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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0302015F I E-4B National Airborne Operations Center (NAOC)							
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	12.816	25.852	80.360	-	80.360	26.535	0.634	-	1.840	Continuing	Continuing
674777: E-4B Aircraft Modernization	-	12.816	25.852	80.360	-	80.360	26.535	0.634	-	1.840	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2016, Project E-4B Recapitalization includes new start efforts to plan for fleet recapitalization.

A. Mission Description and Budget Item Justification

The four (4) aircraft E-4B National Airborne Operations Center (NAOC) fleet satisfies the military need for an airborne operations center with communications capabilities permitting military and civilian leadership to monitor and control military and civil national assets during all phases of conflict (nuclear and non-nuclear) or natural disaster. The E-4B NAOC fleet also satisfies the military requirement to provide a highly survivable node of the National Military Command System (NMCS).

This Program Element's (PE's) 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 mission. Additionally, funds may be used to explore modifications, upgrades, and future systems required to meet evolving mission requirements. Developmental modifications and studies/projects currently underway or planned for accomplishment under this program include:

- The Advanced Extremely High Frequency (AEHF) Compatible Terminal/ Presidential National Voice Conferencing (PNVC) Program integrates externally provided AEHF Compatible Command Post Terminals and PNVC capability onto the E-4B NAOC platform. This integration is necessary to replace the legacy Military Strategic, Tactical and Relay (MILSTAR) terminal, and provide access to protected wideband AEHF satellite networks. PNVC replaces the Survivable Emergency Conferencing Network (SECN), which will not be supported once the AEHF satellite network is in place.
- The Low Frequency Transmit System (LFTS) program will replace the Very Low Frequency/Low Frequency (VLF/LF) Transmit system currently installed on the E-4B. The current system is no longer sustainable after over 35 years of operation on the E-4B. In order to meet existing National Security Presidential Directive (NSPD)-28 requirements and ensure there is constant and consistent connectivity to civilian and military leadership and military forces during real world situations, this system must be replaced. The transmit system consists of three primary equipment groups: a Control/Monitor group, a Power Amplifier/Coupler (PA/C) group, and a Trailing Wire Antenna (TWA) group.
- E-4B Recapitalization efforts include the assessment of aircraft alternatives to meet the required need date and ability to support the Nuclear Command, Control and Communications (NC3), Secretary of Defense travel, Continuity of Operations/Continuity of Government (COOP/COG), and other missions as identified in associated requirements documentation. Funds will be used for technology development strategy, test and evaluation strategy, systems engineering plan development, lifecycle

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management plan development, capabilities development, and other required documents leading up to a Milestone A decision. This program, E-4B Recapitalization, is a new start.								
Activities will include studies and analysis to support current program planning and execution, and planning for future programs.								
This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.								
The FY2016 funding request was reduced by \$1.241 million to account for the availability of prior execution balances.								
B. Program Change Summary (\$ in Millions)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total		
Previous President's Budget		13.250	28.778	42.825	-	42.825		
Current President's Budget		12.816	25.852	80.360	-	80.360		
Total Adjustments		-0.434	-2.926	37.535	-	37.535		
• Congressional General Reductions		-	-0.026					
• Congressional Directed Reductions		-	-2.900					
• Congressional Rescissions		-	-					
• Congressional Adds		-	-					
• Congressional Directed Transfers		-	-					
• Reprogrammings		-	-					
• SBIR/STTR Transfer		-0.434	-					
• Other Adjustments		-	-	37.535	-	37.535		
Change Summary Explanation								
FY16 funding was increased for Advanced Extremely High Frequency (AEHF)/Presidential National Voice Conferencing (PNVC) systems engineering and integration planning and Low Frequency Transmit System (LFTS)laboratory assets, prototype system development, and fielding and testing on first aircraft.								
There was a \$2.9M Congressional Directed Reduction for LFTS in FY2015 due to "Delay to Contract Award".								
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Advanced Extremely High Frequency (AEHF) Compatible Terminal/Presidential National Voice Capability (PNVC)				1.200	1.679	24.810	-	24.810
Description: Integrate AEHF Compatible Terminal/PNVC capability onto the E-4B NAOC Platform, to replace the existing MILSTAR/SECN system.								

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
<p>FY 2014 Accomplishments:</p> <p>- Accomplished engineering activities necessary for the integration of the AEHF Terminal/PNVC Capability onto an airborne platform.</p> <p>- Specific activities addressed technical issues associated with a change in antenna location from the kit design, a modified power amplifier to accomodate the change in antenna location and a fire supression system required to install the capability on the platform.</p> <p>FY 2015 Plans:</p> <p>- Continue E-4B Program Office engineering activities neccessary for the integration of the AEHF Terminal/PNVC capability onto an airborne platform.</p> <p>- Activities will address hands on modifications to the terminal in order to produce a proof of concept prototype of the initial integrated solution.</p> <p>FY 2016 Base Plans:</p> <p>- Continue with full year of design and development efforts, to include non- recurring engineering, development of parts and labor for a systems integration lab, early prototyping, and some hardware qualification testing.</p> <p>- Will complete risk reduction studies and award development contract.</p> <p>- Will begin development of integrated system to install capability onto first aircraft and will conduct a System Readiness Review (SRR) and prepare Preliminary Design Review (PDR).</p> <p>FY 2016 OCO Plans:</p> <p>N/A</p>						
<p>Title: Low Frequency Transmit System (LFTS)</p> <p>Description: Replaces the the E-4B's legacy Very Low Frequency/Low Frequency (VLF/LF) Transmit System, which is over 35 years old and is past its useful life. This capability is required to comply with National Security Presidential Directive (NSPD)-28; to ensure there is constant and consistent connectivity between civilian and military leadership and military forces during all stages of conflict and/or national emergency.</p> <p>FY 2014 Accomplishments:</p> <p>- Activities focused on risk reduction studies prior to development contract award. These studies include Radio Frequency (RF) Antenna Wire Isolation, Antenna Wire Performance, and Power Quality Baseline efforts.</p> <p>- Preparation of proposal costs for development of contract Requests for Proposal.</p> <p>FY 2015 Plans:</p>		11.616	24.173	55.400	-	55.400

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Continue with full year of design and development efforts, to include non- recurring engineering, development of parts and labor for a systems integration lab, early prototyping, and some hardware qualification testing. Will conduct a System Requirements Review (SRR) and Preliminary Design Review (PDR). FY 2016 Base Plans: - Continue with design and development efforts, to include non-recurring engineering, development of parts and labor for a systems integration lab, early prototyping, and some hardware qualification testing. - Will conduct Critical Design Review (CDR), Material Readiness Review (MRR) and purchase prototype kit. FY 2016 OCO Plans: N/A						
Title: E-4B Recapitalization Description: E-4B recapitalization efforts will include analysis for a replacement fleet to support Nuclear Command, Control and Communications (NCS), Secretary of Defense travel, Continuity of Operations/Continuity of Government (COOP/COG), and other missions. It will involve identifying viable concepts and materiel solutions in support of the National Airborne Operations Center (NAOC) mission and capabilities. Funding supports pre-Milestone A activities to include and Analysis of Alternatives (AoA) and associated concept refinement activities of potential materiel solutions. This effort will explore materiel technology alternatives at the system and sub-system levels and during the Materiel Solution Analysis (MSA) Phase leading to a Milestone A decision. FY 2014 Accomplishments: N/A FY 2015 Plans: N/A FY 2016 Base Plans: Efforts will include concept refinement, technology analysis, modeling and simulation, engineering studies, program cost and schedule estimation, acquisition strategy development, risk reduction efforts, initial requirements developments, and Milestone A preparation. FY 2016 OCO Plans: N/A		-	-	0.150	-	0.150
Accomplishments/Planned Programs Subtotals		12.816	25.852	80.360	-	80.360

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D. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• APAF: BA05: Line Item # E00400: E-4B Nat Airborne Ops Center (NAOC)	16.479	16.399	23.237	-	23.237	53.586	32.073	39.292	41.401	Continuing	Continuing
• APAF: BA05: Line Item # 833140: Worldwide Joint Strategic Communication	0.686	0.692	0.700	-	0.700	0.711	0.726	0.738	0.750	Continuing	Continuing
• APAF: BA06: Line Item # 000999: Initial Spares/Repair Parts	265.597	549.972	656.242	-	656.242	833.819	767.431	764.128	743.465	Continuing	Continuing

Remarks

E. Acquisition Strategy

Acquisition Strategy: The acquisition strategy for each specific modification differs based on the urgency of the requirement, definition of the capability, and technology readiness level of the components. Acquisition strategy for an eventual E-4 replacement will be determined after requirements have been finalized.

Management Strategy: Program management for all aircraft modifications is conducted from the existing E-4B program office at Tinker AFB. The Program Executive Officer (PEO) for mobility provides management oversight.

Contracting Strategy: Contracting strategy differs for each individual modification, but normally includes a initial risk reduction study contract followed by a development under Tinker AFB's Engineering Support Services (ESS) contract with Boeing - San Antonio. Production installations and sustainment are accomplished with a separate contract.

F. 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-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0302015F / E-4B National Airborne Operations Center (NAOC)				Project (Number/Name) 674777 / E-4B Aircraft Modernization					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AEHF Compatible Terminal/PNVC	SS/CPIF	Raytheon : Largo, FL	-	1.200	May 2014	-		-		-		-	Continuing	Continuing	1.200
AEHF Compatible Terminal/PNVC -2	C/CPIF	TBD : ,	-	-		1.679	Apr 2015	24.810	Jan 2016	-		24.810	Continuing	Continuing	-
LFTS Replacement	Various	Boeing, OKC : OKC, OK	-	11.616	Sep 2014	24.173	Mar 2015	55.400	Mar 2016	-		55.400	Continuing	Continuing	-
E-4B Recapitalization	C/Various	TBD : ,	-	-		-		0.150	Sep 2016	-		0.150	Continuing	Continuing	-
Subtotal			-	12.816		25.852		80.360		-		80.360	-	-	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	12.816		25.852		80.360		-		80.360	-	-	-

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Appropriation/Budget Activity 3600 / 7			R-1 Program Element (Number/Name) PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i>			Project (Number/Name) 674777 / <i>E-4B Aircraft Modernization</i>				
	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks										

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force			Date: February 2015		
Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0302015F / E-4B National Airborne Operations Center (NAOC)			Project (Number/Name) 674777 / E-4B Aircraft Modernization

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AEHF Compatible Terminal/PNVC Design and Development																												
AEHF Compatible Terminal/PNVC Milestone Decision B																												
AEHF Compatible Terminal/PNVC Integration and Testing																												
AEHF Compatible Terminal/PNVC Milestone Decision C																												
LFTS Modification Design and Development																												
LFTS Milestone Decision B																												
LFTS Modification Integration and Testing																												
LFTS Modification Milestone Decision C																												
E-4B Recapitalization																												
E-4B Recapitalization pre-Milestone Analysis																												
E-4B Recapitalization Decision																												
E-4B Recapitalization Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i>	Project (Number/Name) 674777 / <i>E-4B Aircraft Modernization</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AEHF Compatible Terminal/PNVC Design and Development	1	2014	1	2016
AEHF Compatible Terminal/PNVC Milestone Decision B	3	2015	3	2015
AEHF Compatible Terminal/PNVC Integration and Testing	2	2016	1	2019
AEHF Compatible Terminal/PNVC Milestone Decision C	2	2019	2	2019
LFTS Modification Design and Development	3	2014	2	2017
LFTS Milestone Decision B	2	2015	2	2015
LFTS Modification Integration and Testing	2	2017	2	2018
LFTS Modification Milestone Decision C	1	2017	1	2017
E-4B Recapitalization	4	2016	4	2020
E-4B Recapitalization pre-Milestone Analysis	4	2016	4	2018
E-4B Recapitalization Decision	4	2018	4	2018
E-4B Recapitalization Development	1	2019	4	2020