 requirements. Developed concepts and capabilities in support of air sea battle concepts of operation. FY 2014 Plans: Analyze, develop, and document emerging Air Force (AF) integrated command and control (C2) requirements. Complete future C2 integration/modernization strategy in a series of concept and/or capability development and technology exploration activities designed to integrate C2 operations across air, space, and cyberspace domains. Complete to refine IAMD C2 requirements. FY 2015 Plans: N/A		1.241	1.922	-
Title: Arch and SE Description: Architecture Development and Systems Engineering FY 2013 Accomplishments: Conducted functional and systems engineering analysis within the C2 community to flesh out technical architectures and their relationships to operational architectures within the warfighting environment. Specific focus areas and efforts depended on real world needs, C2 enterprise and C2 of cyber requirements with emphasis on airspace and C2 integration, NTISR, C2 of AFFOR, IAMD, 5th - 4th Generation Fighter Interoperability, Dynamic Aerial Networks, C2 of personnel recovery, and air sea battle. FY 2014 Plans:		1.722	1.605	-

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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207449F / <i>Command and Control (C2) Constellation</i>	Project (Number/Name) 675078 / <i>Horizontal Integration</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014
Functional and systems engineering analysis within the C2 community to flesh out technical architectures and their relationships to operational architectures within the warfighting environment. Specific focus areas and efforts depend on real world needs, C2 enterprise and C2 of cyber requirements, with emphasis on: airspace and C2 integration, kinetic/non-kinetic integration, NTISR, C2 of IAMD, 5th - 4th generation fighter interoperability, dynamic aerial networks, C2 of personnel recovery, air sea battle, electromagnetic spectrum, forward base defense, tactical edge/electronic warfare situation awareness, PACAF distributed control concept/mission planning at unit level, and dynamic execution at distance/net-enabled weapons. FY 2015 Plans: N/A			
Title: HI Solutions Assessments Description: Horizontal Integration Solutions Assessment FY 2013 Accomplishments: Continued annual selections and execution of HI initiatives that fostered enterprise integration across Command and Control (C2), supported the DoDI 5000.02 requirements for competitive prototyping, and aided in refining requirements. Key criteria were near-term warfighter impact and likelihood of transition. The selected initiatives focused on: C2 Integration, C2 of IAMD, ACS/AFFOR C2, 5th - 4th/5th Generation Fighter Interoperability, Airspace Management, Dynamic Aerial Networks, C2 of personnel recovery, and Nontraditional Intelligence, Surveillance and Reconnaissance (NTISR). FY 2014 Plans: The annual selections and execution of HI initiatives that foster enterprise integration across Command and Control (C2), support the DoDI 5000.02 requirements for competitive prototyping, and aid in refining requirements. Key criteria are near-term warfighter impact and likelihood of transition. The initiatives focus on: C2 Integration, C2 of IAMD, ACS/AFFOR C2, 5th - 4th/5th Generation Fighter Interoperability, Airspace Management, Dynamic Aerial Networks, C2 of personnel recovery, and Nontraditional Intelligence, Surveillance and Reconnaissance (NTISR). FY 2015 Plans: N/A		2.489	3.633
Accomplishments/Planned Programs Subtotals		5.452	-
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force		Date: March 2014
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207449F / <i>Command and Control (C2) Constellation</i>	Project (Number/Name) 675078 / <i>Horizontal Integration</i>
<u>D. Acquisition Strategy</u> This project uses full and open competition for operational requirements document creation, systems engineering & architecture development, modeling & simulation and experimentation, joint interoperability/integration, and horizontal integration approaches. <u>E. Performance Metrics</u> 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.		

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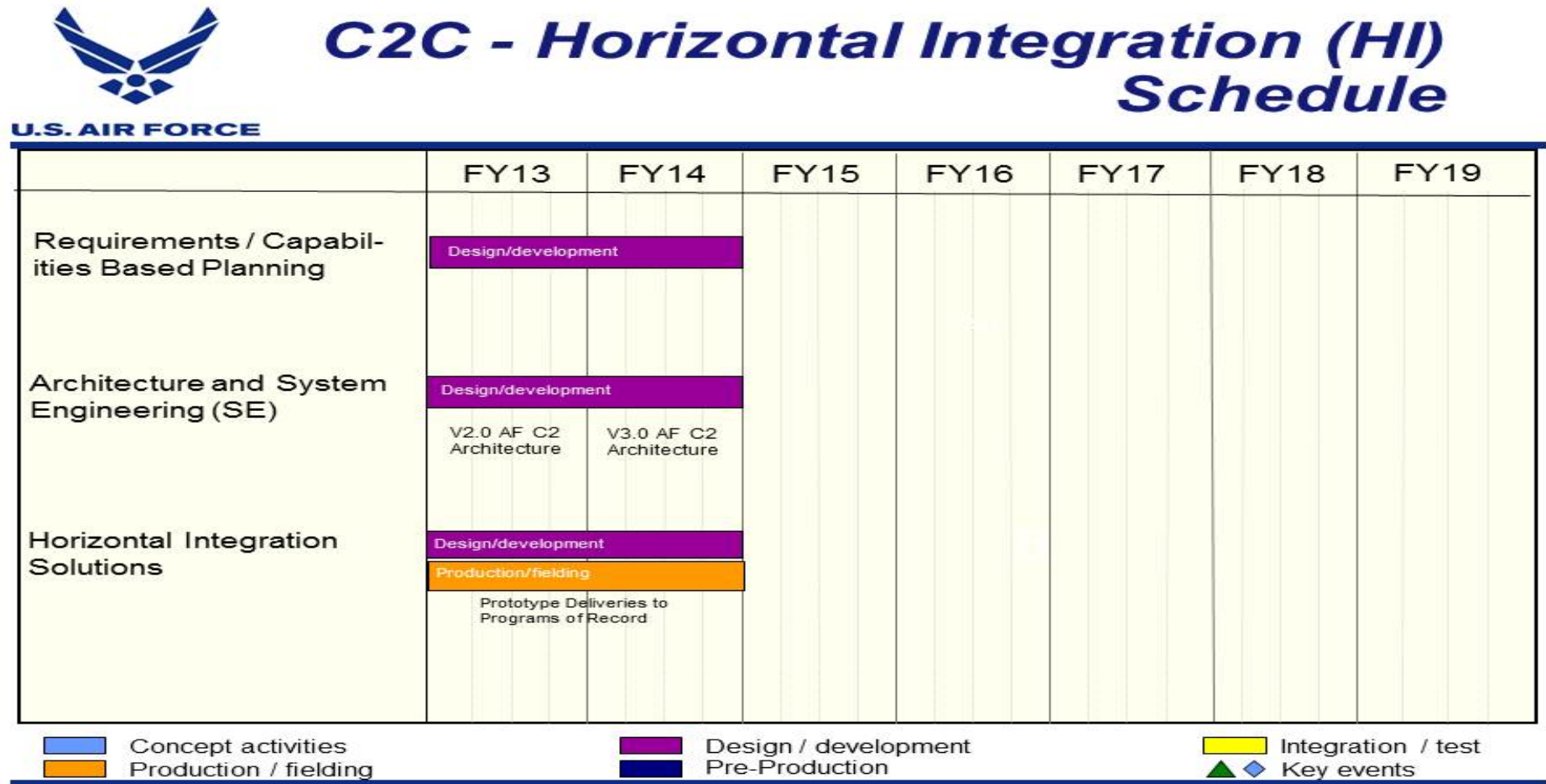
Exhibit R-4, RDT&E Schedule Profile: PB 2015 Air Force

Date: March 2014

Appropriation/Budget Activity
3600 / 7

R-1 Program Element (Number/Name)
PE 0207449F / *Command and Control (C2)*
Constellation

Project (Number/Name)
675078 / *Horizontal Integration*



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Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force										Date: March 2014		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0207449F / Command and Control (C2) Constellation				Project (Number/Name) 675140 / Joint Expeditionary Force Experiments			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
675140: Joint Expeditionary Force Experiments	-	8.486	-	-	-	-	-	-	-	-	-	8.486
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
# The FY 2015 OCO Request will be submitted at a later date.												
Note												
In FY 2014: Project 675140, Joint Expeditionary Force Experiments (JEFX), was terminated.												
A. Mission Description and Budget Item Justification												
The Joint Expeditionary Force Experiments (JEFX) and supporting Limited Objective Experiments (LOEs) are warfighter integration and validation experiments that address operational challenges and are part of the Air Force (AF) command and control (C2) integration and experimentation enterprise. Activities include: evaluation of innovative solutions for C2 aspects of the AF Integrated Air and Missile Defense (IAMD) mission, Anti-Access/Area Denial (A2/AD) threats, dynamic aerial layer networking, 5th to 4th generation aircraft and 5th to 5th generation aircraft disparate tactical datalink (TDL) data translation capabilities, Non-Traditional ISR (NTISR), Airspace Integration, Unit Level Agile Combat Support communication processes, as well as C2 Integration and Modernization for existing AF programs of record. JEFX provides continued integration and experimentation efforts across the AF C2 seams and programs in air, space and cyber domains as defined by CORONA, HQ AF, and the AF Command and Control Integration Center (AFC2IC).												
JEFX/LOE activities explore significant capability gaps across the range of Air Force command and control (C2) by means of assessing Concept of Operations (CONOPS), tactics, techniques and procedures (TTPs) and materiel solutions. The activities address critical lessons learned from recent operations and the validated requirements described in the 2012 Air Force, Joint and Defense Strategies and Operational Concepts, the AF Core Function Master Plans (CFMP) and supported through MAJCOM Core Function Lead Integrator (CFLI). JEFX creates or leverages operationally representative-experiment enterprise warfighter environments to address joint and coalition warfighter gaps and shortfalls that demonstrate existing and emerging Air Force capabilities to deploy and employ decisive air, space and cyberspace power for the joint force commander and enable innovation and transformation. These unique missions are the major reason JEFX is an experiment and not simply a demonstration or exercise. Activities also include studies and analyses to support current program planning and execution, as well as future program planning.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2013	FY 2014	FY 2015	
Title: Requirements Identification and SE									2.026	-	-	
Description: Spiral develop systems architecture, systems engineering, and integration of initiatives into a cohesive system of systems process												
FY 2013 Accomplishments:												

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force			Date: March 2014		
Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0207449F / <i>Command and Control (C2) Constellation</i>		Project (Number/Name) 675140 / <i>Joint Expeditionary Force Experiments</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2013	FY 2014	FY 2015
Continued integration and experimentation across Air Force (AF) C2 seams and programs in air, space and cyber domains as defined by CORONA, HAF, and AFC2IC. JEFX 2013 (JEFX 13) provided some support for dynamic aerial layer networking, Nontraditional Intelligence, Surveillance, and Reconnaissance (NTISR) and other C2 integration/modernization activities; to include requirements identification, systems engineering of initiatives and LOEs which focused on the integration of C2 services. Requirements validation was established in MAJCOM-directed CFMP processes to connect warfighter needs to initiative identification. In addition to validating materiel solutions, experimentation added value and recommended changes to standing or new concepts of employment, concepts of operations (CONOPs), tactics, techniques and procedures (TTPs), in conjunction with the programs of record and centers of excellence for Tactics, Doctrine, Operations, and Education. FY 2014 Plans: N/A FY 2015 Plans: N/A					
Title: Plan and Design Description: Plan, design, coordinate, assess and report the JEFX experiments, provide expertise to support initiative selection, acquisition, program management, communications and systems planning. FY 2013 Accomplishments: Leveraged AF and joint sponsored experimentation events (i.e. AGILE Fire, Trident Warrior, etc.). Developed internally generated, stand-alone events which employed simulation facilities. Limited engineering capability was available to support attendance at external venues as well as hosting/building internal events to support, ie., air sea battle. Activities included: evaluation of innovative solutions for C2 aspects of the AF Integrated Air and Missile Defense (IAMD) mission, Anti-Access/Area Denial (A2/AD) threats, dynamic aerial layer networking, 5th to 4th generation aircraft and 5th to 5th generation aircraft disparate tactical datalink (TDL) data translation capabilities NTISR, airspace integration, unit level agile combat support communication processes, as well as C2 integration and modernization for existing AF programs of record. FY 2014 Plans: N/A FY 2015 Plans: N/A			2.232	-	-
Title: Develop Initiatives			2.127	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force			Date: March 2014		
Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0207449F / Command and Control (C2) Constellation	Project (Number/Name) 675140 / Joint Expeditionary Force Experiments		
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2013	FY 2014	FY 2015
Description: Develop initiatives to introduce new technologies and operational capabilities into the Aerospace Expeditionary Force (AEF) Concept of Operations (CONOPS)					
FY 2013 Accomplishments: Sponsored initiatives were primarily industry based which focused on leveraging existing government and commercial technologies that addressed specific integration shortfalls. Initiatives were developed by the HI portion of this program with specific interest in operational and/or technical utility. The requirement drove the experiment which supported the program of record and examined the integration of the program improvement, the candidate, and rapidly fielded the integration and transition of the effort.					
FY 2014 Plans: N/A					
FY 2015 Plans: N/A					
Title: Define and Build Events			1.989	-	-
Description: Implement architectural configuration, conduct M&S, install and test the communications infrastructure and execute the experiment.					
FY 2013 Accomplishments: Supported the migration of the JEFX program from a major venue to a series of LOE venues that focused on the initiative's integration and systems engineering to combine with either a AF or joint sponsored events or a stand-alone event.					
FY 2014 Plans: N/A					
FY 2015 Plans: N/A					
Title: Assessment and Transition			0.112	-	-
Description: Transition successful JEFX-assessed, and Air Force approved, warfighting capabilities for fielding into an integrated C2 baseline.					
FY 2013 Accomplishments: Transitioned under the JEFX Limited Objective Experiments (LOEs) paradigm which changed significantly from a longlead plan to a near-term transition with the Programs of Record or initiative sponsor. This paradigm focused upon the initiative's transition with					

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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207449F / <i>Command and Control (C2) Constellation</i>	Project (Number/Name) 675140 / <i>Joint Expeditionary Force Experiments</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014
validation through operational and technical assessments. It placed a much higher priority under the new JEFX scheme to ensure that technical and operation transition was possible upon completion of JEFX.			
FY 2014 Plans: N/A			
FY 2015 Plans: N/A			
Accomplishments/Planned Programs Subtotals		8.486	-
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy JEFX supports evolutionary acquisition of multiple programs by providing venues and initiatives to experiment new and emerging technologies to be integrated into other systems-of-record. All contracts awarded through full and open competition.			
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.			

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Exhibit R-4, RDT&E Schedule Profile: PB 2015 Air Force

Date: March 2014

Appropriation/Budget Activity
3600 / 7

R-1 Program Element (Number/Name)
PE 0207449F / Command and Control (C2)
Constellation

Project (Number/Name)
675140 / Joint Expeditionary Force
Experiments



C2 Constellation Joint Expeditionary Force Experiment (JEFX) Schedule

