PE NUMBER: 0207449F
PE TITLE: C2 Constellation

Exhibit R-2, RDT&E Budget Item Justification

DATE: February 2004

BUDGET ACTIVITY: 07 Operational System Development

PE NUMBER AND TITLE: 0207449F C2 Constellation

	Cost ($ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
	Total Program Element (PE) Cost	337.764	360.051	44.035	42.250	46.570	58.511	59.171	Continuing	TBD
5064	Airframe	129.395	206.045	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5065	Sensors	208.369	154.006	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5078	Horizontal Integration	0.000	0.000	12.840	10.908	13.830	25.328	25.006	Continuing	TBD
5140	Joint Expeditionary Force Experiments	0.000	0.000	31.195	31.342	32.740	33.183	34.165	Continuing	TBD

1. In Fiscal Year (FY) 2005, this Program Element (PE) was renamed Command and Control (C2) Constellation (formerly Multi-sensor Command and Control Constellation (MC2C)). Furthermore, Project 5064-Airframe and Project 5065-Sensor transferred to PE 0207450F, Multi-sensor Command and Control Aircraft (MC2A), Project 5131 MC2A-Airframe and Project 5132-MC2A Sensors. Both actions were accomplished to eliminate the programmatic confusion between the Multi-sensor Command and Control Aircraft (MC2A) and the MC2C.

Project 675078, Horizontal Integration, is established to continue Horizontal Integration efforts begun in FY03 in Project 5064 to develop an integrated intelligence, surveillance, and reconnaissance capability to support network centric operations. The C2 Constellation will build horizontal integration among its elements through (1) Systems Engineering, and Architecture Development, (2) Modeling and Simulation (M&S) Infrastructure and Experimentation, and (3) Horizontal Integration Enablers.

Project 675140 work transferred from PE 0207028F, Joint Expeditionary Force Experiments to continue the exploration of horizontal integration (HI) capabilities of the C2 Constellation with a primary focus on the integration of an Advanced Technology Air Operations Center (AT-AOC) and Advanced Technology Distributed Ground System, with Command and Control, Intelligence, Surveillance, Reconnaissance (C2ISR). This will enable future capabilities of the E-10A aircraft, BMC2, Family of Interoperable Operational Pictures, Battle Control System, Persistent Battlespace ISR, and the Deployable Theater Information Grid to be reviewed. The outcome will be a future architecture designed to achieve C2ISR capabilities required to support GSTF and C2ISR concepts of operations.

2. In FY 2003, the Multi-sensor Command and Control Constellation (MC2C) PE 0207449F and associated Project Numbers 5064-Airframe and 5065-Sensors absorbed, and continued, the Multi-Platform Radar Technology Insertion Program (MP-RTIP) previously reported in PE 0207581F Joint STARS, Project Number 4995-MP-RTIP. Additionally, it supported hosting the MP-RTIP sensor on a 767-400ER testbed aircraft with funding transferred from PE 0207581F Joint STARS, Project Number 0003-JSTARS.

3. In FY 2003, MC2C received $147M FY 2003 Defense Emergency Response Fund (DERF) funding which is included in the above Total Program Element Cost table as follows: $64.8M to Project 675064-Airframe; $61.7M for the acceleration of MP-RTIP sensor development (Project 5065-Sensors); and $20.5M for MC2 Constellation horizontal integration efforts (accounted for in the Project 675064-Airframe, in addition to the $64.8M). The DERF funding was used to initiate the incrementally funded purchase of a 767-400ER testbed aircraft, begin system engineering design efforts for the testbed modifications, accelerate MP-RTIP sensor development and initiate the MC2 Constellation's horizontal integration architecture development.

Exhibit R-2, RDT&E Budget Item Justification	DATE February 2004
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0207449F C2 Constellation

(U) A. Mission Description and Budget Item Justification

The C2 Constellation will be a horizontally integrated architecture of Command and Control (C2), Intelligence, Surveillance, and Reconnaissance (ISR) capabilities. The C2 Constellation will be Task Forces' critical enabling function to achieve persistent battlespace awareness. This vision integrates current, developmental, and future manned/unmanned space, air and ground sensors, data links, ground stations, exploitation tools, communication/information dissemination systems and C2/ battle management elements to give the warfighter real-time, decision quality information to prosecute the full range of military operations. C2 Constellation will achieve horizontal integration through the development of a network centric architecture, use of rapidly maturing modeling and simulation techniques, and application of rapid reaction, high leverage technology initiatives.

A key element of C2 Constellation is the E-10A aircraft -- the 'hub' of the constellation's architecture. The E-10A activity transferred to the MC2A PE 0207450F beginning in FY 2005 (see cost table footnote 1) and is fully discussed in that PE.

The MP-RTIP radar program funding was originally categorized as BA-7 to reflect a technology insertion program within the Joint STARS (PE 0207581F) program. The program retained its technology insertion character when MP-RTIP's funding transferred into program element 0207449F Project 5065, and remained in the BA-7 category.

This program is in Budget Activity 7 - Operational System Development because it provides a vehicle for horizontal integration and allows developers, testers and warfighters to experiment, analyze,and explore operational concepts and new technologies to enhance operational system developments and improve capabilities of the 21st century aerospace force.

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

		FY 2003	FY 2004	FY 2005
(U)	Previous President's Budget	333.864	363.630	550.860
(U)	Current PBR/President's Budget	337.764	360.051	44.035
(U)	Total Adjustments	3.900	-3.579	
(U)	Congressional Program Reductions			
	Congressional Rescissions		-3.579	
	Congressional Increases			
	Reprogrammings	3.900		
	SBIR/STTR Transfer			

(U) Significant Program Changes:

The only significant program change that occurred between the FY04 and FY05 PB was the realignment of MC2A funding into a new PE (see cost table footnote 1). FY03 $3.9M reprogrammed to DARPA for classified project.

Exhibit R-2a, RDT&E Project Justification			DATE: February 2004
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0207449F C2 Constellation	PROJECT NUMBER AND TITLE: 5064 Airframe	

Cost ($ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
5064 Airframe	129.395	206.045	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

1. In FY 2005, this PE was renamed C2 Constellation (formerly Multi-sensor Command and Control Constellation (MC2C)). Furthermore, Project 5064-Airframe and Project 5065-Sensor transferred to PE 0207450F, MC2A, Project 5131 MC2A-Airframe and Project 5132-MC2A Sensors. Both actions were accomplished to eliminate the programmatic confusion between the Multi-sensor Command and Control Aircraft (MC2A) and the MC2C.

2. In FY 2003, this was a new PE. This new Multi-sensor Command and Control Constellation (MC2C) PE 0207449F and associated Project Numbers 5064-Airframe and 5065-Sensors absorbed, and continued, the Multi-Platform Radar Technology Insertion Program (MP-RTIP) previously reported in PE 0207581F Joint STARS, Project Number 4995-MP-RTIP. Additionally, it supported hosting the MP-RTIP sensor on a 767-400ER testbed aircraft with funding transferred from PE 0207581F Joint STARS, Project Number 0003-JSTARS.

3. In FY 2003, MC2C received $147M FY2003 Defense Emergency Response Fund (DERF) funding which is included in the above Total Program Element Cost table as follows: $64.8M to Project 5064-Airframe; $61.7M for the acceleration of MP-RTIP sensor development (Project 5065-Sensors); and $20.5M for MC2 Constellation horizontal integration efforts (accounted for in the Project 5064-Airframe, in addition to the $64.8M). The DERF funding was used to initiate the incrementally funded purchase of a 767-400ER testbed aircraft, begin system engineering design efforts for the testbed modifications, accelerate MP-RTIP sensor development and initiate the MC2 Constellation's horizontal integration architecture development.

(U) A. Mission Description and Budget Item Justification

This project is established to design, develop, and integrate a wide-body aircraft to host multiple sensor configurations. The E-10 is a key node of the C2 Constellation (see PE 0207449F) bringing operational command and control to the joint warfighter through the use of advanced sensors, sensor fusion, network-centric warfare and high-speed, wide band communications systems. The E-10 aircraft series will employ both on-board and off-board sensors, communications, data links, and battle management integration software to execute the full range of military operations. The E-10 will interface with multi-Service ground/air/space-based sensors, intelligence and communications assets to shorten the decision cycle for combat operations. The E-10 will enable the detection, designation, and prosecution of time critical targets by providing battlespace situational awareness. The result is weapons-quality target cueing for joint and coalition shooters to engage time sensitive cruise missiles and other fleeting high-priority targets.

The E-10A, based on the Multi-Platform Radar Technology Insertion Program (MP-RTIP), will deliver a focused Air Moving Target Indicator (AMTI) capability for Cruise Missile Defense (CMD); an advanced, next-generation Ground Moving Target Indicator (GMTI) wide-area surveillance radar; and the open system architecture to facilitate dynamic Battle Management, Command and Control (BMC2) with growth potential for Unmanned Aerial Vehicle (UAV) control, space-based radar interface and Intelligence, Surveillance and Reconnaissance (ISR) management functions, integrated onto a 767-400ER testbed. A decision on the target wide-body platform for E-10A production will be made at the E-10A Milestone B review. E-10A Increment 1 will deliver the core capability to perform the focused AMTI and GMTI missions to include

Exhibit R-2a, RDT&E Project Justification		DATE February 2004
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0207449F C2 Constellation	PROJECT NUMBER AND TITLE 5064 Airframe

data processing and advanced communications links. Future spirals within E-10A Increment 1 are envisioned to incorporate sensor fusion, advanced battle management functions, UAV control, space-based radar integration and laser communications, while future E-10 increments are envisioned to incorporate advanced sensors for air surveillance operations.

Funds in this project will be used to: (1) incrementally fund the purchase of a Boeing 767-400ER aircraft to serve as the testbed for the wide-area surveillance "large sized" variant of the MP-RTIP radar system, (2) design, develop, and execute the transformation of the 'green'/commercial 767-400ER platform into the E-10A testbed for Increment 1 capabilities (3) develop the E-10A Increment 1 BMC2 architectures to include, communications and computing applications, (4) support Weapon Systems Integration activities, and (5) pursue horizontal integration efforts to support continuous improvement and implementation of the C2 Constellation.

This program is Budget Activity 7 because it provides a vehicle for horizontal integration and allows developers, testers and warfighters to experiment, analyze,and explore operational concepts and new technologies to enhance operational system developments and improve capabilities of the 21st century aerospace force.

(U)	**B. Accomplishments/Planned Program ($ in Millions)**	FY 2003	FY 2004	FY 2005
(U)	Horizontal Integration Efforts (FY04 plan to BTR funds to continue Horizontal Integration efforts, FY05 will transfer activity to Project 5078 in this PE)	20.500		
(U)	Incremental funding of a 767-400ER testbed	20.000	5.000	
(U)	Systems engineering associated with the modification of the commercial testbed	22.227	22.166	
(U)	BMC2 efforts	1.500	20.000	
(U)	Weapons Systems Integration (WSI) efforts	64.500	142.500	
(U)	SPO Ops Effort	0.668	1.079	
(U)	Sensor Lab/Test Hardware		15.000	
(U)	Conduct Future Studies/Spiral Development--includes concept exploration, program definition/risk reduction, and spiral development efforts supporting continuous improvement and implementation of Command & Control, Intelligence, Surveillance, and Reconnaissance (C2ISR) capabilities enabling the joint air and cruise missile defense architecture, joint decisive operations and the AEF Task Force CONOPS.		0.300	
(U)	Total Cost	129.395	206.045	0.000

Remark: In FY 2005, activity transferred to program element 0207450F-MC2A, Project 5131-Airframe

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

		FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
(U)	AF RDT&E									
(U)	PE 0207449F/Project 5065 Sensors	208.369	154.006	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
(U)	PE 0207450F/Project 5132	0.000	0.000	205.848	194.120	135.452	108.505	94.020	Continuing	TBD

Exhibit R-2a, RDT&E Project Justification			DATE: February 2004
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0207449F C2 Constellation	PROJECT NUMBER AND TITLE: 5064 Airframe	

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

(U)	MC2A Sensors PE 0207450F/Project 5131 MC2A Airframe	0.000	0.000	333.012	336.338	303.048	312.495	138.480	Continuing	TBD
(U)	APAF PE 0207450F (MC2A Production)	0.000	0.000	0.000	0.000	0.000	567.504	706.243	Continuing	TBD

(U) D. Acquisition Strategy

The E-10A acquisition strategy approved by USD/AT&L on 22 Apr 03, permitted the program to enter the pre-System Development & Demonstration phase. In FY 2003 the following events occurred: (1) the E-10A Weapon System Integration contract was awarded (14 May 03), (2) the incrementally funded purchase order for the 767-400ER testbed was placed (15 Aug 03), (3) system design engineering was initiated to transform the 'green'/commercial 767-400ER into a testbed for the "large" MP-RTIP radar variant, and (4) a competitive selection for an BMC2 provider began with "down-select" contracts awarded to three industry teams.

The Multi-Platform Radar Technology Insertion Program (MP-RTIP) Acquisition Decision Memorandum (ADM), dated 4 Dec 03, delayed the E-10A MS B date from July 2004 to July 2005. This allows for the completion of several trade studies regarding GMTI and elevated sensors for the integrated theater air and missile defense architecture to support cruise missile defense.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: February 2004

BUDGET ACTIVITY: 07 Operational System Development

PE NUMBER AND TITLE: 0207449F C2 Constellation

PROJECT NUMBER AND TITLE: 5064 Airframe

(U) Cost Categories (Tailor to WBS, or System/Item Requirements) ($ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2003 Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development												
Weapon System Integration (WSI)	SS/CPAF	Northrop Grumman Systems Corporation; Melbourne, FL	0.000	64.500	May-03	142.500	May-03	0.000		Continuing	TBD	
Systems Engineering	Various	Various	0.000	13.316	Oct-02	21.309	Oct-03	0.000		Continuing	TBD	
AFOTEC	MIPR	Various	0.000	0.000		0.154	Jan-04	0.000		Continuing	TBD	
JTF	SS/T&M	Titan Systems Corporation; Melbourne, FL	0.000	0.259	Apr-03	0.703	Jan-04				0.962	
DARPA	Allotment	Various	0.000	8.652	Jan-03	0.000		0.000			8.652	
BMC2-Winner	C/TBD	TBD	0.000			9.500	Jun-04	0.000		Continuing	TBD	
BMC2-Competition Team A	C/FFP	The Boeing Company; Seattle, WA	0.000	0.500	Sep-03	3.500	Oct-03	0.000			4.000	
BMC2-Competition Team B	C/FFP	Northrop-Grumman, Melbourne, FL	0.000	0.500	Sep-03	3.500	Oct-03	0.000			4.000	
BMC2-Competition Team C	C/FFP	Lockheed-Martin; Colorado Springs, CO	0.000	0.500	Sep-03	3.500	Oct-03	0.000			4.000	
767-400ER Testbed	SS/FFP	The Boeing Company; Seattle, WA	0.000	20.000	Aug-03	5.000	Oct-03	0.000		Continuing	TBD	
Sensor Lab/Test Hardware	SS/CPAF	Northrop Grumman Systems Corporation (MP-RTIP); El Segundo, CA	0.000	0.000		15.000	Mar-04	0.000		Continuing	TBD	
Horizontal Integration	Various	Various	0.000	20.500	Feb-03	0.000		0.000			20.500	
Future Studies/Spiral Development	Various	Various	0.000	0.000		0.300	Mar-04			Continuing	TBD	
Subtotal Product Development			0.000	128.727		204.966		0.000		Continuing	TBD	0.000
Remarks: Where Various Contract Method & Types take place, earliest date funds will obligated is noted. * Note: Awaiting competition results to determine contract award.												
(U) Management												
Program Office Support	Various	Various	0.000	0.668	Oct-02	1.079	Oct-03			Continuing	TBD	

Exhibit R-3, RDT&E Project Cost Analysis			DATE: February 2004
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0207449F C2 Constellation	PROJECT NUMBER AND TITLE: 5064 Airframe	

	Subtotal Management	0.000	0.668	1.079	0.000	Continuing	TBD	0.000
	Remarks: Where Various Contract Method & Types take place, earliest date funds will obligated is noted.							
(U)	Total Cost	0.000	129.395	206.045	0.000	Continuing	TBD	0.000

Remark: FY 2003 funding includes: $85.3M DERF to E-10A airframe (BPAC 5064); which includes $20.5M for the horizontal integration efforts.
FY 2005 funding activity transferred to program element 0207450F-MC2A, Project 5131-Airframe

Exhibit R-4, RDT&E Schedule Profile		DATE: February 2004
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0207449F C2 Constellation	PROJECT NUMBER AND TITLE: 5064 Airframe

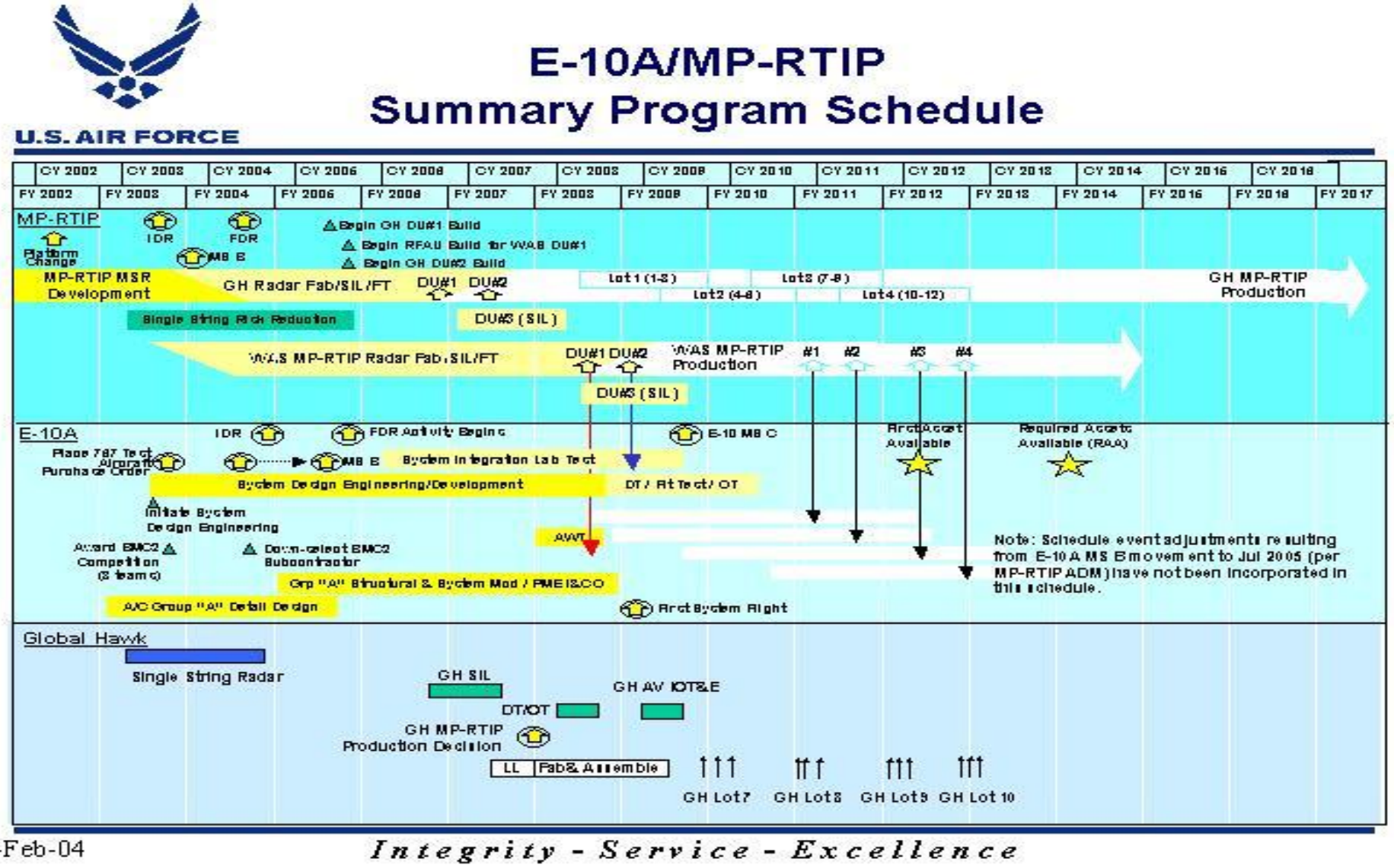

Exhibit R-4a, RDT&E Schedule Detail		DATE February 2004
BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0207449F C2 Constellation**	PROJECT NUMBER AND TITLE **5064 Airframe**

(U) **Schedule Profile**	FY 2003	FY 2004	FY 2005
(U) Initiated System Design Engineering	3Q		
(U) Placed incrementally funded purchase order for a 767-400ER	4Q		
(U) System Requirements Review		2Q	
(U) Initial Design Review (IDR)		4Q	

Remark: In FY 2005, activity transferred to program element 0207450F-MC2A, Project 5131-Airframe

Exhibit R-2a, RDT&E Project Justification			DATE: February 2004
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0207449F C2 Constellation	PROJECT NUMBER AND TITLE: 5065 Sensors	

Cost ($ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
5065 Sensors	208.369	154.006	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

1. In FY 2005, this PE was renamed C2 Constellation (formerly Multi-sensor Command and Control Constellation (MC2C)). Furthermore, Project 5064-Airframe and Project 5065-Sensor transferred to PE 0207450F, MC2A, Project 5131 MC2A-Airframe and Project 5132-MC2A Sensors. Both actions were accomplished to eliminate the programmatic confusion between the Multi-sensor Command and Control Aircraft (MC2A) and the MC2C.

2. In FY 2003, this was a new PE. This new Multi-sensor Command and Control Constellation (MC2C) PE 0207449F and associated Project Numbers 5064-Airframe and 5065-Sensors absorbed, and continued, the Multi-Platform Radar Technology Insertion Program (MP-RTIP) previously reported in PE 0207581F Joint STARS, Project Number 4995-MP-RTIP. Additionally, it supported hosting the MP-RTIP sensor on a 767-400ER testbed aircraft with funding transferred from PE 0207581F Joint STARS, Project Number 0003-JSTARS.

3. In FY 2003, MC2C received $147M FY2003 Defense Emergency Response Fund (DERF) funding which is included in the above Total Program Element Cost table as follows: $64.8M to Project 5064-Airframe; $61.7M for the acceleration of MP-RTIP sensor development (Project 5065-Sensors); and $20.5M for MC2 Constellation horizontal integration efforts (accounted for in the Project 5064-Airframe, in addition to the $64.8M). The DERF funding was used to initiate the incrementally funded purchase of a 767-400ER testbed aircraft, begin system engineering design efforts for the testbed modifications, accelerate MP-RTIP sensor development and initiate the MC2 Constellation's horizontal integration architecture development.

(U) A. Mission Description and Budget Item Justification

Exhibit R-2a, RDT&E Project Justification		DATE February 2004
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0207449F C2 Constellation	PROJECT NUMBER AND TITLE 5065 Sensors

(U)	Continue Multi-Platform RTIP radar design and development for integration on the E-10A and Global Hawk target platforms	198.433	152.076	
(U)	Continue Test Efforts (examples include: Operator-In-The-Loop [OITL]; Joint Test Force Support; AFOTEC Support, and Independent Verification & Validation IV&V).	1.455	1.031	
(U)	Continue SPO Operations	0.733	0.799	
(U)	Continue Future Studies/Spiral Development--includes concept exploration, program definition/risk reduction, sensor technology development and spiral development efforts supporting continuous improvements and implementation of Command & Control, Intelligence, Surveillance, and Reconnaissance (C2ISR) capabilities enabling the joint air and cruise missile defense architecture, joint decisive operations and the AEF Task Force CONOPS.	7.748	0.100	
(U)	Total Cost	208.369	154.006	0.000

Remark: In FY 2005, activity transferred to program element 0207450F-MC2A, Project 5132-Sensor

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

		FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
(U)	AF RDT&E									
(U)	PE 0207449F/Project 5064 Airframe	129.395	206.045	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
(U)	PE 0207450F/Project 5132 MC2A Sensor	0.000	0.000	205.848	194.120	135.452	108.505	94.020	Continuing	TBD
(U)	PE 0207450F/Project 5131 MC2A Airframe	0.000	0.000	333.012	336.338	303.048	312.495	138.480	Continuing	TBD
(U)	PE 0305205F/Project 4799 (Global Hawk MP-RTIP Sensor)	11.000	32.000	34.000	18.000	8.000	0.000	0.000	Continuing	TBD
(U)	APAF									
(U)	PE 0207450F (MC2A Production)	0.000	0.000	0.000	0.000	0.000	567.504	706.243	Continuing	TBD

(U) D. Acquisition Strategy

The MP-RTIP Acquisition Decision Memorandum (ADM), dated 4 Dec 03, approved Global Hawk MP-RTIP entry into SDD and continued platform integration efforts for other platforms. MP-RTIP SDD activities will begin in FY 2004.

The MP-RTIP program currently plans to provide sensors for five aircraft (1 test bed and 4 production aircraft) and 12 Global Hawk air vehicles. LRIP quantities for Global Hawk (6 radars) were established at the MP-RTIP Milestone B in FY 2003. LRIP quantities for a widebody aircraft will be addressed at the E-10A MS B in FY 2005.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: February 2004

BUDGET ACTIVITY: 07 Operational System Development

PE NUMBER AND TITLE: 0207449F C2 Constellation

PROJECT NUMBER AND TITLE: 5065 Sensors

(U) Cost Categories (Tailor to WBS, or System/Item Requirements) ($ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2003 Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development												
Multi-Platform Radar Technology Insertion Program (MP-RTIP)	SS/CPAF	Northrop Grumman Systems Corporation; El Segundo, CA	112.405	189.854	Jan-02	136.063	Dec-03			Continuing	TBD	
Systems Engineering associated with MP-RTIP	Various	Various	7.778	8.579	Oct-02	16.013	Oct-03			Continuing	TBD	
DARPA	Allotment	Various	0.000	7.748	Jan-03						7.748	
Future Studies/Spiral Development	Various	Various				0.100	Mar-04				0.100	
Subtotal Product Development			120.183	206.181		152.176		0.000		Continuing	TBD	0.000
Remarks: For "Various" earliest date funds will be obligated is noted.												
(U) Test & Evaluation												
OITL	SS/T&M	Hanscom AFB, MA	0.800	0.500	Mar-03	0.000				Continuing	TBD	
JTF Support	SS/T&M	Titan Systems Corporation; Melbourne, FL	0.012	0.409	Apr-03	0.556	Jan-04			Continuing	TBD	
AFOTEC Support	MIPR	Various	0.270	0.096	Apr-03	0.000				Continuing	TBD	
IV&V	MIPR	Various	0.000	0.450	Jul-03	0.475	Jan-04			Continuing	TBD	
Subtotal Test & Evaluation			1.082	1.455		1.031		0.000		Continuing	TBD	0.000
Remarks:												
(U) Management												
Program Office Support	Various	Various	0.625	0.733	Oct-02	0.799	Oct-03			Continuing	TBD	
Subtotal Management			0.625	0.733		0.799		0.000		Continuing	TBD	0.000
Remarks: For "Various" earliest date funds will be obligated is noted.												
(U) Total Cost			121.890	208.369		154.006		0.000		Continuing	TBD	0.000

Remarks: FY 2002 and prior funds are reflected in JSTARS/PE 0207581F
FY 2003 and FY2004 funds are reflected in C2 Constellation/PE 0207449F
FY 2005 funding activity transfers to program element 0207450F-MC2A, Project 5132-Sensor

Exhibit R-4, RDT&E Schedule Profile		DATE: February 2004
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0207449F C2 Constellation	PROJECT NUMBER AND TITLE: 5065 Sensors

E-10A/MP-RTIP Summary Program Schedule

U.S. AIR FORCE

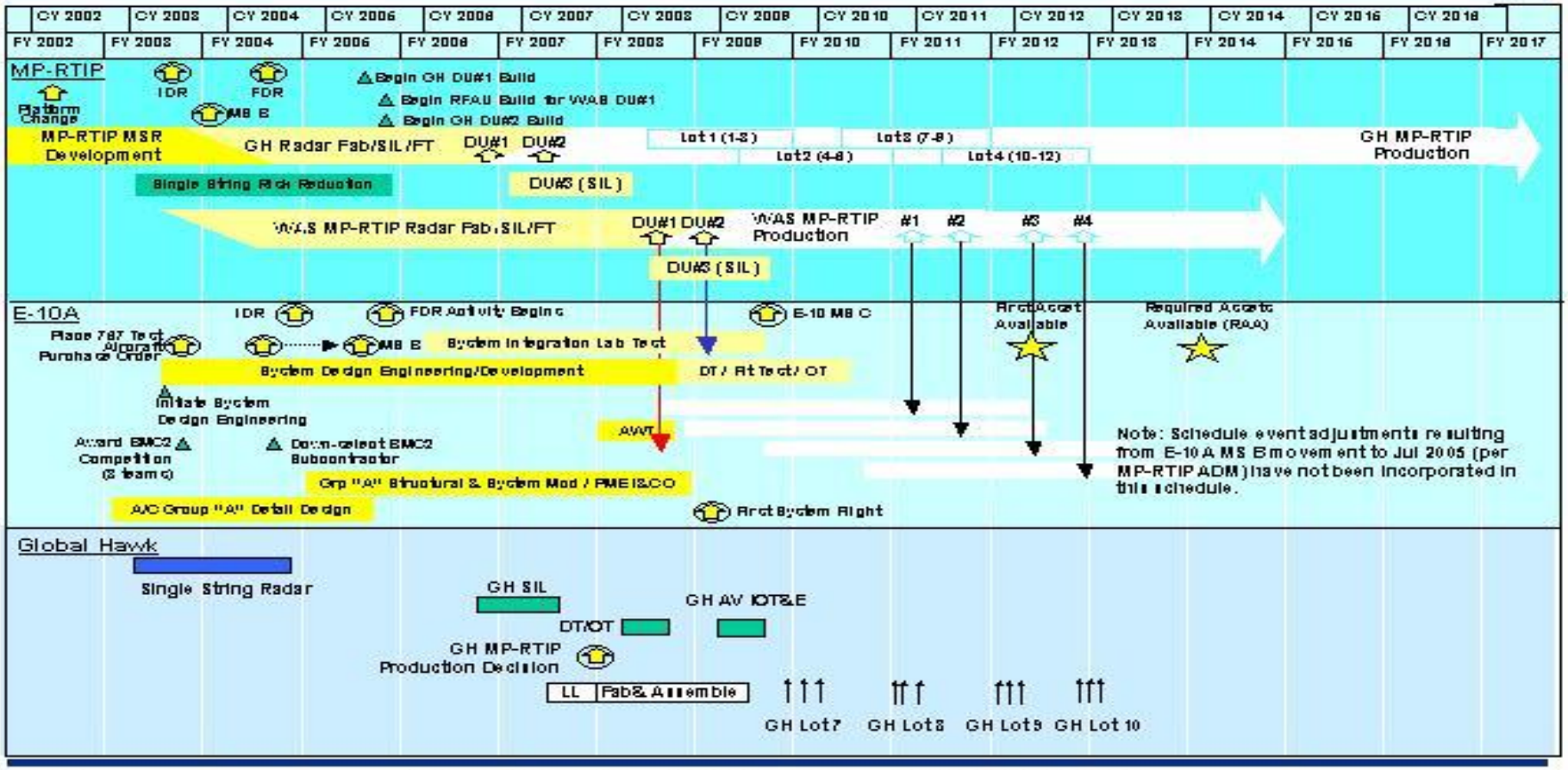

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Exhibit R-4a, RDT&E Schedule Detail		DATE February 2004
BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0207449F C2 Constellation**	PROJECT NUMBER AND TITLE **5065 Sensors**

(U) Schedule Profile	FY 2003	FY 2004	FY 2005
(U) INITIAL DESIGN REVIEW	3Q		
(U) MILESTONE B		1Q	
(U) FINAL DESIGN REVIEW (FDR)		3Q	

Remark: In FY 2005, activity transferred to program element 0207450F-MC2A, Project 5132-Sensor

Exhibit R-2a, RDT&E Project Justification

DATE: February 2004

BUDGET ACTIVITY: 07 Operational System Development

PE NUMBER AND TITLE: 0207449F C2 Constellation

PROJECT NUMBER AND TITLE: 5078 Horizontal Integration

Cost ($ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
5078 Horizontal Integration	0.000	0.000	12.840	10.908	13.830	25.328	25.006	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

In FY 2003, the Air Force established a program element called the Multi-sensor Command and Control Constellation (MC2C). The MC2 Constellation is a horizontally integrated architecture of Command and Control (C2) and Intelligence, Surveillance, and Reconnaissance (ISR) capabilities. The horizontal integration effort included in this project will develop the system architecture foundation upon which all other MC2 Constellation elements will be established. The MC2 Constellation horizontal integration effort is captured in three main areas: Systems Engineering and Architecture Development, Modeling and Simulation (M&S) capabilities; development/fielding of rapid reaction, high leverage horizontal integration initiatives. This project's FY03 $20.5M horizontal integration activities were funded with FY03 DERF dollars.

In FY04, Horizontal Integration efforts continue in Project Number 675064, Airframe.

In FY05, to clarify the programmatic confusion between the MC2 Aircraft (MC2A) and the MC2 Constellation, the Air Force revised its budgeting structure to clearly delineate separate Program Elements to support these two efforts. This Program Element (PE) 0207449F, was retitled as C2 Constellation, and a new PE 0207450F, MC2A, was constructed. In addition, Project Number 675064, Airframe's horizontal integration work transferred to Project Number 675078, Horizontal Integration.

(U) A. Mission Description and Budget Item Justification

Project 675078, Horizontal Integration, is established to develop an integrated intelligence, surveillance, and reconnaissance capability to support network centric operations. The C2 Constellation will build horizontal integration among its elements through (1) Systems Engineering, and Architecture Development, (2) Modeling and Simulation (M&S) Infrastructure and Experimentation, and (3) Horizontal Integration Enablers.

(1) Systems Engineering and Architecture Development is the 'glue' which will hold the constellation elements together, and close the seams in the C4ISR architecture. C2 Constellation system and technical architectures, cross program requirements allocation, key cost drivers, risk assessment and corresponding risk mitigation strategy will be examined. Existing/planned industry efforts and high payoff demonstrations/exercises will be leveraged for maximum benefit.

(2) M&S Infrastructure and Experimentation will leverage existing government/industry development and simulation sites to allow 'virtual' assessments of the C2 Constellation, as it is developed/refined. Facility network architecture management, new or improved communications linkages between the various government and industry simulation sites, with the required accreditation and encryption systems will be developed. A series of experiments, exercises and simulations will provide insight into the constellation architecture alternatives and identify targets of opportunity for further engineering and integration.

(3) Horizontal Integration Enablers will capitalize on near-term opportunities to eliminate known horizontal integration deficiencies in the seamless Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) network vision. Specific initiatives will focus on network centric warfare capabilities, air and space C2 integration, improved management and tasking of existing and forecast ISR systems, and correlation/fusion tools to improve our time critical targeting capabilities. These initiatives will become integral to the weapon system configuration controlled baseline.

Exhibit R-2a, RDT&E Project Justification		DATE February 2004
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0207449F C2 Constellation	PROJECT NUMBER AND TITLE 5078 Horizontal Integration

This program is in Budget Activity 7 - Operational System Development because it provides a vehicle for 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 21st century aerospace force.

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

	FY 2003	FY 2004	FY 2005
(U) Systems Engineering and Architecture Development, M&S Infrastructure and Experimentation, and Horizontal Integration Enablers	0.000	0.000	12.840
(U) Total Cost	0.000	0.000	12.840

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

	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
(U) Not Applicable									

(U) D. Acquisition Strategy

The C2 Constellation horizontal integration effort embraces full and open competition for one or more systems engineering and architect approaches, coupled with M&S experiments and exercises. Long-term plan includes continued systems engineering, architecture refinement and maturing of the M&S infrastructure and experimentation to facilitate horizontal integration enablers. These enablers, performed toward a target end-state defined by architectural products, will allow the C2 Constellation to continuously spiral capabilities.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: February 2004

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 2003 Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development												
Lockheed Martin	C/CPAF	ESC Hanscom AFB, MA	0.000	0.000		0.000		3.900	Dec-04		3.900	
ACS Defense	C/CPAF	ESC Hanscom AFB, MA	0.000	0.000		0.000		0.331	Apr-05		0.331	
ESC/SR	SPO Managed	ESC Hanscom AFB, MA	0.000	0.000		0.000		0.700	Dec-04		0.700	
ESC/JS	C/T&M	ESC Hanscom AFB, MA	0.000	0.000		0.000		0.286	Dec-04		0.286	
GSA	MIPR	Various	0.000	0.000		0.000		0.182	Dec-04		0.182	
AFRL	MIPR	Various	0.000	0.000		0.000		0.286	Dec-04		0.286	
NAVAIR/DPPS	MIPR	Various	0.000	0.000		0.000		0.081	Dec-04		0.081	
Various	Various	Various	0.000	0.000		0.000		5.994	Dec-04		5.994	
Subtotal Product Development			0.000	0.000		0.000		11.760		0.000	11.760	0.000
Remarks:												
(U) Support												
											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Test & Evaluation												
46th Test Squadron	PO	Various	0.000	0.000		0.000		0.248	Dec-04		0.248	
605th Test Squadron	PO	Various	0.000	0.000		0.000		0.032	Dec-04		0.032	
Subtotal Test & Evaluation			0.000	0.000		0.000		0.280		0.000	0.280	0.000
Remarks:												
(U) Management												
MITRE	FFRDC	ESC Hanscom AFB, MA						0.800	Dec-04		0.800	
Subtotal Management			0.000	0.000		0.000		0.800		0.000	0.800	0.000
Remarks:												
(U) Total Cost			0.000	0.000		0.000		12.840		0.000	12.840	0.000

Exhibit R-4, RDT&E Schedule Profile		DATE: February 2004
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0207449F C2 Constellation	PROJECT NUMBER AND TITLE: 5078 Horizontal Integration

Horizontal Integration

Summary Program Schedule

Exhibit R-4a, RDT&E Schedule Detail		DATE February 2004
BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0207449F C2 Constellation**	PROJECT NUMBER AND TITLE **5078 Horizontal Integration**

(U) Schedule Profile	FY 2003	FY 2004	FY 2005
(U) Develop a simulation architecture to facilitate C2 Enterprise integration.			1-4Q
(U) Perform C2 Enterprise integrated architecture experimentation/analysis			1-4Q
(U) Implement HI Enabler			1-4Q

Exhibit R-2a, RDT&E Project Justification			DATE: February 2004
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 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
5140	Joint Expeditionary Force Experiments	0.000	0.000	31.195	31.342	32.740	33.183	34.165	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0		

In FY05, work transferred in from PE 0207028F, Joint Expeditionary Force Experiment, Project Number 674373.

(U) A. Mission Description and Budget Item Justification

The Joint Expeditionary Force Experiments (JEFX) are large-scale warfighter experiments that address emerging operational challenges and are part of the total Air Force (AF) experimentation effort. We will explore significant capability gaps across the range of AF CONOPS and address critical lessons learned from recent operations. They combine live-fly forces and simulations into an operationally representative warfighter environment. These experiments provide a vehicle for experimentation with operational concepts and attendant new technologies to evolve and transform our aerospace forces and capabilities for the 21st century. 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 aerospace 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 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 21st century aerospace force.

(U) B. Accomplishments/Planned Program ($ in Millions)	FY 2003	FY 2004	FY 2005
(U) Develop systems architecture, systems engineering, and integration of initiatives into a cohesive system of systems. Integration of systems and process is the major reason JEFX is an experiment and not simply a demonstration or exercise.	0.000	0.000	5.160
(U) Plan, design, coordinate, assess and report the APTX 05 experiment. Provide expertise to support SPO functions of initiative selection, acquisition, program management, communications and systems planning.	0.000	0.000	7.000
(U) Develop initiatives to introduce new technologies and operational capabilities into the Aerospace Expeditionary Force (AEF) Concept of Operations (CONOPS) and develop and install Command and Control (C2) center upgrades.	0.000	0.000	6.861
(U) Implement architectural configuration, conduct M&S, install and the test the communications infrastructure and execute the APTX 05 experiment	0.000	0.000	3.700
(U) Transition the integration of new initatiatives and legacy systems into an integrated C2ISR baseline.	0.000	0.000	8.474
(U) Total Cost	0.000	0.000	31.195

Exhibit R-2a, RDT&E Project Justification		DATE February 2004
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 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost

(U) Not Applicable

(U) D. Acquisition Strategy

Electronic Systems Center (ESC), Hanscom AFB, MA and Air Force Command and Control, Intelligence, Surveillance and Reconnaissance (AFC2ISRC) Center, Langley AFB, VA will manage the acquisition and development for the experimentation, integration and fielding of selected technologies and process with legacy systems into an integrated C2ISR baseline.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: **February 2004**

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 2003 Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development												
MITRE	FFRDC	AFC2ISRC, Langely AFB, VA	0.000	0.000		0.000		2.360	Dec-04	Continuing	TBD	
Lockheed Martin	C/CPAF	ESC Hanscom AFB, MA	0.000	0.000		0.000		1.800	Dec-04	Continuing	TBD	
ACS Defense	C/IDIQ	AFC2ISRC, Langely AFB, VA	0.000	0.000		0.000		1.575	Apr-05	Continuing	TBD	
Northrup Grumann	C/T&M	ESC Hanscom AFB, MA	0.000	0.000		0.000		0.200	Dec-04	Continuing	TBD	
Logicon	C/T&M	AFC2ISRC, Langely AFB, VA	0.000	0.000		0.000		0.500	Dec-04	Continuing	TBD	
GSA	MIPR	Various	0.000	0.000		0.000		1.706	Dec-04	Continuing	TBD	
AFRL	MIPR	Various	0.000	0.000		0.000		0.500	Dec-04	Continuing	TBD	
General Dynamics	C/T&M	AFC2ISRC, Langely AFB, VA	0.000	0.000		0.000		0.450	Dec-04	Continuing	TBD	
ESC	Various	Various	0.000	0.000		0.000		0.180	Dec-04	Continuing	TBD	
Various	MIPR	Various	0.000	0.000		0.000		14.739	Dec-04	Continuing	TBD	
L3 Comm	MIPR	Various	0.000	0.000		0.000		1.000	Dec-04	Continuing	TBD	
Sverdrup	C/GSA	Various	0.000	0.000		0.000		0.175	Oct-04	Continuing	TBD	
TRW	C/GSA	Various	0.000	0.000		0.000		0.250	Oct-04	Continuing	TBD	
AFC2TIG	MIPR	AFC2ISRC, Langely AFB, VA	0.000	0.000		0.000		0.575	Feb-05	Continuing	TBD	
Alion	C/GSA	Various	0.000	0.000		0.000		1.850	Dec-04	Continuing	TBD	
ACS Defense	C/GSA	Various	0.000	0.000		0.000		0.500	Dec-04	Continuing	TBD	
SAIC	C/GSA	Various	0.000	0.000		0.000		1.058	Dec-04	Continuing	TBD	
L3 Comm	C/GSA	Various	0.000	0.000		0.000		1.207	Dec-04	Continuing	TBD	
TRW	C/GSA	Various	0.000	0.000		0.000		0.300	Dec-04	Continuing	TBD	
Zel Tech	C/GSA	Various	0.000	0.000		0.000		0.220	Dec-04	Continuing	TBD	
Subtotal Product Development			0.000	0.000		0.000		31.145		Continuing	TBD	0.000

Exhibit R-3, RDT&E Project Cost Analysis

DATE: **February 2004**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT NUMBER AND TITLE
07 Operational System Development	**0207449F C2 Constellation**	**5140 Joint Expeditionary Force Experiments**

Remarks:										
(U) Support										
									0.000	
Subtotal Support			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Remarks:										
(U) Test & Evaluation										
46th Test Squadron	PO	Various	0.000	0.000	0.000	0.050	Dec-04	Continuing	TBD	
Subtotal Test & Evaluation			0.000	0.000	0.000	0.050		Continuing	TBD	0.000
Remarks:										
(U) Management										
									0.000	
Subtotal Management			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Remarks:										
(U) Total Cost			0.000	0.000	0.000	31.195		Continuing	TBD	0.000

Exhibit R-4, RDT&E Schedule Profile		DATE: February 2004
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0207449F C2 Constellation	PROJECT NUMBER AND TITLE: 5140 Joint Expeditionary Force Experiments

Joint Expeditionary Force Experiments
Summary Program Schedule

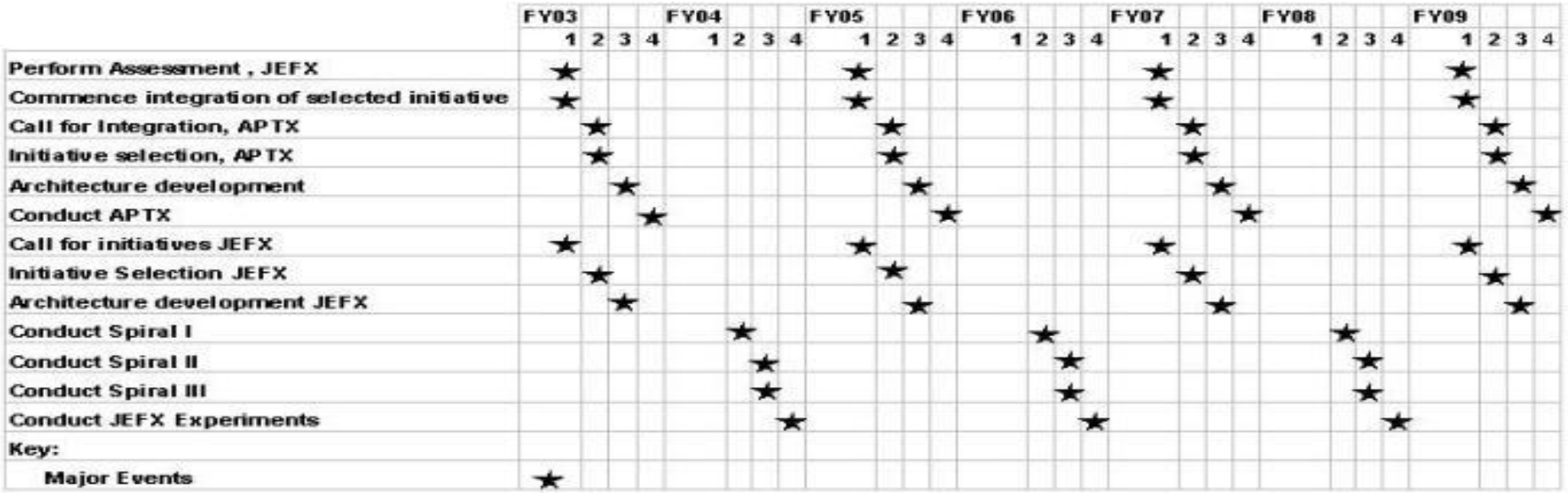

Exhibit R-4a, RDT&E Schedule Detail		DATE February 2004
BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0207449F C2 Constellation**	PROJECT NUMBER AND TITLE **5140 Joint Expeditionary Force Experiments**

(U) Schedule Profile	FY 2003	FY 2004	FY 2005
(U) JEFX 04 Assessment			1Q
(U) Integration of Initiatives			1Q
(U) APTX 05 Integration			2Q
(U) APTX Initative Selection			2Q
(U) Architecture Development			3Q
(U) APTX 05			4Q
(U) JEFX 06 Call for Initiatives			1Q
(U) JEFX 06 Selection			2Q
(U) JEFX 06 Architecture Developed			3Q