PE NUMBER: 0302015F
PE TITLE: E-4B NATIONAL AIRBORNE OPERATIONS CENTER

Exhibit R-2, RDT&E Budget Item Justification							DATE February 2006		
BUDGET ACTIVITY 07 Operational System Development				PE NUMBER AND TITLE 0302015F E-4B NATIONAL AIRBORNE OPERATIONS CENTER					
Cost ($ in Millions)	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	13.801	18.639	0.283	0.000	0.000	0.000	0.000	0.000	210.293
4777 E-4B Aircraft Modernization	13.801	18.639	0.283	0.000	0.000	0.000	0.000	0.000	210.293

(U) **A. Mission Description and Budget Item Justification**

The E-4B National Airborne Operations Center (NAOC) modernization program upgrades the fleet of four highly modified Boeing 747-200 aircraft to add new capability and improve reliability for its two primary missions (nuclear command and control and senior national leader support). The E-4B NAOC fleet satisfies the military requirement to provide a survivable operations center as an alternate to the National Military Command Center (NMCC) located in the Pentagon. The E-4B NAOC fleet also satisfies the military need for an airborne operations center with communications capabilities that will permit senior national leadership to monitor and control military and civil national assets during all phases of national conflict or disaster. Developmental modifications include, but are not limited to, upgrades and enhancements to aircraft structures, propulsion system, fuel system, environmental control system, electrical generation and distribution systems, flight safety and navigation systems (with their associated communications equipment), and the related aircraft operations center facilities, equipment, and communications necessary for the E-4B fleet to execute its primary mission as an alternate NMCC.

Modifications currently underway or planned for accomplishment under this program include:
- Modification Block 1 (Mod Blk 1): A group designator for modifications being started and completed together on the same aircraft. The RDT&E elements of Mod Blk 1 include Audio Infrastructure Update (AIU) (formerly Block 5A) and Global Air Traffic Management (GATM) II. The Senior Leaders Communication System (SLCS) is also included in the Mod Blk 1 work, but is not considered R&D work. The SLCS modification is entirely funded with Aircraft Procurement (Aircraft Modification) funds.

  -- Audio Infrastructure Update (AIU) affects the primary mission internal audio distribution and recording system. It replaces obsolete 1960s era analog equipment with digital technology that corrects a major sustainment issue associated with out-dated analog voice, data distribution, and recording equipment.   The planning for the internal noise reduction modification of the senior leadership conference room (Area 4) was completed during FY03 as part of the "Block 5B - Data Concept Exploration." The exploration revealed installation of the Area 4 noise reduction would be most efficiently performed if done in conjunction with the AIU modification.   Consequently, the internal noise reduction modification for Area 4 is being performed as part of the AIU modification. Design deficiencies recognized when the prototype AIU modified aircraft was delivered have delayed this aircraft from assuming a mission capable status. However, these AIU technical problems are scheduled to be corrected and the prototype AIU aircraft, and the follow-on AIU aircraft, assuming mission capable status during FY06.

  -- Global Air Traffic Management (GATM) II is the second part of a 3-phased implementation of Global Access, Navigation, and Safety/Global Air Traffic Management modifications to permit unencumbered access to international airspace and to maintain the level of E-4B flight safety consistent with civil standards that become effective in CY05.

  -- Senior Leader Communication System (SLCS): The FY02 Defense Emergency Response Funds (DERF) funded a SLCS study which concluded that the technical solution would not require research and development. Consequently, the SLCS modification is funded with Aircraft Procurement modification funds. SLCS will

Exhibit R-2, RDT&E Budget Item Justification	DATE February 2006

BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0302015F E-4B NATIONAL AIRBORNE OPERATIONS CENTER

provide an 'office in the sky' capability for senior leaders that includes commercial Direct Broadcast Service (DBS), International Maritime Satellite (INMARSAT) access, and video teleconferencing capability, plus access to Defense Information System Network (DISN) and Public Switch Network (PSN) for secure/non-secure voice, video and data exchange on and off the airplane (external e-mail and Internet access).
- Super High Frequency (SHF) Multiplexor (MUX) Upgrade: This modification combines secure and non-secure digital signals into one data stream for transmission over the Frequency Division Multiple Access (FDMA) modem or USC-28. The multiplexor replacement is a dual V-100 MUX. The technical risk of integrating the new multiplexor into the E-4B communication suite is sufficiently high to justify the use of RDT&E funding on the prototype aircraft. This modification may be installed either during depot level maintenance or during field maintenance.

The E-4B program is categorized as a Budget Activity 7 - Operational System Development, because it develops modifications for a fielded system.

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

	FY 2005	FY 2006	FY 2007
(U) Previous President's Budget	11.074	18.909	6.489
(U) Current PBR/President's Budget	13.801	18.639	0.283
(U) Total Adjustments	2.727	-0.270	
(U) Congressional Program Reductions			
Congressional Rescissions	-0.098	-0.270	
Congressional Increases			
Reprogrammings	2.825		
SBIR/STTR Transfer			

(U) Significant Program Changes:
DoD decided to retire the E-4B fleet at the rate of one per year beginning during FY09 and completing during FY12. Additionally, the last two (2 of 4) Mod Blk 1 installations will be terminated as well as future programmed but non-essential modifications, such as C3 UHF Digitization and CNS/ATM I (fka GATM Phase III). The DoD is committed to keeping the E-4B fleet mission capable until it is removed from service. Accordingly, additional modifications, including but not limited to SHF MUX, will be required before FY12 to ensure the aircraft remain mission capable until retirement. These additional modifications will be considered during future budget submissions. All future non-safety related modifications that are not expected to see at least five years of in-service use will be the subject of the "Sunset Law" waiver and the Congressional notification process.

Technical problems related to the AIU portion of the first Mod Blk 1 installation have prevented this aircraft from being declared mission capable. The Air Force is implementing design changes to the AIU modification and will have two mission capable Mod Blk 1 capable aircraft during FY06. The FY06 Appropriation Act contained funds for the Data LAN Infrastructure (DLI) modification. The DLI modification has been cancelled and all of its FY06 funds applied to the correction of AIU technical problems. The Air Force will not be requesting funds for resumption of the DLI project as long as the last E-4B is planned to be removed from service during FY12.

Exhibit R-2a, RDT&E Project Justification								DATE **February 2006**	

BUDGET ACTIVITY **07 Operational System Development**				PE NUMBER AND TITLE **0302015F E-4B NATIONAL AIRBORNE OPERATIONS CENTER**			PROJECT NUMBER AND TITLE **4777 E-4B Aircraft Modernization**		

Cost ($ in Millions)	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
4777 E-4B Aircraft Modernization	13.801	18.639	0.283	0.000	0.000	0.000	0.000	0.000	210.293
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

The E-4B National Airborne Operations Center (NAOC) modernization program upgrades the fleet of four highly modified Boeing 747-200 aircraft to add new capability and improve reliability for its two primary missions (nuclear command and control and senior national leader support). The E-4B NAOC fleet satisfies the military requirement to provide a survivable operations center as an alternate to the National Military Command Center (NMCC) located in the Pentagon. The E-4B NAOC fleet also satisfies the military need for an airborne operations center with communications capabilities that will permit senior national leadership to monitor and control military and civil national assets during all phases of national conflict or disaster. Developmental modifications include, but are not limited to, upgrades and enhancements to aircraft structures, propulsion system, fuel system, environmental control system, electrical generation and distribution systems, flight safety and navigation systems (with their associated communications equipment), and the related aircraft operations center facilities, equipment, and communications necessary for the E-4B fleet to execute its primary mission as an alternate NMCC.

Modifications currently underway or planned for accomplishment under this program include:
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Exhibit R-2a, RDT&E Project Justification	DATE **February 2006**

BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0302015F E-4B NATIONAL AIRBORNE OPERATIONS CENTER**	PROJECT NUMBER AND TITLE **4777 E-4B Aircraft Modernization**

provide an 'office in the sky' capability for senior leaders that includes commercial Direct Broadcast Service (DBS), International Maritime Satellite (INMARSAT) access, and video teleconferencing capability, plus access to Defense Information System Network (DISN) and Public Switch Network (PSN) for secure/non-secure voice, video and data exchange on and off the airplane (external e-mail and Internet access).

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The E-4B program is categorized as a Budget Activity 7 - Operational System Development, because it develops modifications for a fielded system.

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

		FY 2005	FY 2006	FY 2007
(U)	Mod Blk 1 - AIU prototype installation (formerly called Block 5A)	12.701	17.569	
(U)	Mod Blk 1 - GATM II prototype installation	1.000		
(U)	Began Data LAN Infrastructure (formerly part of Blk 5B) - Data Concept Exploration (MN-4381B)	0.100		
(U)	Engineering Development of SHF MUX Upgrade (MN-4391)		0.895	0.276
(U)	Hardware Purchase for SHF MUX Prototype		0.175	
(U)	Install of SHF MUX Prototype			0.007
(U)	Total Cost	13.801	18.639	0.283

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

		FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
(U)	Aircraft Procurement AF, Budget Activity 5, Weapon System Code E00400, PE 0302015F; Mod 4381 (AIU--formerly Blk 5A); Mod 9709 (GATM Phase II)	68.940	60.134						0.000	129.074
(U)	Aircraft Procurement AF, Budget Activity 5, Weapon System Code E00400, PE 0302015F; Mod 4391 SHF MUX Upgrade			0.188	0.121					0.309

Exhibit R-2a, RDT&E Project Justification		DATE **February 2006**
BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0302015F E-4B NATIONAL AIRBORNE OPERATIONS CENTER**	PROJECT NUMBER AND TITLE **4777 E-4B Aircraft Modernization**

(U) D. Acquisition Strategy

In light of the planned retirement of the E-4B fleet by the end of FY12, the Air Force will be implementing only those modifications that are either safety of flight related or are essential for the aircraft to remain mission capable until it is removed from service. E-4B modernization to include system engineering, design, and prototype installations will be obtained using either Cost Plus Incentive Fee (CPIF) or Cost Plus Fixed Fee (CPFF) contracts.

Exhibit R-3, RDT&E Project Cost Analysis			DATE **February 2006**

BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0302015F E-4B NATIONAL AIRBORNE OPERATIONS CENTER**	PROJECT NUMBER AND TITLE **4777 E-4B Aircraft Modernization**

(U) Cost Categories (Tailor to WBS, or System/Item Requirements) ($ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2005 Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development												
Boeing - Wichita	Sole Source CPIF	Wichita Development & Modification Center, Wichita, KS	61.747	12.473	Nov-04	18.335	Mar-06	0.283	Dec-06	0.000	92.838	TBD
Subtotal Product Development			61.747	12.473		18.335		0.283		0.000	92.838	TBD
Remarks:												
(U) Support												
Communications interoperability engineering and requirements development	Various MIPRs	DISA and other DoD Activities at Arlington, VA	2.415	0.168	May-05					0.000	2.583	TBD
Requirements development and programming support	MIPR	Air Combat Command (ACC) at Hampton, VA	0.549	0.202	Jan-06					0.000	0.751	TBD
DLI MLS Testing	MIPR	Naval Space and Warfare Systems Command (NAVSPAWAR) at San Diego, CA	0.240	0.025	May-05					0.000	0.265	TBD
Subtotal Support			3.204	0.395		0.000		0.000		0.000	3.599	TBD
Remarks:												
(U) Test & Evaluation												
Mod Blk 1 test plan development and test execution	Project Order	605th Flight Test Squadron at Eglin AFB, FL	0.731	0.299	Feb-05	0.180	Feb-06			0.000	1.210	TBD
Subtotal Test & Evaluation			0.731	0.299		0.180		0.000		0.000	1.210	TBD
Remarks:												
(U) Management												
E-4B Program Office contractor support	Sole Source T&M	Northrop Grumman at Oklahoma City, OK	3.990	0.634	Jan-05					0.000	4.624	TBD

Project 4777	R-1 Shopping List - Item No. 169-7 of 169-10	Exhibit R-3 (PE 0302015F)

Exhibit R-3, RDT&E Project Cost Analysis						DATE **February 2006**				
BUDGET ACTIVITY **07 Operational System Development**				PE NUMBER AND TITLE **0302015F E-4B NATIONAL AIRBORNE OPERATIONS CENTER**				PROJECT NUMBER AND TITLE **4777 E-4B Aircraft Modernization**		
E-4B Program Office contractor support	Small Business T&M	Efficiency Managment and Engineering Company at Oklahoma City, OK	0.000	0.000	N/A	0.124	Jan-06		0.000	0.124	TBD
Subtotal Management			3.990	0.634		0.124		0.000	0.000	4.748	TBD
Remarks:											
(U) Total Cost			69.672	13.801		18.639		0.283	0.000	102.395	TBD

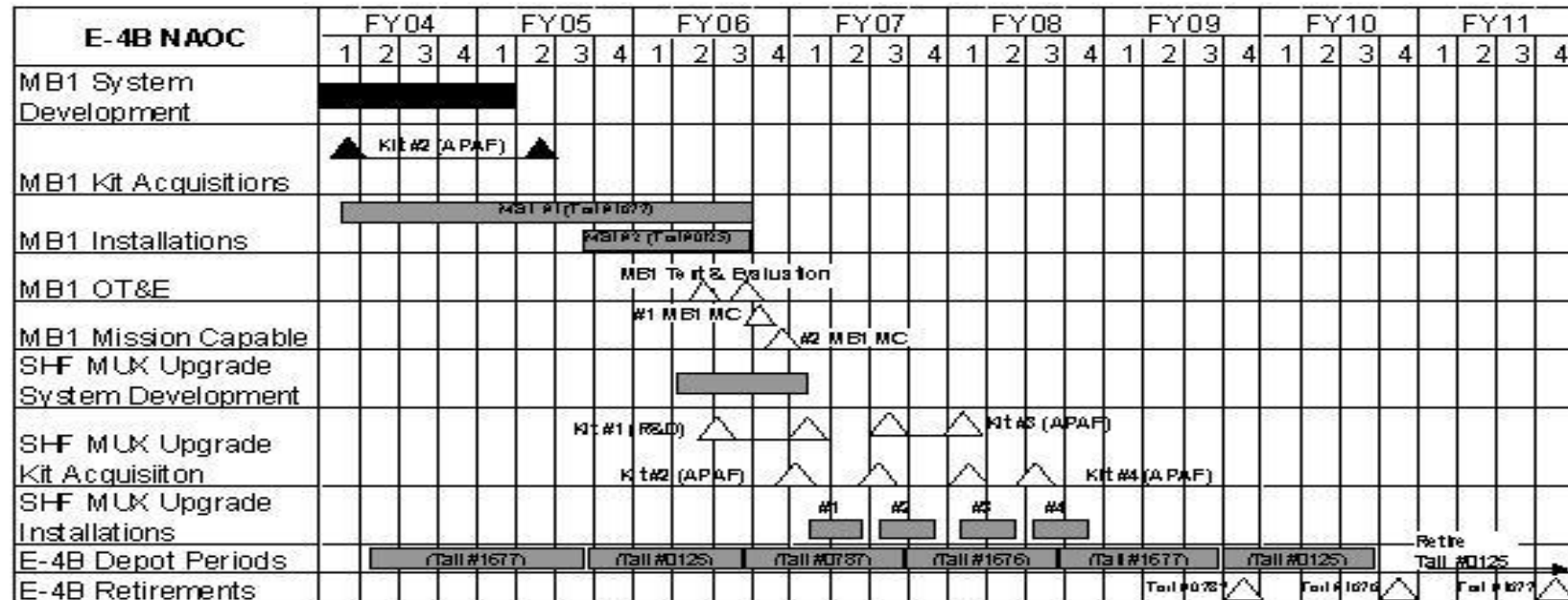| Exhibit R-4, RDT&E Schedule Profile	DATE February 2006

BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0302015F E-4B NATIONAL AIRBORNE OPERATIONS CENTER	PROJECT NUMBER AND TITLE 4777 E-4B Aircraft Modernization

E-4B NAOC Schedule Profile chart (FY04–FY11) showing rows: MB1 System Development, MB1 Kit Acquisitions, MB1 Installations, MB1 OT&E, MB1 Mission Capable, SHF MUX Upgrade System Development, SHF MUX Upgrade Kit Acquisition, SHF MUX Upgrade Installations, E-4B Depot Periods, E-4B Retirements.

Legend:
- Planned Activity(s)
- Completed Activity
- ▲ Completed Event
- △ Planned Event

MB1: Modification Block 1
SHF: Super High Frequency
MUX: Multiplexer
MC: Mission Capable
OT&E: Operational Test & Evaluation

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Exhibit R-4a, RDT&E Schedule Detail	DATE February 2006

BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0302015F E-4B NATIONAL AIRBORNE OPERATIONS CENTER**	PROJECT NUMBER AND TITLE **4777 E-4B Aircraft Modernization**

(U) **Schedule Profile**	FY 2005	FY 2006	FY 2007
(U) Modification Block I (Mod Blk 1)	2-3Q	2-4Q	
(U) -- Mod Blk 1 - System engineering Complete	2Q		
(U) -- Prototype Delivers	3Q		
(U) -- Prototype OT&E			3Q
(U) -- Production Kit #1 Delivers	2Q		
(U) -- Production #1 Input	3Q		
(U) -- Production #1 Delivers			4Q
(U) -- Production Kit #2 Ordered	2Q		
(U) -- Production Kit #2 Delivers			2Q
(U) Data LAN Infrastructure (DLI)	2Q		
(U) -- Multi-Level Security Testbed Study	2Q		
(U) Super High Frequency (SHF) Multiplexer Upgrade		2-3Q	1-4Q
(U) -- Development Begins		2Q	
(U) -- System Engineering Complete			1Q
(U) -- Prototype Kit Ordered		3Q	
(U) -- Prototype Kit Delivers			1Q
(U) -- Prototype Install Begins			1Q
(U) -- Prototype Install Delivers			2Q
(U) -- Production Kit #1 Ordered			1Q
(U) -- Production Kit #1 Delivers			3Q
(U) -- Production #1 Install Begins			3Q
(U) -- Production #1 Delivers			4Q
(U) -- Production Kit #2 Ordered			3Q