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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<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 0401119F I C-5 Airlift Squadrons (IF)
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	9.883	30.560	17.507	0.000	17.507	-	-	-	-	-	-
671307: <i>C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)</i>	-	9.883	30.560	17.507	0.000	17.507	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

C-5M Replace multi-functional controls and display (RMCD) program is a comprehensive effort to ensure appropriate RMCD Line Replaceable Units (LRU) are developed and installed on the C-5M allowing aircraft operation in accordance with civil airspace access mandates for both US National Airspace System (NAS) and international civil airspace. The C-5M RMCD program ensures system standardization and interoperability with other DoD systems to the maximum extent possible and directly supports airworthiness certification. The purpose of the program is to find a suitable replacement for the current Multi-functional Display Unit (MFDU) LRUs while maintaining existing interfaces to legacy equipment and providing for future growth opportunities. Additionally, the replacement LRUs must have the Ethernet load capability to reduce Operational Flight Programs (OFP) load times, and the program will implement a power solution for Mission Planning Equipment (MPE). Operational Flight Programs (OFP) updates/aggregation are required to support the latest aircraft display technologies and will be designed to ensure seamless integration into the platform. Aircraft wiring will be replaced/upgraded as required. Use of mixed displays (current and new) is not permissible due to human factors considerations. It is anticipated equipment will be predominately commercial off-the-shelf or non-developmental items.

The RMCD program is a modification to mitigate the obsolescence of the current control and display units. This effort centers around modifying the current display units to obtain sufficient capacity/capability to support integration of new system capabilities with margin for growth by upgrading displays and correcting any mission essential deficiencies identified during development, including additions of an Ethernet loading capability and a power solution for the MPE. This modification may include software development, data, cyber security, testing, installation, spares, Systems Integration Lab (SIL), program support, etc.

The modification helps to maintain aircraft availability as the new multi-functional controls and displays replaces the current controls and displays, which are experiencing severe diminishing manufacturing source (DMS) issues. Failure to upgrade the displays to support aircraft availability will create a significant operational impact to the support of Geographic Combatant Command (GCCs) and maintaining U.S. National objectives.

Funding supports program management administration, studies and analysis, risk reduction efforts, Advisory and Assistance Services (A&AS), change orders, and other government costs such as travel, directorate support, government furnished equipment (GFE), and over and above costs. Funding also provides Diminishing Manufacturing Sources (DMS) through studies and analysis.

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This program element may include necessary civilian pay expenses required to manage, execute, and deliver the C-5 Airlift Squadrons (IF) weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY 2020 \$0.000 million was expended for civilian pay expenses in this program element, and in FY 2021 \$0.000 million is forecasted for civilian pay expenses in this program element.

This modification supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	10.223	32.560	22.600	0.000	22.600
Current President's Budget	9.883	30.560	17.507	0.000	17.507
Total Adjustments	-0.340	-2.000	-5.093	0.000	-5.093
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-2.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.337	0.000			
• Other Adjustments	-0.003	0.000	-5.093	0.000	-5.093

**Change Summary Explanation**

FY 2021 funding reduced by \$2.0 million due to Congressional Directed Reduction for Unjustified Program Management and Administration (PMA) growth.

FY 2022 funding request was reduced by \$5.093 million to account for the availability of prior year execution balances and economic adjustments.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> C-5 Replace Multi-Functional Controls and Display	9.883	30.560	17.507
<b>Description:</b> Replace Multi-Functional Controls and Display replacement will enable the C-5M to achieve wartime mission requirements by maintaining fleet availability (mission capable rate) and Program Management and Administration (PMA).			
<b>FY 2021 Plans:</b>			

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
OTA Hardware Prototype development and Phase 0 Risk Reduction/Agile Software Partnering to provide a certified hardware solution for EMD integration. This effort will include organic software development and IV&V support.  <b>FY 2022 Plans:</b> Continue organic software development. Blue Label Software released in FY2022. Award EMD contract for hardware, software, test, and trainers support. EMD will include Agile Software Development partnering, integration, data management, systems engineering, logistics, and program support to modify 2 AMC aircraft.  <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding decreased due to ramping down of Phase 0 Risk Reduction/Agile Software Partnering.			
<b>Accomplishments/Planned Programs Subtotals</b>	9.883	30.560	17.507

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2022</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u>	<u>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	
• APAF 05 C00500: C-5	56.326	50.279	17.583	0.000	17.583	-	-	-	-	-	-
• APAF 05 0401119F: <i>C-5 Airlift Squadrons</i>	0.574	0.000	0.000	0.000	0.000	-	-	-	-	-	-
• APAF 06 0401119F: <i>C-5 Airlift Squadrons</i>	2.053	0.409	0.000	0.000	0.000	-	-	-	-	-	-
• APAF 05 0401897F: <i>TRAINING</i>	0.000	0.000	7.848	0.000	7.848	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**  
The Acquisition Strategy Panel (ASP) package was approved 4 April 20. Program utilized Other Transaction Authority (OTA) to procure prototype hardware; utilize an organic software development effort and award a sole source contract to the prime contractor for EMD integration of hardware, software, test, and training support. Two aircraft will be modified during EMD. Delta ASP approved October 8, 2020 to incorporate a Phase 0 Sole Source Contract effort with Lockheed Martin Aerospace for EMD risk reduction and Agile Software Development Partnering.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 7				PE 0401119F / C-5 Airlift Squadrons (IF)				671307 / C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)								
<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
Phase 0 / Integration Contract - LMA	SS/CPIF	Lockheed Martin : Marietta, GA	-	-		16.010	May 2021	6.511	Nov 2021	-		6.511	-	-	-	
Organic Software Development	PO	AFMC 578 SWES/ MXDPAA : Robins AFB, GA	-	5.098	Jun 2020	2.200		0.936	Nov 2021	-		0.936	-	-	-	
Other Transaction Authority (OTA)	SS/FP	SOSSEC, Inc : Salem, NH	-	2.559	Mar 2021	2.062		-		-		-	-	-	-	
<b>Subtotal</b>			-	7.657		20.272		7.447		-		7.447	-	-	N/A	
<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
Change Orders	Various	TBD : TBD	-	1.371	Feb 2021	0.188		0.721		-		0.721	-	-	-	
Technical Deliverables	Various	TBD : TBD	-	0.321		-		-		-		-	-	-	-	
PMA - OGC's	Various	WPAFB/RobinsAFB : TBD	-	0.534		4.758		1.265		-		1.265	-	-	-	
<b>Subtotal</b>			-	2.226		4.946		1.986		-		1.986	-	-	N/A	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
Contractor Test/SIL	Various	TBD : TBD	-	-		-		2.256	Nov 2021	-		2.256	-	-	-	
SIL	PO	AFLCMC/WLS : Robins AFB, GA	-	-		0.635		1.940	Nov 2021	-		1.940	-	-	-	
<b>Subtotal</b>			-	-		0.635		4.196		-		4.196	-	-	N/A	



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / C-5 Airlift Squadrons (IF)	<b>Project (Number/Name)</b> 671307 / C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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

<b>Replace Multi-Functional Control &amp; Display</b>																																
Program Start			■																													
ASP			■																													
OTA H/W Contract Award					■																											
Milestone B									■																							
SIL									■																							
Phase 0 / Integration Contract					■																											
PDR									■																							
CDR									■																							
DT&E													■																			
Milestone C																					■											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / C-5 Airlift Squadrons (IF)	<b>Project (Number/Name)</b> 671307 / C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Replace Multi-Functional Control &amp; Display</i></b>				
Program Start	3	2020	3	2020
ASP	3	2020	3	2020
OTA H/W Contract Award	2	2021	1	2022
Milestone B	1	2022	1	2022
SIL	1	2022	2	2022
Phase 0 / Integration Contract	3	2021	1	2024
PDR	2	2022	2	2022
CDR	3	2022	3	2022
DT&E	1	2023	2	2023
Milestone C	1	2024	1	2024