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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Air Force **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401130F / <i>C-17 Aircraft (IF)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	72.566	48.807	12.430	0.000	12.430	71.563	72.890	28.715	24.845	Continuing	Continuing
672569: <i>C-17A Aircraft</i>	-	72.566	48.807	12.430	0.000	12.430	71.563	72.890	28.715	24.845	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

The C-17 can perform the entire spectrum of airlift missions and is specifically designed to operate effectively and efficiently in both strategic and theater environments. Airlift provides essential flexibility when responding to contingencies on short notice anywhere in the world. It is a major element of America's national security strategy and constitutes the most responsive means of meeting mobility requirements. Specific tasks associated with the airlift mission include deployment, employment, sustaining support, retrograde, and combat redeployment. Not only can the C-17 deliver outsize cargo to austere tactical environments, but it also reduces ground time during airland operations. The C-17 will perform its airlift mission well into this century.

C-17 RDT&E funding efforts support, but are not limited to: Aircraft performance improvements and airspace access mandates (i.e., Communications/Navigation Improvements); flight test activities and facilities; development of solutions for obsolescence and safety of flight issues; systems engineering/program management administration support; support for avionics laboratories; block development/change management; proposal preparation for new projects; cost estimating and engineering/acquisition studies not related to requirements generation.

In FY15 the major thrusts under "Accomplishments/Planned Programs" are: Performance Improvement and Obsolescence, Systems Engineering/Program Management, Boeing Flight Test and Edwards Flight Test. In FY16 the major thrusts transition to: Common Configuration (CC), Extended Range Onboard Inert Gas Generating System (ER/OBIGGS)II, and Beyond Line of Sight (BLOS); which are Air Force Acquisition Master List Programs.

CC includes several projects: Modernized Replacement Core Integrated Processor (M-RCIP), Communication and Navigation Capability (Comm Nav), Replacement Heads Up Display (RHUD), and Software Improvements.

ER OBIGGS II includes OBIGGS Filter Fire Fix which is a redesign of the OBIGGS II shutoff valve.

BLOS includes, but is not limited to: Narrowband tactical satellite communications Mobile User Objective System (MUOS); both Aero H/Aero I multi-channel voice and data upgrades delivered via an intermediate-gain antenna; next-generation Military GPS receiver (M-Code); and upgrades for Ka/Ku band satellite communications.

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.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	82.948	54.807	32.877	0.000	32.877
Current President's Budget	72.566	48.807	12.430	0.000	12.430
Total Adjustments	-10.382	-6.000	-20.447	0.000	-20.447
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-6.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-10.382	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-20.447	0.000	-20.447

**Change Summary Explanation**

FY15: The FY2015 funding was reduced by \$10.382 million for higher AF priorities.

FY16: The FY2016 funding was reduced by \$6 million due to a Congressionally directed reduction for "program decrease".

FY17: Funding request was reduced by \$20.447M to account for the availability of prior year execution balances.

**C. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
<b>Title:</b> Performance Improvement and Obsolescence	57.273	0.000	0.000	0.000	0.000
<b>Description:</b> Continued development of C-17 aircraft performance improvements for its avionics, aircraft and mission systems and the development of solutions to emergent obsolescence and safety of flight issues, airspace access mandates and engineering/acquisition studies not related to requirements generation.					
<b>FY 2015 Accomplishments:</b> Continued development of C-17 aircraft performance improvements/mandates to include, but not limited to, RHUD and ADS-B out.  Completed Instrument Landing Systems & Flight Control Computer updates.  Began efforts to redesign On-Board Inert Gas Generation System II (OBIGGS II) shut off valve to eliminate the potential for OBIGGS II filter fires and improve fuel efficiency.					
<b>FY 2016 Plans:</b>					

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>					
	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
N/A <b>FY 2017 Base Plans:</b> N/A <b>FY 2017 OCO Plans:</b> N/A					
<b>Title:</b> Systems Engineering/Program Management <b>Description:</b> Continuation of Systems Engineering/prime contractor Program Management (SE/PM). Funding supports software updates, system integration, software development, laboratories, test facilities, and programmatic efforts in support of C-17. <b>FY 2015 Accomplishments:</b> Continued SE/PM. Supported software updates, system integration and software development laboratories, test facilities, and programmatic efforts. <b>FY 2016 Plans:</b> N/A <b>FY 2017 Base Plans:</b> N/A <b>FY 2017 OCO Plans:</b> N/A	4.126	0.000	0.000	0.000	0.000
<b>Title:</b> Boeing Flight Test <b>Description:</b> Continues contractor testing of new capabilities as required. Costs include maintenance on test aircraft, contractor engineering support for test related technical and safety of flight issues, test planning, test analysis and test execution. <b>FY 2015 Accomplishments:</b> Continued contractor testing of new capabilities.	5.000	0.000	0.000	0.000	0.000

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
<p>Costs included maintenance on test aircraft, contractor engineering support for test related technical and safety of flight issues, test planning, test analysis and test execution.</p> <p><b>FY 2016 Plans:</b> N/A</p> <p><b>FY 2017 Base Plans:</b> N/A</p> <p><b>FY 2017 OCO Plans:</b> N/A</p>						
<p><b>Title:</b> Edwards Flight Test</p> <p><b>Description:</b> Continues direct costs of flight testing. The costs include ramp space, fuel, air traffic control, range costs, etc., which are items each weapon system must pay when using Air Force flight test locations.</p> <p><b>FY 2015 Accomplishments:</b> Continued direct costs of flight testing.</p> <p>The costs included ramp space, fuel, air traffic control, range costs, etc., which each weapon system must pay for when using Air Force flight test locations.</p> <p><b>FY 2016 Plans:</b> N/A</p> <p><b>FY 2017 Base Plans:</b> N/A</p> <p><b>FY 2017 OCO Plans:</b> N/A</p>		6.167	0.000	0.000	0.000	0.000
<p><b>Title:</b> Common Configuration</p> <p><b>Description:</b> Common Configuration (CC) is a multiple development, integration and retrofit project to support achievement of the C-17 A Block 18+ baseline. It consists of projects including M-RCIP, Comm Nav, and RHUD that lead to modifications and upgrades to the C-17. Support for on going flight test, software labs, system</p>		0.000	9.048	1.186	0.000	1.186

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>					
engineering, program management and engineering/acquisition studies not related to requirements generation are included in the overall program cost.					
<b>FY 2015 Accomplishments:</b> N/A					
<b>FY 2016 Plans:</b> Completes ADS-B out. Continues development of RHUD. Support for on going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation are included in the overall program cost.					
<b>FY 2017 Base Plans:</b> Will continue development of RHUD. Support for on going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation are included in the overall program cost.					
<b>FY 2017 OCO Plans:</b> N/A					
<b>Title:</b> Extended Range Onboard Inert Gas Generating System II					
<b>Description:</b> Extend Range Onboard Inert Gas Generating System II (ER/OBIGGS II) Filter Fire Fix is a program that redesigns the OBIGGS II shutoff valve and makes software changes to the Warning and Caution Computer (WCC). It includes support for on going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.					
<b>FY 2015 Accomplishments:</b> N/A					
<b>FY 2016 Plans:</b> Redesign OBIGGS II shut off valve to eliminate the potential for OBIGGS II filter fires and improve fuel efficiency. It will include support for on going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.					
<b>FY 2017 Base Plans:</b> N/A					
<b>FY 2017 OCO Plans:</b>					
	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
	0.000	39.759	0.000	0.000	0.000

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
N/A					
<b>Title:</b> Beyond Line of Sight  <b>Description:</b> Beyond Line-Of-Sight (BLOS) modernization modifications is a development, integration, and retrofit program for C-17 communications. BLOS modifies and improves hardware and software for voice and data communications on the C-17. The program will modify both integrated aircraft avionics as well as back-end mission communications and could utilize both military and commercial satellite systems to extend communication ranges. The current efforts include but are not limited to AERO-I modernization (multi-channel voice and data delivered via an intermediate-gain antenna), increased broadband and secure data capability. It includes support for on going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.  <b>FY 2015 Accomplishments:</b> N/A  <b>FY 2016 Plans:</b> N/A  <b>FY 2017 Base Plans:</b> BLOS efforts will include work on: Narrowband tactical satellite communications Mobile User Objective System (MUOS); both Aero H/Aero I multi-channel voice and data upgrades delivered via an intermediate-gain antenna; next-generation military GPS receiver (M-Code); upgrades for Ka/Ku band satellite communications; and upgrades to the ARC-210 radio. It will include support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.  <b>FY 2017 OCO Plans:</b> N/A	0.000	0.000	11.244	0.000	11.244
<b>Accomplishments/Planned Programs Subtotals</b>	72.566	48.807	12.430	0.000	12.430

<b>D. Other Program Funding Summary (\$ in Millions)</b>						<b>Cost To</b>					
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Complete</u>	<u>Total Cost</u>
• APAF: BA05: Line Item # C01700: C-17A	70.894	43.697	21.555	0.000	21.555	93.547	63.526	52.445	53.412	Continuing	Continuing

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF: BA07: Line Item # C01700: C-17A	20.110	15.054	23.559	0.000	23.559	16.329	0.000	0.000	0.000	Continuing	Continuing
• APAF: BA06: Line Item # 000999: C-17A	15.801	12.450	9.400	0.000	9.400	13.227	12.995	13.180	13.423	Continuing	Continuing

**Remarks**

**E. Acquisition Strategy**

The C-17 Acquisition Strategy is based on several separate contracts to support the entire scope of the C-17 weapon system. Globemaster Operational Enhancement (GLOBE) is an indefinite delivery, indefinite quantity (IDIQ) contract used to purchase services and research articles (through delivery orders) to support all RDT&E with our prime contractor. In addition, purchase orders are used to support flight test activities at Edwards AFB. Additional contract vehicles could be utilized as required.

**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 2017 Air Force** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401130F / C-17 Aircraft (IF)	<b>Project (Number/Name)</b> 672569 / C-17A Aircraft
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<b>Product Development (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Performance Improvement and Obsolescence	Various	Boeing : Long Beach, CA	-	57.273	Nov 2014	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Systems Engineering/ Program Management	Various	Boeing : Long Beach, CA	-	4.126	Nov 2014	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Common Configuration	Various	Boeing : Long Beach, CA	-	0.000		9.048	Nov 2015	1.186	Nov 2016	0.000		1.186	Continuing	Continuing	-
Extended Range Onboard Inert Gas Generating System II	Various	Boeing : Long Beach, CA	-	0.000		39.759	May 2016	0.000		0.000		0.000	0.000	39.759	-
Beyond Line of Sight	Various	Boeing : Long Beach, CA	-	0.000		0.000		11.244	Jul 2017	0.000		11.244	Continuing	Continuing	-
<b>Subtotal</b>			-	61.399		48.807		12.430		0.000		12.430	-	-	-

<b>Support (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

<b>Test and Evaluation (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Edwards Flight Test	PO	AFTC : Edwards, CA	-	6.167	Nov 2014	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Boeing Flight Test	SS/CPIF	Boeing : Long Beach, CA	-	5.000	Nov 2014	0.000		0.000		0.000		0.000	Continuing	Continuing	-
<b>Subtotal</b>			-	11.167		0.000		0.000		0.000		0.000	-	-	-





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**Exhibit R-4A, RDT&E Schedule Details:** PB 2017 Air Force **Date:** February 2016

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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Common Configuration (ACAT II)	1	2016	1	2018
-- Replacement Heads Up Display (RHUD) - Critical Design Review (CDR)	1	2016	1	2016
-- RHUD - System Test Readiness Review:	2	2017	2	2017
-- RHUD - Flight Test Begins	3	2017	3	2017
ER/OBIGGS (ACAT II)	3	2016	2	2018
-- Projected contract award	3	2016	3	2016
BLOS	1	2018	3	2021
-- AERO I/AERO H Replacement - Request for Proposal	4	2017	4	2017
-- AERO I/AERO H Replacement - Advanced technology demonstration	3	2018	3	2018

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