PE NUMBER: 0207449F
PE TITLE: C2 Constellation

Exhibit R-2, RDT&E Budget Item Justification	DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0207449F C2 Constellation

	Cost ($ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
	Total Program Element (PE) Cost	42.969	31.705	26.792	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5078	Horizontal Integration	11.301	15.083	11.967	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5140	Joint Expeditionary Force Experiments	31.668	16.622	14.825	0.000	0.000	0.000	0.000	0.000	Continuing	TBD

(U) A. Mission Description and Budget Item Justification

Command and Control Constellation (C2C) efforts provide strategic, operational, and tactical direction for Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF) solutions to facilitate the integration of Global Effects that support Command and Control, Intelligence, Surveillance and Reconnaissance (C2ISR) planning and execution for air, space, and cyberspace. In-depth development and analyses of C2C operational, systems, and technical architectures are geared to identify capability gaps, identify required "TO BE" information services, evaluate C2ISR program planned improvements and document the results in a capability roadmap. The C2C incorporates rapidly developing technologies to promote common standards, data sharing and information services across Air Force and joint warfighting applications to support a network-centric, joint enterprise solution.

Project 5078, Horizontal Integration (HI) conducts DOTMLPF analysis and assessments to guide cross-cutting net-centric, C2ISR sub-enterprise and cyberspace investment decisions that integrate USAF capabilities into Department of Defense (DoD), joint and coalition operations. HI identifies, prioritizes, and develops horizontally integrated solution recommendations across the Services to ensure the latest technologies and information services into a cross cutting net centric C2 system that enables integrated Global Effects in all warfighter domains. The Fiscal Year 2010 strategy is validated by HQ AF/A3 and AF/A5 to ensure that initiatives are harmonized with the most urgent warfighter needs. Once validated, HI funds are applied toward identifying the most critical warfighter domain capabilities and ensuring they are horizontally integrated into both Air Force and Joint C2ISR programs of record.

Project 5140, Joint Expeditionary Force Experiments (JEFX) transitioned from a large bi-annual warfighting experiment in Fiscal Year 2009 to an agile, smaller, quarterly operational assessment profile. Live-fly forces are combined with simulations into an operationally representative warfighter environment that focus on areas of interest that support the warfighter. This includes C2ISR information that supports the cyberspace domain. These experiments provide a vehicle for experimentation with operational concepts and attendant new technologies that evolve and transform Air Force capabilities to meet emerging real world threats. The JEFX strategy is validated by HQ AF/A3 and A5 ensuring initiatives are harmonized with the most urgent warfighter needs. Yearly JEFX themes are based on emerging CONOPS and warfighter challenges. They are part of a broader effort to implement the Joint Vision 2020, exploit the Revolution in Military Affairs, demonstrate emerging Air Force capabilities to deploy and employ decisive air, space, and cyberspace power for the Joint Force Commander, and are important enablers of innovation and transformation.

This program is in Budget Activity 7- Operational System Development because it provides a vehicle for developers, testers, and warfighters to experiment, analyze, and explore operational concepts and new technologies to enhance operational system developments and improve future capabilities.

Exhibit R-2, RDT&E Budget Item Justification	DATE May 2009
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0207449F C2 Constellation

(U) B. Program Change Summary ($ in Millions)

		FY 2008	FY 2009	FY 2010
(U)	Previous President's Budget	44.582	32.151	29.464
(U)	Current PBR/President's Budget	42.969	31.705	26.792
(U)	Total Adjustments	-1.613	-0.446	
(U)	Congressional Program Reductions			
	Congressional Rescissions		-0.446	
	Congressional Increases			
	Reprogrammings	-0.385		
	SBIR/STTR Transfer	-1.228		

(U) Significant Program Changes:

FY10: Changes in President's Budget due to reprogramming to meet higher Air Force priorities.

Exhibit R-2a, RDT&E Project Justification			DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0207449F C2 Constellation	PROJECT NUMBER AND TITLE: 5078 Horizontal Integration	

Cost ($ in Millions)		FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
5078	Horizontal Integration	11.301	15.083	11.967	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

Project 5078, Horizontal Integration (HI), is established to develop a Global Effects integrated capability to support cross-cutting net-centric solutions across air, space and Cyberspace C2ISR Warfighter domain. HI activities include studies and analysis to support both current program planning and execution and future program planning. HI defines the Command and Control Constellation (C2C) through six thrusts: first, requirements and planning documentation will be created/updated; second, architecture development and systems engineering policy will be developed to further refine the C2C and provide baseline data for more detailed analysis; third, analysis integration and systems engineers will perform analyses to validate and prioritize the major issues facing the C2C and develop net-centric roadmaps; fourth, technological analysis and applicability will be researched and applied; fifth, various Modeling & Simulation infrastructure and experimentation methods will be used to assess both non-materiel and materiel solutions; sixth, horizontal integration initiatives will be built, assessed, and transitioned to the warfighter as the final step in the C2C systems engineering process.

Program specifics are:
(1) Requirements documents will be published and revised. A requirements database and implementation plan identifying the most significant C2C net-centric integration issues will continue to be developed to catalog the activities necessary to accomplish this integration.

(2) Architecture Development and Systems Engineering is the 'glue' that holds C2C elements together, and closes the seams in the Command, Control, Communications Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) architecture. C2C system and technical architectures, cross program requirements allocation, key cost drivers, risk assessments and corresponding risk mitigation strategies will be examined. The C2C architecture provides a framework for conducting analyses to identify capability gaps, compare alternatives for improving Joint warfighting capabilities and to identify associated resource implications. Capability analyses identifies areas where interoperability can be improved within the Air Force, among joint services, and among coalition partners. Once capability issues are identified through the architecture analyses, they are prioritized and capability roadmaps and pilot initiatives are developed to provide solutions to the warfighter that resolve the capability gaps.

(3) Analysis Integration and Systems Engineering for Net-centric capability across C4ISR programs results in a Net-centric Strategic Plan which influences C4ISR program roadmaps. These roadmaps feed directly into the air, space and cyberspace C2ISR and C4ISR Net-centric flight plans. The plans provide Air Staff with issue development, data collection, data analysis, mapping of capabilities to system functions, and support the ability to develop trade space recommendations through use of a capability evolution methodology assessment tool.

(4) Ops/Technology Analysis and Concept Development assists in the development of standards for net-centricity which must be synchronized with the joint community. Net-Centric Enterprise Solutions for Interoperability (NESI) standards, Technical Integration Architecture (TIA), and Strategic Technical Plan (STP) all provide cross-service guidance on standards and implementation. Interaction/integration with the joint community will occur through HI participation in United States Joint Forces Command (USJFCOM) Board of Directors and the Global Information Grid (GIG) Information Sharing Session (ISS).

Exhibit R-2a, RDT&E Project Justification		DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0207449F C2 Constellation	PROJECT NUMBER AND TITLE: 5078 Horizontal Integration

(5) Modeling and Simulation (M&S) Infrastructure and Experimentation leverages existing government/industry simulation sites that allow 'virtual' assessments of the C2 Constellation. For FY09, the C2C PE served as the pathway to Net Enabled Command Capability (NECC) by linking the "Cyber Hot Bench" environment with three JEFX events per year where operational assessments occur for the purpose of Joint exposure and participation. The Hot Bench manages a continuous distributed operational environment that supports air, space, and cyberspace C2ISR and cyberspace rapid acquisition, development, integration, and fielding. C2ISR and cyberspace initiatives use the Hot Bench to mature their development status prior to entry into JEFX for final operational assessment.

(6) Horizontal Integration Solutions Assessment evaluates an initiatives' performance for operational utility and Clinger-Cohen Act compliance, which includes an assessment of Global Information Grid (GiG) compliance (net-centricity and service orientation) and Information Assurance (IA). The most promising initiatives/technologies will be matured and transitioned into weapon system configuration control baselines.

This program is in Budget Activity 7 - Operational System Development because it provides developers, testers and warfighters a way to experiment, analyze, and explore operational concepts and new technologies to enhance operational system developments and improve future capabilities leading to a horizontally integrated C2ISR Warfighter Sub-enterprise.

(U) B. Accomplishments/Planned Program ($ in Millions)

		FY 2008	FY 2009	FY 2010
(U)	Requirements/Planning documents creation/update	1.073	1.794	1.121
(U)	Architecture Development and Systems Engineering	4.152	4.486	2.456
(U)	Analysis Integration and Systems Engineering	3.255	3.347	1.577
(U)	Ops/Tech Analysis and Concept Development	1.442	4.241	2.700
(U)	M&S Infrastructure and Experimentation	0.164	0.173	0.000
(U)	Horizontal Integration Solutions Assessment	1.215	1.042	4.113
(U)	Total Cost	11.301	15.083	11.967

(U) C. Other Program Funding Summary ($ in Millions)

	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total Cost
(U) Not applicable										

(U) D. Acquisition Strategy

When feasible, 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.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: May 2009

BUDGET ACTIVITY: 07 Operational System Development

PE NUMBER AND TITLE: 0207449F C2 Constellation

PROJECT NUMBER AND TITLE: 5078 Horizontal Integration

(U) Cost Categories (Tailor to WBS, or System/Item Requirements) ($ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2008 Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development												
Requirements/Capability Based Planning (CBP)	FFRDC	MITRE Corp, ESC, Hanscom AFB, MA	1.563	0.351	Nov-07	0.367	Nov-08	0.582	Nov-09	Continuing	TBD	TBD
	C/CPAF	ManTech ITSP, ESC, Hanscom AFB, MA	0.110	0.110	Dec-07	0.115	Dec-08			Continuing	TBD	TBD
Architecture Development and Systems Engineering	FFRDC	MITRE Corp, ESC, Hanscom AFB, MA	6.909	1.101	Nov-07	1.417	Nov-08	1.796	Nov-09	Continuing	TBD	TBD
	C/CPAF	Lockheed Martin, ESC, Hanscom AFB, MA	2.218	0.396	Dec-07	0.414	Dec-08			Continuing	TBD	TBD
	FFRDC	MITRE Corp GCIC Langley AFB VA	1.705	1.705	Oct-07	1.705	Oct-08	1.705	Oct-09	Continuing	TBD	TBD
	IDIQ/T&M	Northrop Grumman & EDS, GCIC Hampton, VA	0.950	0.950	Oct-07	0.950	Oct-08	0.394	Oct-09	Continuing	TBD	TBD
Analysis, Integration, and SE/Capability Roadmaps	C/CPAF	Lockheed Martin, ESC, Hanscom AFB, MA	4.753	0.848	Dec-07	0.907	Dec-08			Continuing	TBD	TBD
	C/CPAF	Lockheed Martin/ESC, Hanscom AFB, MA	0.946	0.165	Dec-07	0.173	Dec-08			Continuing	TBD	TBD
	FFRDC	MITRE, ESC, Hanscom AFB, MA	1.755	0.770	Nov-07	0.805	Nov-08	1.227	Nov-09	Continuing	TBD	TBD
	IDIQ/T&M	EDS GCIC 300 Exp.Way Hampton,Va	0.210	0.210	Dec-07	0.210	Dec-08			Continuing	TBD	
Tech Analysis and Concept Development	IDIQ/T&M	Teledyne Brown GCIC 300 Exp Way Hampton, VA	0.880	0.880	Oct-07	1.312	Jan-09	2.747	Jan-10	Continuing	TBD	TBD

Exhibit R-3, RDT&E Project Cost Analysis

DATE: May 2009

BUDGET ACTIVITY: 07 Operational System Development

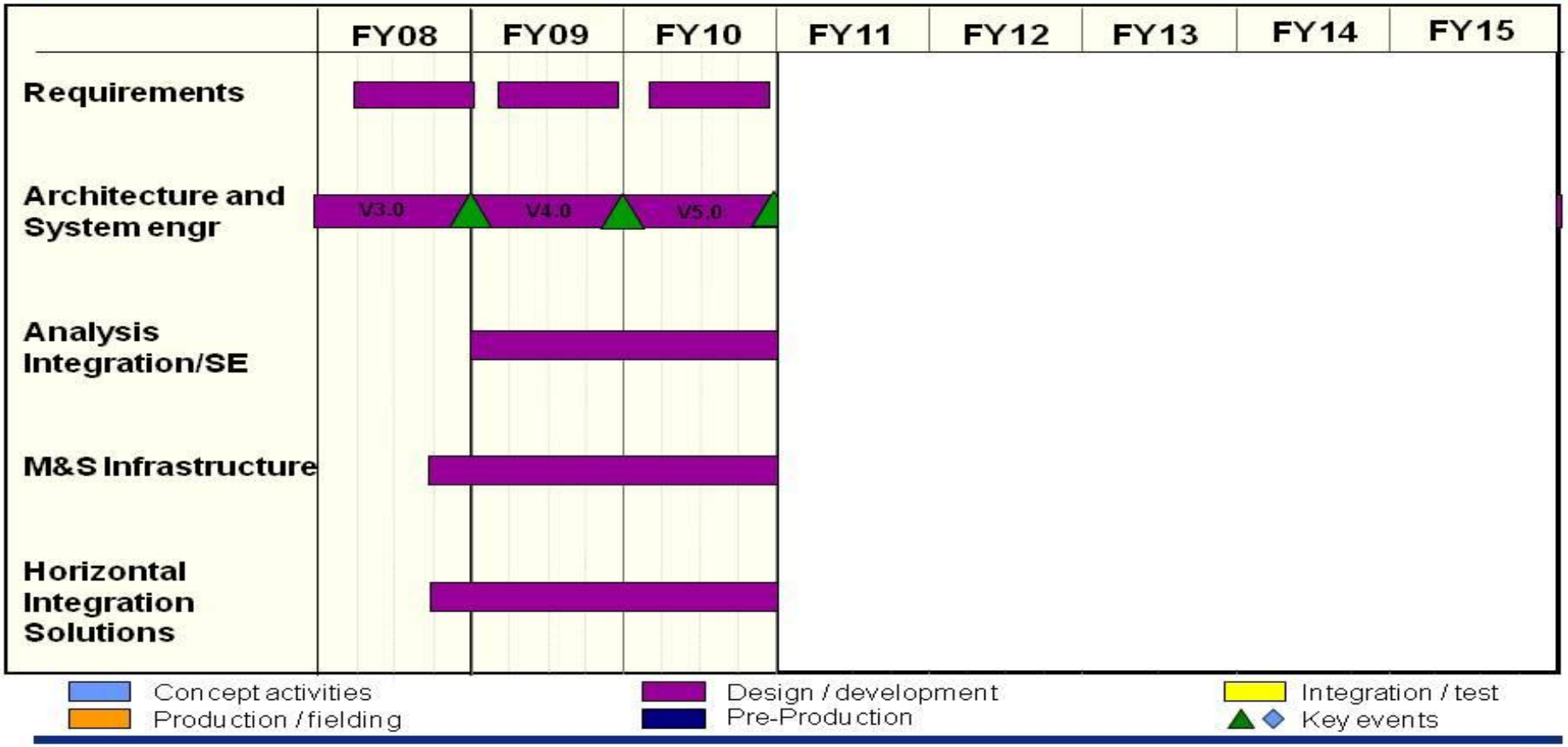
PE NUMBER AND TITLE: 0207449F C2 Constellation

PROJECT NUMBER AND TITLE: 5078 Horizontal Integration

	M&S Infrastructure and Experimentation	FFP	L-3 Titan AFCYBER LAFB VA				1.393	Jan-09			Continuing	TBD	TBD
		FFP	Various AFCYBER LAFB VA				1.662	Jun-09	1.187	Nov-09	Continuing	TBD	TBD
	Horizontal Integration Solution Assessment	Various	Various ESC HAFB MA		1.442	Jun-08	1.042	Jun-09	1.543	Jun-10	Continuing	TBD	TBD
	Subtotal Product Development			21.999	8.928		12.472		11.181		Continuing	TBD	TBD
	Remarks:												
(U)	Support												
	Support	C/CPAF	Quantech PASS, ESC, Hanscom AFB, MA		1.071	Dec-07	1.252	Nov-08	0.298	Nov-09	Continuing	TBD	TBD
	Subtotal Support			0.000	1.071		1.252		0.298		Continuing	TBD	TBD
	Remarks:												
(U)	Test & Evaluation												
	Engineering Analysis and Assessment	Various	GCIC, 300 Exp.Way, Hampton,Va	1.138	1.138	Nov-07	1.186	Nov-08	0.000		Continuing	TBD	TBD
	Subtotal Test & Evaluation			1.138	1.138		1.186		0.000		Continuing	TBD	TBD
	Remarks:												
(U)	Management												
	Program Management Support	C/CPAF	Quantech PASS, ESC, Hanscom AFB, MA		0.164	Nov-07	0.173	Nov-08	0.238	Nov-09	Continuing	TBD	TBD
	Program Management Support	C/CPAF	Jacobs, ETASS, ESC, Hanscom AFB, MA						0.250	Dec-09	Continuing	TBD	TBD
	Subtotal Management			0.000	0.164		0.173		0.488		Continuing	TBD	TBD
	Remarks:												
(U)												0.000	
	Subtotal			0.000	0.000		0.000		0.000		0.000	0.000	0.000
	Remarks:												
(U)	Total Cost			23.137	11.301		15.083		11.967		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile		DATE May 2009
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0207449F C2 Constellation	PROJECT NUMBER AND TITLE 5078 Horizontal Integration

Horizontal Integration Schedule



PB10 R-Docs

Depicted by installation/production flow

1

Exhibit R-4a, RDT&E Schedule Detail		DATE May 2009
BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0207449F C2 Constellation**	PROJECT NUMBER AND TITLE **5078 Horizontal Integration**

(U) Schedule Profile	FY 2008	FY 2009	FY 2010
(U) Requirements Documents	2-4Q	2-4Q	2-4Q
(U) Architecture Development and Systems Engineering	1-4Q	1-4Q	1-4Q
(U) Analysis (Integration/Ops/Tech) and Systems Engineering		1-4Q	1-4Q
(U) M&S Infrastructure and Experimentation	1-4Q	1-4Q	
(U) Horizontal Integration Initiatives	4Q	1-4Q	1-4Q

Exhibit R-2a, RDT&E Project Justification		DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0207449F C2 Constellation	PROJECT NUMBER AND TITLE: 5140 Joint Expeditionary Force Experiments

Cost ($ in Millions)		FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
5140	Joint Expeditionary Force Experiments	31.668	16.622	14.825	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

The Joint Expeditionary Force Experiments (JEFX) / Limited Objective Experiments (LOE) are warfighter experiments that address emerging operational challenges and are part of the total Air Force (AF) experimentation effort. JEFX/LOE explores significant capability gaps across the range of AF Concept of Operations (CONOPS) and address critical lessons learned from recent operations. They combine live-fly forces and simulations into an operationally representative warfighter environment. JEFX/LOE provides a multi-dimensional, multi-national, multi-service environment for an end-to-end process of exploration, assessment, and transition of capabilities that will provide joint and coalition warfighters with solutions to gaps identified in the Capability Review and Risk Assessment (CRRA) process and through lessons learned in recent and current operations. They are part of a broader effort to implement the Joint Vision 2020, demonstrate emerging Air Force capabilities to deploy and employ decisive aerospace power for the Joint Force Commander, and are important enablers of innovation and transformation. The integration of systems and process is the major reason JEFX is an experiment and not simply a demonstration or exercise.

Activities also include studies and analysis to support both current program planning and execution and future program planning.

This program is in Budget Activity 7 - Operational System Development because it provides horizontal integration, developers, testers, and warfighters to experiment, analyze, and explore operational concepts and new technologies to enhance operational system developments and improve capabilities of the air, space, and cyberspace forces.

(U) B. Accomplishments/Planned Program ($ in Millions)		FY 2008	FY 2009	FY 2010
(U)	Spiral develop systems architecture, systems engineering, and integration of initiatives into a cohesive system of systems process	6.654	3.386	3.250
(U)	Plan, design, coordinate, assess and report the JEFX experiments, provide expertise to support initiative selection, acquisition, program management, communications and systems planning	5.916	3.341	4.125
(U)	Develop initiatives to introduce new technologies and operational capabilities into the Aerospace Expeditionary Force (AEF) Concept of Operations (CONOPS)	6.350	3.064	3.200
(U)	Implement architectural configuration, conduct M&S, install and the test the communications infrastructure and execute the experiment	12.748	1.832	3.500
(U)	Transition successful JEFX assessed and CSAF approved warfighting capabilities for fielding into an integrated C2ISR baseline	0.000	4.999	0.750
(U)	Total Cost	31.668	16.622	14.825

Exhibit R-2a, RDT&E Project Justification		DATE May 2009
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0207449F C2 Constellation	PROJECT NUMBER AND TITLE 5140 Joint Expeditionary Force Experiments

(U) C. Other Program Funding Summary ($ in Millions)

	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total Cost

(U) Not applicable

(U) D. Acquisition Strategy

JEFX supports evolutionary acquisition of multiple programs by providing a venue to experiment new and emerging technologies to be integrated into other systems-of-record.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: May 2009

BUDGET ACTIVITY: 07 Operational System Development

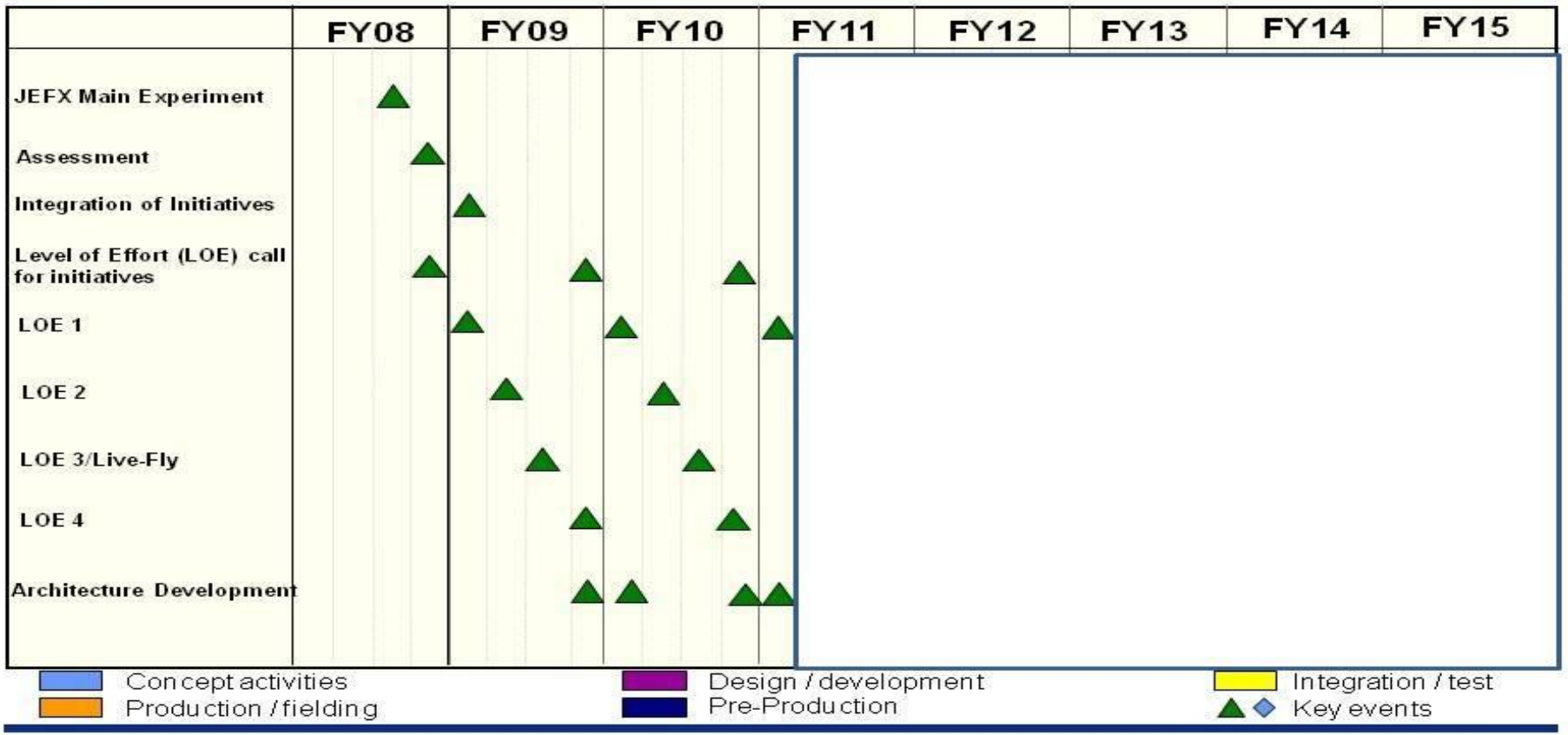
PE NUMBER AND TITLE: 0207449F C2 Constellation

PROJECT NUMBER AND TITLE: 5140 Joint Expeditionary Force Experiments

(U) Cost Categories (Tailor to WBS, or System/Item Requirements) ($ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2008 Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development												
Experimentation	FFRDC	MITRE, ESC Hanscom AFB, MA	6.566	3.685	Nov-07	1.643	Nov-08	1.643	Nov-09	Continuing	TBD	TBD
Experimentation	C/IDIQ	Sverdrup, ESC Hanscom AFB	1.324	1.324	Mar-08	0.662	Jan-09	0.662	Jan-10	Continuing	TBD	TBD
Experimentation	C/IDIQ	Quantech, ESC Hanscom AFB, MA	0.712	0.712	Jan-08	0.356	Jan-09	0.356	Jan-10	Continuing	TBD	TBD
Experimentation	C/CPAF	Lockheed Martin, ESC Hanscom AFB, MA	6.600	1.329	Nov-07	0.625	Nov-08	0.625	Nov-09	Continuing	TBD	TBD
Experimentation	Various	ESC, Hanscom AFB, MA	0.630	0.450	Oct-07	0.100	Oct-08	0.114	Oct-09	Continuing	TBD	TBD
Experimentation	Various	GCIC, Langley AFB, VA	5.802	5.802	Nov-07	5.802	Nov-08	5.577	Nov-09	Continuing	TBD	TBD
Experimentation	MIPR	L-3 Com, 505 CCW	3.100	1.130	Dec-07					Continuing	TBD	TBD
Experimentation	C/GSA	Sverdrup, 505 CCW	0.175	0.180	Oct-07					Continuing	TBD	TBD
Experimentation	C/GSA	Northrop Grumman	0.675	0.250	Oct-07					Continuing	TBD	TBD
Experimentation	Various	505 CCW	8.025	1.831	Jan-08	1.831	Jan-09	1.700	Nov-09	Continuing	TBD	TBD
Experimentation	MIPR	Various	25.056	14.975	Nov-07	5.603	Nov-08	4.148	Nov-09	Continuing	TBD	TBD
Subtotal Product Development			58.665	31.668		16.622		14.825		Continuing	TBD	TBD
Remarks:												
(U) Test & Evaluation										Continuing	TBD	TBD
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		Continuing	TBD	TBD
Remarks:												
(U) Total Cost			58.665	31.668		16.622		14.825		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile		DATE May 2009
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0207449F C2 Constellation	PROJECT NUMBER AND TITLE 5140 Joint Expeditionary Force Experiments

JEFX Schedule



PB10 R-Docs

Depicted by installation/production flow

Exhibit R-4a, RDT&E Schedule Detail		DATE May 2009
BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0207449F C2 Constellation**	PROJECT NUMBER AND TITLE **5140 Joint Expeditionary Force Experiments**

(U) **Schedule Profile**	FY 2008	FY 2009	FY 2010
(U) JEFX Main Experiment	3Q		
(U) Assessment	4Q		
(U) Integration of Initiatives		1Q	
(U) LOE Call for Initiatives	4Q	4Q	4Q
(U) Limited Objective Experiment 1 (LOE 1)		1Q	1Q
(U) LOE 2		2Q	2Q
(U) LOE 3/Live Fly		3Q	3Q
(U) LOE 4		4Q	4Q
(U) Architecture Development		4Q	1Q

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