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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Air Force **DATE:** February 2011

APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>				R-1 ITEM NOMENCLATURE PE 0401119F: <i>C-5 Airlift Squadrons</i>							
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	82.339	58.990	24.941	-	24.941	-	-	-	-	Continuing	Continuing
674495: <i>Avionics Modernization Program</i>	1.681	4.867	-	-	-	-	-	-	-	Continuing	Continuing
674835: <i>Reliability Enhancement & Reengining Program</i>	61.332	34.654	24.941	-	24.941	-	-	-	-	Continuing	Continuing
675353: <i>C-5 Block Upgrade</i>	19.326	19.469	-	-	-	-	-	-	-	Continuing	Continuing

Note

Totals include funding for PRCP Program Number 273, C-5 AMP.
Totals include funding for PRCP Program Number 327, C-5 RERP.

A. Mission Description and Budget Item Justification

674495: Avionics Modernization Program (AMP): AMP implements communication, navigation, surveillance/air traffic management (CNS/ATM), navigation/safety capability and the All Weather Flight Control System (AWFCS). It installs directed navigation/safety equipment: Terrain Awareness and Warning System (TAWS) and Traffic Alert and Collision Avoidance System (TCAS), reducing the threat of controlled flight into terrain and mid-air collisions. CNS/ATM capability requirements are incorporated in the aircraft to meet current and future International Civil Aviation Organization (ICAO)/Federal Aviation Administration (FAA) requirements and to progress toward Next Gen Air Transportation System. AWFCS replaces low reliability line replaceable units (LRUs) in the automatic flight control system and replaces aging, non-supportable mechanical instruments in the engine and flight systems. Connectivity to mobility command and control capabilities is also incorporated in the AMP design. The TCAS portion was accelerated ahead of the rest of the AMP mod and was completed 31 Oct 02. The portion of avionics capability required for modernization that was not complete at the end of AMP development will be captured and funded in RERP. All other avionics capability will be captured in a separate follow-on block upgrade program. This project is comprised of low technical risk efforts supporting fielded weapons systems and, therefore, was assigned to Budget Activity 7, Operational Systems Development. AMP requirements have been expanded to incorporate updates to the new avionics architecture, to include security enhancements to the Global Positioning System. Equipment Diminishing Manufacturing Source (DMS) issues will be resolved to support continued operations through studies, development, and redesign efforts. FY 2010/2011: Funding required for development of Pilot Assist Capability/Servo (PAC/Servo) capabilities for insertion in aircraft that have previously completed the AMP modification. NOTE: FY 2011 is the last year of RDT&E for C-5 AMP.

674835: C-5 Reliability Enhancement and Re-engining Program (RERP): RERP is a comprehensive modernization effort to improve aircraft reliability, maintainability, and availability. RERP will enable the C-5 to achieve wartime mission requirements by increasing fleet availability (mission capable rate, departure reliability). This effort centers around replacing the current TF39 engines with more reliable, Commercial Off-the-Shelf CF6 turbofan engines with increased take-off thrust and stage three noise compliance. The new engines, military designation F138-GE-100, increase payload capability and access to Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM) airspace. On 7 Oct 10, the USD(AT&L) conducted a successful full rate production (FRP) Decision Acquisition Board (DAB) and approved the C-5 RERP FRP ADM for lots 5 – 7; directed Air Force to fully fund RERP to the OSD Cost Assessment and Program Evaluation (CAPE)

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Air Force **DATE:** February 2011

APPROPRIATION/BUDGET ACTIVITY

3600: *Research, Development, Test & Evaluation, Air Force*
BA 7: *Operational Systems Development*

R-1 ITEM NOMENCLATURE

PE 0401119F: *C-5 Airlift Squadrons*

Independent Cost Estimate (ICE) for RDT&E; and re-designated C-5 RERP as an Acquisition Category IC program. This project is comprised of low technical risk efforts supporting fielded weapons systems and, therefore, was assigned to Budget Activity 7, Operational Systems Development. FY 2010: Funding supports RERP design, development, engineering change orders, and contractor/government test. Mission support funding is required for program office operations. FY10 is also required to continue the development/delivery of aircrew/maintenance training devices. FY 2011: Funding supports RERP design, development, engineering change orders, contractor/government test, and technical order publications. Mission support funding is required for program office operations. FY11 funding is also required to design, build, test and initiate delivery of aircrew/maintenance training devices. FY 2012: Funding supports final RERP design, development, engineering change orders, contractor/government test, and technical order publication. Mission support funding is required for program office operations. FY12 funding is also required to finalize the testing and development/delivery of aircrew/maintenance training devices and efforts to continue to minimize divergence of AMP and RERP baselines. NOTE: FY 2012 is the last year of RDT&E funding for C-5 RERP.

675353: C-5 Block Upgrade: Purpose of this program is to provide a measured approach to implement a common baseline for the C-5 fleet and its training systems in order to allow insertion and integration of new/future capabilities and replacement of future unsupportable equipment. This program supports software (S/W) and hardware (H/W) baselines between legacy aircraft, Avionics Modernization Program (AMP) aircraft, and Reliability Enhancement and Re-engining Program (RERP) aircraft. The C-5 AMP core processing platform has a total of two Core Processor Module (CPM) cards; C-5 RERP core processing platform has a total of three CPM cards. The AMP requirement is to have 50% spare processing and memory capability; CPM-1 and CPM-2, respectively, have only 22% and 19% throughput capability remaining. AMP throughput/capacity constraint does not allow for new/future capability and contributes to current computer problems. Failure to upgrade the AMP system to the 3 CPM RERP configuration will affect mission capable rates, will inhibit the ability to fix current Deficiency Reports (DRs), and will drive increased sustainment costs associated with S/W and H/W baseline divergence. This project is comprised of low technical risk efforts supporting fielded weapons systems and, therefore, was assigned to Budget Activity 7, Operational Systems Development. FY 2010: Funding supports Block Upgrade design, development, engineering change orders, and contractor/government test. FY 2011: Funding supports Block Upgrade design, development, engineering change orders, contractor/government test, and technical order publications. NOTE: FY 2011 is the last year of RDT&E for C-5 Block Upgrade.

B. Program Change Summary (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	85.266	58.990	15.118	-	15.118
Current President's Budget	82.339	58.990	24.941	-	24.941
Total Adjustments	-2.927	-	9.823	-	9.823
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-2.927	-	9.823	-	9.823

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development	R-1 ITEM NOMENCLATURE PE 0401119F: C-5 Airlift Squadrons	
<p><u>Change Summary Explanation</u></p> <p>FY10 reduction is a result of AMP enhanced surveillance development completing ahead of schedule. Excess funding was moved to other higher priorities.</p> <p>FY12 increase results from the Department's requirement to fund the reliability enhancement and re-engining program to meet Capability Assessment & Program Evaluation requirements.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force									DATE: February 2011		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0401119F: C-5 Airlift Squadrons				PROJECT 674495: Avionics Modernization Program			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
674495: Avionics Modernization Program	1.681	4.867	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

Avionics Modernization Program (AMP): AMP implements Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM), navigation/safety capability and the All Weather Flight Control System (AWFCS). It installs directed navigation/safety equipment: Terrain Awareness and Warning System (TAWS) and Traffic Alert and Collision Avoidance System (TCAS), reducing the threat of controlled flight into terrain and mid-air collisions. CNS/ATM capability requirements are incorporated in the aircraft to meet current and future International Civil Aviation Organization (ICAO)/Federal Aviation Administration (FAA) requirements and to progress toward Next Gen Air Transportation System. AWFCS replaces low reliability line replaceable units (LRUs) in the automatic flight control system and replaces aging, non-supportable mechanical instruments in the engine and flight systems. Connectivity to mobility command and control capabilities is also incorporated in the AMP design. The TCAS portion was accelerated ahead of the rest of the AMP mod and was completed 31 Oct 02. The portion of avionics capability required for modernization that does not complete at the end of AMP development will be captured and funded in RERP. All other avionics capability will be captured in a separate follow-on block upgrade program. AMP requirements have been expanded to incorporate updates to the new avionics architecture, to include security enhancements to the Global Positioning System. Equipment Diminishing Manufacturing Source (DMS) issues will be resolved to support continued operations through studies, development, and redesign efforts. FY 2010/2011: Funding required for development of the Pilot Assist Capability/Servo (PAC/Servo) capabilities for insertion in aircraft that have previously completed the AMP modification. 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. Accomplishments/Planned Programs (\$ in Millions)

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: PAC SERVO	1.681	4.867	-	-	-
Description: Redesign,development, and testing of brushless PAC Servo to increase Mean Time Between Repairs.					
FY 2010 Accomplishments: Redesign,development, and testing of brushless PAC Servo to increase Mean Time Between Repairs.					
FY 2011 Plans: Redesign,development, and testing of brushless PAC Servo to increase Mean Time Between Repairs.					
FY 2012 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force							DATE: February 2011				
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>			R-1 ITEM NOMENCLATURE PE 0401119F: <i>C-5 Airlift Squadrons</i>			PROJECT 674495: <i>Avionics Modernization Program</i>					
B. Accomplishments/Planned Programs (\$ in Millions)											
						FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	
<i>FY 2012 OCO Plans:</i>											
Accomplishments/Planned Programs Subtotals						1.681	4.867	-	-	-	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• PE 0401119F: <i>APAF, BA-05, C-5 Mods, Avionics Modernization Program</i>	60.814	33.638	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• PE: <i>0401119F, APAF, BA-07, C-5 AMP Other Production Charges</i>	4.866	1.468	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
D. Acquisition Strategy											
Avionics Modernization Program: Program acquisition strategy establishes a single integrating contractor (Lockheed Martin Aeronautics Company) to modify and qualify integrated commercial off-the-shelf line replaceable units and software to meet C-5 communication, navigation, surveillance/air traffic management requirements; update existing engineering and technical data; develop interface control specifications based on requirements; prototype the new system; and support flight testing. The AMP modification is planned for the C-5 fleet.											
E. 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 2012 Air Force										DATE: February 2011			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0401119F: C-5 Airlift Squadrons				PROJECT 674495: Avionics Modernization Program					
Product Development (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PAC/Servo	SS/CPAF	Lockheed Martin:Marietta, GA	356.629	2.422		-		-		-	0.000	359.051	0.000
Subtotal			356.629	2.422		-		-		-	0.000	359.051	0.000
Support (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PAC/Servo	TBD	Lockheed Martin:Marietta, GA	28.737	2.445		-		-		-	0.000	31.182	0.000
Subtotal			28.737	2.445		-		-		-	0.000	31.182	0.000
Test and Evaluation (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PAC/Servo	TBD	Lockheed Martin:Marietta, GA	19.096	-		-		-		-	0.000	19.096	0.000
Subtotal			19.096	-		-		-		-	0.000	19.096	0.000
Management Services (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-	0.000	0.000	0.000
			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			404.462	4.867		-		-		-	0.000	409.329	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Air Force						DATE: February 2011			
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>			R-1 ITEM NOMENCLATURE PE 0401119F: <i>C-5 Airlift Squadrons</i>			PROJECT 674495: <i>Avionics Modernization Program</i>			
	Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks									

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0401119F: <i>C-5 Airlift Squadrons</i>	PROJECT 674495: <i>Avionics Modernization Program</i>

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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Air Force			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0401119F: <i>C-5 Airlift Squadrons</i>	PROJECT 674495: <i>Avionics Modernization Program</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Aircraft is in production	1	2010	4	2011
PAC/Servo Development	1	2010	4	2011
Full Operational Capability	2	2012	2	2012

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force									DATE: February 2011		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0401119F: C-5 Airlift Squadrons				PROJECT 674835: Reliability Enhancement & Reengining Program			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
674835: Reliability Enhancement & Reengining Program	61.332	34.654	24.941	-	24.941	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

C-5 Reliability Enhancement and Re-engining Program (RERP): RERP is a comprehensive modernization effort to improve aircraft reliability, maintainability, and availability. RERP will enable the C-5 to achieve wartime mission requirements by increasing fleet availability (mission capable rate, departure reliability). This effort centers around replacing the current TF39 engines with more reliable, Commercial Off-the-Shelf CF6 turbofan engines with increased take-off thrust and stage three noise compliance. The new engines, military designation F-138-GE-100, increase payload capability and access to Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM) airspace. The modification also decreases aircraft time to climb, increases engine-out climb gradient for takeoff, improves transportation system throughput, and decreases engine removals. Additionally, numerous other system modifications will be performed to increase fleet availability. Increased costs led to a review of total program requirements. On 14 Feb 08, the USD(AT&L) certified a restructured RERP to Congress. This restructured program reduced RERP scope to include only 49 production aircraft (47 C-5Bs and 2 C-5Cs). The AF was directed to fully fund RERP to the OSD Cost Analysis Improvement Group (CAIG) Independent Cost Estimate (ICE). On 14 Mar 08 the USD(AT&L) conducted a successful Milestone C (MS C) Defense Acquisition Board (DAB). The USD(AT&L) signed the Acquisition Program Baseline (APB) reflecting the N-M certification and the MS C approval on 24 Jun 08. Equipment Diminishing Manufacturing Source (DMS) issues will be resolved to support continued operations through studies, bridge buys, life of type buys, development and redesign efforts. On 7 Oct 10, USD AT&L conducted a successful Full Rate Production (FRP) Decision Acquisition Board (DAB) and approved the C-5 RERP FRP ADM for lots 5 – 7; directed Air Force to fully fund RERP to the OSD Cost Assessment and Program Evaluation (CAPE) Independent Cost Estimate (ICE) for RDT&E; re-designated C-5 RERP as an Acquisition Category IC program. 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 Prior Years funding estimate is \$1,472.363M.

FY2010: Funding supports RERP design, development, engineering change orders, and contractor/government test. Mission support funding is required for program office operations. FY10 funding is also required to continue the development/delivery of aircrew/maintenance training devices.

FY2011: Funding supports RERP design, development, engineering change orders, contractor/government test, and technical order publications. Mission support funding is required for program office operations. FY11 funding is also required to design, build, test and initiate delivery of aircrew/maintenance training devices.

FY2012: Funding supports RERP design, development, engineering change orders, contractor/government test, and technical order publication in support of the correction of Qualification Operational Test & Evaluation deficiency reports. Mission support funding is required for program office operations. FY12 funding is also

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0401119F: <i>C-5 Airlift Squadrons</i>	PROJECT 674835: <i>Reliability Enhancement & Reengining Program</i>
required to finalize the testing and development/delivery of aircrew/maintenance training devices and efforts to continue to minimize divergence between AMP and RERP baselines.		
FY12 is the last year of RDT&E funding.		

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: Reliability Enhancement & Re-engining Program Description: Reliability Enhancement and Re-engining Program (RERP) will enable the C-5 to achieve wartime mission requirements by increasing fleet availability (mission capable rate, departure reliability). FY 2010 Accomplishments: The accomplishments/planned program funding in Paragraph B are to support RERP design, development, engineering change orders, contractor/government test, technical order publications, and the continued development/delivery of aircrew/maintenance training devices. Mission support funding is also required for program office operations. FY 2011 Plans: The accomplishments/planned program funding in Paragraph B are to support RERP design, development, engineering change orders, contractor/government test, technical order publications, and design, build, test and deliver the aircrew/maintenance training devices. Mission support funding is also required for program office operations. FY 2012 Base Plans: Program funding supports final RERP design, development, engineering change orders, contractor/government test, technical order publications, resulting resulting from Qualification Operational Testing & Evaluation deficiency report corrections and to finalize the development/delivery of aircrew and maintenance training devices and efforts to minimize divergence between AMP and RERP baselines. Mission support funding is also required for program office operations. FY 2012 OCO Plans:	61.332	34.654	24.941	-	24.941
Accomplishments/Planned Programs Subtotals	61.332	34.654	24.941	-	24.941

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0401119F: <i>C-5 Airlift Squadrons</i>	PROJECT 674835: <i>Reliability Enhancement & Reengining Program</i>	

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

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PE 0401119F: <i>APAF, BA-5, C-5 Reliability Enhancement and Re-engining Program, Advance Procurement</i>	141.566	166.900	112.200	0.000	112.200	175.800	0.000	0.000	0.000	Continuing	Continuing
• PE 0401119F (1): <i>APAF, BA-5, C-5 Mods, Reliability Enhancement and Re-engining Program</i>	437.876	676.457	851.859	0.000	851.859	936.024	1,012.009	330.946	0.000	Continuing	Continuing
• PE 0401119F (2): <i>APAF, BA-06, C-5 Initial Spares</i>	0.000	0.000	116.175	0.000	116.175	117.186	131.933	0.000	0.000	Continuing	Continuing
• PE 0401119F (3): <i>APAF, BA-07, C-5 Other</i>	12.373	19.641	9.389	0.000	9.389	0.000	0.000	0.000	1.532	Continuing	Continuing

D. Acquisition Strategy

Reliability Enhancement and Re-engining Program (RERP): System Development & Demonstration (SDD) includes 1 C-5A and 2 C-5Bs. The acquisition strategy considers every opportunity to use commercial components to modernize the C-5 to meet or exceed required system performance and support, so as to renew the weapon system until 2040. Lockheed Martin was selected as the prime contractor through a sole source arrangement. Lockheed selected General Electric (Powerplant), Goodrich (Pylon), and Honeywell (Avionics) as the major subcontractors.

E. 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 2012 Air Force **DATE:** February 2011

APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0401119F: <i>C-5 Airlift Squadrons</i>	PROJECT 674835: <i>Reliability Enhancement & Reengining Program</i>
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Product Development (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Not specified.	SS/FFP	Lockheed Martin:Marietta, GA	46.738	-		-		-		-	0.000	46.738	46.738
Not specified. (1)	SS/CPAF	Lockheed Martin:Marietta, GA	1,290.066	22.934	Oct 2010	8.060		-		8.060	0.000	1,321.060	1,321.060
Interim Contract Support (ICS)	SS/Various	Lockheed Martin:Marietta, GA	0.234	0.300	Jan 2011	0.300		-		0.300	0.000	0.834	0.834
Subtotal			1,337.038	23.234		8.360		-		8.360	0.000	1,368.632	1,368.632

Remarks

Costs shown on Interim Contract Support (ICS) line were previously included in SDD line. Due to a change in contracting strategy post-FY09 PB submission, these costs were moved from the SDD line to the ICS line. These costs represent the costs associated with post-SDD DMS resolution and resolution of Deficiency Reports (DRs) discovered during Qualification Operational Test & Evaluation (QOT&E) to be executed using the ICS contract vehicle.

Support (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
WR-ALC/GRS, Robins AFB, GA	TBD	WR-ALC:Robins AFB, GA	31.653	0.150		0.150		-		0.150	0.000	31.953	31.953
ASC/WLS, Wright-Patterson AFB, OH	TBD	ASC:Wright-Patterson AFB, OH	46.849	0.200		0.200		-		0.200	0.000	47.249	47.249
Subtotal			78.502	0.350		0.350		-		0.350	0.000	79.202	79.202

Test and Evaluation (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
418 Test Squadron (Edwards AFB)	TBD	418 Test Squadron:Edwards AFB, CA	63.621	1.350		3.279		-		3.279	0.000	68.250	68.250
Subtotal			63.621	1.350		3.279		-		3.279	0.000	68.250	68.250

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Air Force											DATE: February 2011			
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>				R-1 ITEM NOMENCLATURE PE 0401119F: <i>C-5 Airlift Squadrons</i>				PROJECT 674835: <i>Reliability Enhancement & Reengining Program</i>						

Management Services (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircrew & Maintenance Trainer	TBD	OO-ALC:Hill AFB, UT	54.534	9.720		12.952		-		12.952	0.000	77.206	77.206
Subtotal			54.534	9.720		12.952		-		12.952	0.000	77.206	77.206

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,533.695	34.654		24.941		-		24.941	0.000	1,593.290	1,593.290

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0401119F: <i>C-5 Airlift Squadrons</i>	PROJECT 674835: <i>Reliability Enhancement & Reengining Program</i>

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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Air Force			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0401119F: <i>C-5 Airlift Squadrons</i>	PROJECT 674835: <i>Reliability Enhancement & Reengining Program</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Complete Dedicated Qualification Operational Test and Evaluation (QOT&E) (AFOTEC Report Complete)	3	2010	3	2010
Full Rate Production (FRP) decision	4	2010	4	2010
Training System Development	1	2010	3	2012
Initial Operational Capability	1	2013	1	2013

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force								DATE: February 2011			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0401119F: C-5 Airlift Squadrons				PROJECT 675353: C-5 Block Upgrade			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
675353: C-5 Block Upgrade	19.326	19.469	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
A. Mission Description and Budget Item Justification											
C-5 Block Upgrade:											
Purpose of this program is to provide a measured approach to implement a common baseline for the C-5 fleet in order to allow insertion and integration of new/future capabilities and replacement of future unsupportable equipment. Software (S/W) and hardware (H/W) baselines between the Avionics Modernization Program (AMP) and Reliability Enhancement and Re-engining Program (RERP) have diverged. S/W deficiencies corrected under AMP sustainment (Block Cycle Changes) reappear in RERP. C-5 AMP system has a total of two Core Processor Module (CPM) cards; C-5 RERP system has a total of three CPM cards. Originally, AMP was to have 50% spare processing and memory capability; AMP's CPM-1 and CPM-2, respectively, have only 22% and 19% throughput capability remaining. AMPs throughput/capacity constraint does not allow room for any new/future capability and contributes to current computer problems. Failure to upgrade the C-5 AMP system to the 3 CPM RERP configuration will affect mission capable rates, will inhibit the ability to fix current Deficiency Reports (DRs)and drive increased sustainment costs associated with S/W and H/W baseline divergence. The C-5 Block Upgrade Program development requirements complete in FY11. 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. Accomplishments/Planned Programs (\$ in Millions)							FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: C-5 Core Processing Platform & Software Commonality							19.326	19.469	-	-	-
Description: Upgrade the AMP core processing platform [Versatile Integrated Avionics (VIA) and Avionics Interface Unit (AIU)] to the RERP core processing platform configuration and address key AMP program waivers/recurring critical AMP DRs in RERP software.											
FY 2010 Accomplishments: Development and integration of AMP core processing software for a 3 core processing module (CPM) environment and investigation/development of software solutions for key AMP waivers. Development and integration of critical AMP DR solutions into RERP software suite.											
FY 2011 Plans: Complete software development and integration, regression testing, Ground Testing, Development Test & Evaluation (DT&E) and Operational Test & Evaluation (OT&E).											
FY 2012 Base Plans:											

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force							DATE: February 2011				
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>				R-1 ITEM NOMENCLATURE PE 0401119F: <i>C-5 Airlift Squadrons</i>			PROJECT 675353: <i>C-5 Block Upgrade</i>				
B. Accomplishments/Planned Programs (\$ in Millions)											
							FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<i>FY 2012 OCO Plans:</i>											
Accomplishments/Planned Programs Subtotals							19.326	19.469	-	-	-
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• PE 0401119F: <i>APAF, BA-5, C-5 Mods, Block Upgrade Program</i>	0.000	21.260	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
D. Acquisition Strategy											
Program acquisition strategy established a single integrating contractor (Lockheed Martin) to integrate & qualify the C-5 RERP core processing platform utilizing the C-5 AMP Operational Flight Program (OFP) into the C-5 AMP aircraft and incorporate software solutions developed for AMP into the RERP software baseline. Block Upgrade 01 is the start of a measured approach in implementing a more common baseline to allow insertion and integration of newly acquired/required capabilities and replacement of future unsupportable equipment due to obsolescence or Diminishing Manufacturing Source (DMS) issues.											
E. 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 2012 Air Force											DATE: February 2011			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development					R-1 ITEM NOMENCLATURE PE 0401119F: C-5 Airlift Squadrons				PROJECT 675353: C-5 Block Upgrade					
Product Development (\$ in Millions)					FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Software Update	SS/CPFF	Lockheed Martin:Marietta, GA	19.326	13.957	Feb 2011	-		-		-	0.000	33.283	28.068	
Subtotal			19.326	13.957		-		-		-	0.000	33.283	28.068	
Support (\$ in Millions)					FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Subtotal			-	-		-		-		-	0.000	0.000	0.000	
Test and Evaluation (\$ in Millions)					FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
418 Test Squadron (Edwards AFB, CA)	PO	418 Test Squadron:Edwards AFB, CA	-	5.512	Jul 2012	-		-		-	0.000	5.512	5.512	
Subtotal			-	5.512		-		-		-	0.000	5.512	5.512	
Management Services (\$ in Millions)					FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Subtotal			-	-		-		-		-	0.000	0.000	0.000	
			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			19.326	19.469		-		-		-	0.000	38.795	33.580	
Remarks														

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0401119F: <i>C-5 Airlift Squadrons</i>	PROJECT 675353: <i>C-5 Block Upgrade</i>

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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Air Force			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0401119F: <i>C-5 Airlift Squadrons</i>	PROJECT 675353: <i>C-5 Block Upgrade</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
System Development and Demonstration	1	2011	1	2013
Production	2	2012	4	2013
Test Readiness Review (TRR)	3	2012	3	2012
Formal Qualification Test (FQT)	3	2012	3	2012
Integrated DT/OT&E	3	2012	1	2013
Aircraft Kit Installations	1	2013	4	2013

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