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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401130F / <i>C-17 Aircraft (IF)</i>
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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	-	97.134	82.948	54.807	-	54.807	32.877	83.604	100.185	28.973	-	480.528
672569: <i>C-17A Aircraft</i>	-	97.134	82.948	54.807	-	54.807	32.877	83.604	100.185	28.973	-	480.528
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	2	-		

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 FY16, the Efforts in the C-17 R2 part C, "Accomplishments/Planned Programs", transition from Performance Improvement and Obsolescence, Systems Engineering, and Test in FY14 & 15 to link RDT&E funding directly to Programs on the Air Force Acquisition Master List (AML).

As a result, funding on lines that appear as unfunded in FY16 have transitioned to the following Programs: Common Configuration (CC), Communications/Navigation and Capability Mandates(CN/CM), Extended Range Onboard Inert Gas Generating System (ER/OBIGGS)II and Beyond Line of Sight (BLOS).

CC includes several projects: Modernized Replacement Core Integrated Processor (M-RCIP), Communication and Navigation Capability (Comm Nav), Replacement Heads Up Display (RHUD), Identification Friend or Foe (IFF) & Global Air Traffic Management (GATM) updates, and Airdrop Improvements.

CN/CM includes Communication, Navigation, Surveillance & Air Traffic Management (CNS/ATM) which is Automatic Dependent Surveillance Broadcast Out (ADS-B out).

ER OBIGGS II includes Onboard Inert Gas Generating System (OBIGGS) Filter Fire Fix which is a redesign of the OBIGGS II shutoff valve.

BLOS modernization includes satellite communications and increased broadband capabilities. AERO I modernization is multi-channel voice and data delivered via an intermediate-gain antenna.

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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.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	97.134	83.773	56.172	-	56.172
Current President's Budget	97.134	82.948	54.807	-	54.807
Total Adjustments	-	-0.825	-1.365	-	-1.365
• Congressional General Reductions	-	-0.825			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-1.365	-	-1.365

Change Summary Explanation

FY16 - Reduction due to restructuring the replacement heads-up display development

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Performance Improvement and Obsolescence	74.498	57.273	-	-	-
Description: 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.					
FY 2014 Accomplishments: Continued development of C-17 aircraft performance improvements/mandates to include projects, but not limited to, RHUD, Instrument Landing System & Flight Control Computer (ILS & FCC), Comm Nav, M-RCIP, and ADS-B out. Completes Airdrop, Comm Nav Capabilities, RCIP and IFF & GATM.					
FY 2015 Plans: Continues development of C-17 aircraft performance improvements/mandates to include projects, but not limited to, RHUD and ADS-B out. Completes ILS & FCC updates. Begins efforts to redesign On-Board Inert Gas					

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
<p>Generation System II (OBIGGS II) shut off valve to eliminate the potential for OBIGGS II filter fires and improve fuel efficiency.</p> <p>FY 2016 Base Plans: N/A</p> <p>FY 2016 OCO Plans: N/A</p>						
<p>Title: Systems Engineering/Program Management</p> <p>Description: 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.</p> <p>FY 2014 Accomplishments: Continuation of SE/PM. Funding supported software updates, system integration and software development laboratories, test facilities, and programmatic efforts in support of C-17.</p> <p>FY 2015 Plans: Continuation of SE/PM. Funding supports software updates, system integration and software development laboratories, test facilities, and programmatic efforts in support of C-17.</p> <p>FY 2016 Base Plans: N/A</p> <p>FY 2016 OCO Plans: N/A</p>		7.976	9.000	-	-	-
<p>Title: Boeing Flight Test</p> <p>Description: 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.</p> <p>FY 2014 Accomplishments:</p>		8.160	9.175	-	-	-

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C. Accomplishments/Planned Programs (\$ in Millions)					
Continued contractor testing of new capabilities as required. 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.					
FY 2015 Plans: 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.					
FY 2016 Base Plans: N/A					
FY 2016 OCO Plans: N/A					
Title: Edwards Flight Test					
Description: 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.					
FY 2014 Accomplishments: Continued direct costs of flight testing. The costs included ramp space, fuel, air traffic control, range costs, etc., which are items each weapon system must pay for when using Air Force flight test locations.					
FY 2015 Plans: 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 for when using Air Force flight test locations.					
FY 2016 Base Plans: N/A					
FY 2016 OCO Plans: N/A					
Title: Common Configuration					
Description: 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					
	6.500	7.500	-	-	-
	-	-	29.685	-	29.685

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
engineering, program management and engineering/acquisition studies not related to requirements generation are included in the overall program cost. FY 2014 Accomplishments: N/A FY 2015 Plans: N/A FY 2016 Base Plans: 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. FY 2016 OCO Plans: N/A					
Title: Communications/Navigation and Capability Mandates Description: Communication/Navigation & Capability Mandates is a program to develop, integrate and retrofit C-17 A CNS/ATM mandates required functionality improvements and updates beyond the C-17 A baseline. It includes the ADS-B out project. 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. FY 2014 Accomplishments: N/A FY 2015 Plans: N/A FY 2016 Base Plans: Completes ADS-B out. FY 2016 OCO Plans: N/A	-	-	-	-	-
Title: Extended Range Onboard Inert Gas Generating System II	-	-	18.010	-	18.010

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
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<p>Description: 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.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Base Plans: This program will continue efforts to redesign On-Board Inert Gas Generation System (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.</p> <p>FY 2016 OCO Plans: N/A</p>					
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<p>Title: Beyond Line of Sight</p> <p>Description: 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.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans:</p>	-	-	7.112	-	7.112
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A					
<i>FY 2016 Base Plans:</i> Efforts will include, but are not limited, to AERO-I modernization (multi-channel voice and data delivered via an intermediate-gain antenna) and increased broadband capabilities. It will include support for on going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.					
<i>FY 2016 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	97.134	82.948	54.807	-	54.807

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF: BA05: Line Item # C01700: <i>Aircraft Modifications</i>	98.197	89.394	46.997	-	46.997	73.678	61.880	41.330	52.846	Continuing	Continuing
• APAF: BA07: Line Item # C01700: <i>Aircraft Support Equipment & Facilities</i>	49.952	20.111	30.108	-	30.108	36.369	4.822	-	-	Continuing	Continuing
• APAF: BA06: Line Item # 000999: <i>Initial Spares and Repair Parts</i>	10.218	14.105	12.943	-	12.943	13.721	13.333	13.060	13.281	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 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401130F / C-17 Aircraft (IF)	Project (Number/Name) 672569 / C-17A Aircraft
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Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	-	74.498	Dec 2013	57.273	Nov 2014	-		-		-	Continuing	Continuing	-
Systems Engineering/ Program Management	Various	Boeing : Long Beach, CA	-	7.976	Nov 2013	9.000	Nov 2014	-		-		-	Continuing	Continuing	-
Common Configuration	Various	Boeing : Long Beach, CA	-	-		-		29.685	Nov 2015	-		29.685	Continuing	Continuing	107.941
Extended Range Onboard Inert Gas Generating System II	Various	Boeing : Long Beach, CA	-	-		-		18.010	May 2016	-		18.010	Continuing	Continuing	18.010
Beyond Line of Sight	Various	Boeing : Long Beach, CA	-	-		-		7.112	Jun 2016	-		7.112	Continuing	Continuing	-
Subtotal			-	82.474		66.273		54.807		-		54.807	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	-	6.500	Oct 2013	7.500	Nov 2014	-		-		-	Continuing	Continuing	-
Boeing Flight Test	SS/CPPIF	Boeing : Long Beach, CA	-	8.160	Dec 2013	9.175	Nov 2014	-		-		-	Continuing	Continuing	-
Subtotal			-	14.660		16.675		-		-		-	-	-	-

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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 0401130F / C-17 Aircraft (IF)	Project (Number/Name) 672569 / C-17A Aircraft
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Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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			
Subtotal			-	-		-		-		-		-	-	-	-
Project Cost Totals			-	97.134		82.948		54.807		-		54.807	-	-	-

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 0401130F / C-17 Aircraft (IF)	Project (Number/Name) 672569 / C-17A Aircraft
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	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
Airdrop Improvements	████████																											
Comm Nav Capabilities	████████																											
Replacement Core Integrated Processor	████████																											
IFF and GATM Mode 5	██████████																											
ILS and FCC updates	██████████████																											
CNS/ATM ADS-B out	██████████████████																											
-- Critical Design Review (CDR)			██																									
-- Begin Flight Test					██																							
OBIGGS II Filter Fire Fix					██████████████																							
- CDR									██																			
- Begin Flight Test											██																	
AERO I Modernization									██████████████																			
- Test Readiness Review											██																	
- Flight Test Begins															██													
Replacement Heads up Display (RHUD)	██████████████████																											
-- CDR									██																			
-- Flight Test Begins															██													
-- 2 RHUD RDTE Articles																			██									

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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 0401130F / C-17 Aircraft (IF)	Project (Number/Name) 672569 / C-17A Aircraft
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Airdrop Improvements	1	2014	3	2014
Comm Nav Capabilities	1	2014	3	2014
Replacement Core Integrated Processor	1	2014	3	2014
IFF and GATM Mode 5	1	2014	4	2014
ILS and FCC updates	1	2014	3	2015
CNS/ATM ADS-B out	1	2014	2	2016
-- Critical Design Review (CDR)	3	2014	3	2014
-- Begin Flight Test	2	2015	2	2015
OBIGGS II Filter Fire Fix	3	2015	2	2017
- CDR	2	2016	2	2016
- Begin Flight Test	4	2016	4	2016
AERO I Modernization	4	2016	2	2019
- Test Readiness Review	1	2017	1	2017
- Flight Test Begins	3	2018	3	2018
Replacement Heads up Display (RHUD)	1	2014	4	2019
-- CDR	1	2016	1	2016
-- Flight Test Begins	2	2018	2	2018
-- 2 RHUD RDTE Articles	1	2019	1	2019